GW – 001

RIVER TERRACE VOLUNTARY CORRECTIVE MEASURES

2018

July 25, 2019

John Kieling, Bureau Chief
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

Carl Chavez
NM Energy, Minerals & Natural Resources
Oil Conservation Division, Env Bureau
1220 South St. Francis Drive
Santa Fe, NM 87505

Certified Mail#: 7016 0750 0000 1998 7406 (Delivery to NMED)
Certified Mail#: 7016 0750 0000 1998 7406 (Delivery to OCD)
7413

RE: Response to Approval with Modifications
River Terrace Annual Report - Voluntary Bioventing / Air Sparging System
(January – December 2017) Revised July 2018
Western Refining Southwest, Inc. – Bloomfield Terminal
EPA ID# NMD089416416
HWB-WRB-18-001

Dear Mr. Kieling and Mr. Chavez,

On behalf of Marathon Petroleum Company (dba Western Refining Southwest, Inc.), please find enclosed the responses required in the referenced approval letter and the revised Tables. If you have questions, then please contact Mr. Gregory McCartney at 419-421-2338.

Sincerely,

Western Refining Southwest, Inc.

Gregory J. McCartney P.E.
Senior Environmental Professional

cc D. Cobrain, NMED HWB
L. Tsinnajinnie – NMED HWB
Kelly Robinson – Bloomfield Terminal
Scott T. Crouch, P.G. DiSorbo

Enclosures

NMED Comment No. 1

Western's response to NMED's *Disapproval* Comment 2 states that "upon further review, it was noted that none of these locations were designed and installed as bioventing wells and thus collection of "soil gas" from these locations may not be entirely possible. For example, the collection gallery is a long-perforated pipe placed below the water table with riser on the end to allow placement of a pump to recover groundwater, thus there is no entrance point for soil gas into the collection gallery." It should be noted that NMED's Comment 2 directs Western to collect soil gas samples from all wells (e.g., TP, BV, DW and MW) at the site, rather than the collection gallery. Regardless, it is not clear why collection of soil gas is not possible from these wells unless the wells are not equipped to allow soil gas samples to be collected. Explain why collection of soil gas is not possible in the response letter.

Western's Response No. 1 The request to add the collection of soil gas samples has already been addressed in the 2019 Facility-Wide Ground Water Monitoring Plan, which was submitted to NMED on June 25, 2019. New Section 5.4.3 includes the collection of soil gas samples from wells located within the remediation area. Some wells, such as MW-49, are located on the opposite side the slurry wall and are not included.

NMED Comment No. 2

Western' s response to NMED 's *Disapproval* Comment 8 states, "[t]he requested information along with the screened interval as measured from the ground surface has been added to Table 1 of the revised report for DW-1, DW-2, DW-3, and MW-49." Table 1 did not include the information regarding the depths of well-screen intervals. Provide this information in a separate table (see Comment 3) for all of the wells at the site, separating the analytical data from the measured groundwater levels and water quality measurements.

Western's Response No. 2 Table 1 has been separated into three sections as requested. In order to avoid revising the entire report, the table reference "Table 1 Groundwater Monitoring Data Summary" is retained for all three sections of the table. The table incudes screened intervals that can be directly compared to the water level elevations with a new column that indicates whether the well screen is submerged on a particular gauging event.

NMED Comment No. 3

Western's response to NMED's *Disapproval* Comment 8 states, "[i]t is not clear how NMED compared the screen interval in TP-5 to the water level elevation without the land surface elevation. Perhaps the land surface elevation was presented in a historical document that is not reflected in Table 1 of the FWGWMP. If NMED can provide the source of the land surface elevation for the TP locations, then we will update Table 1." NMED did not use the land surface elevation to compare the depths of groundwater and screened interval in TP-5 because the information was not available. The screened interval elevation was calculated with information available in Table 1 and the Facility-wide Groundwater Monitoring Plan (FWGMP). According to Table 1, the depth to water (DTW) in TP-5 was recorded as 4.91 feet in the week of April 26, 2017 which was measured from the top of casing (TOC). The depth of screened interval relative to the TOC was calculated by adding the stickup length to the reported depth of screened interval in Table I (Well Summary) from the 2016 FWGMP. Then, the depth of screened interval relative to TOC in TP-5 was calculated as 3.83 - 8.83 feet, assuming a five-foot screen. Comparing the DTW and the calculated depth of screened interval below TOC in TP-5, NMED determined that the screened interval was not submerged. Comment 8 stating that the screen interval in TP-5 was submerged is not correct based on the available information. Western must evaluate whether the screened intervals of monitoring wells, temporary piezometers and dewatering wells are appropriate for SPH measurement at the River Terrace. Include the three most recent monitoring events that summarize the DTW data and depths of screened intervals in all of the wells at the River Terrace area in the table required by Comment 2 and evaluate whether each well-screen interval intersects the water table.

Western's Response No. 3 Although the report is only for the January to December 2017 reporting period, we have included data through the end of 2018 per the request for the three most recent monitoring events. Table 1 includes a new column that indicates whether a particular water level measurement would be above the top of the well screen. Monitoring points TP-6, TP-7, TP-8, DW-1, DW-3, and MW-48 have the most frequent water level measurements indicating a submerged well screen. Based on the dissolved-phase concentrations of organic contaminants in groundwater samples collected from these wells, it appears very unlikely that SPH is present in the area monitored by these wells.

NMED Comment No. 4

Western's response to NMED's *Disapproval* Comment 10 states, "[t]he requested information [elevation, DTW, and total well depth data] has been added to Table 1 of the revised report." The DTW and total well depth data were added for TP-3, TP-10, TP-11, TP-12 and TP-13; however, the groundwater elevation data was not included in Table I. NMED's *Disapproval*

Comment 10 directs Western to include the elevation data. Since the TOC elevation data after 2006 is available (except TP-11), the groundwater elevation data can be calculated and added to the table using the information from Table I (Well Summary) of the 2016 FWGMP. Include the groundwater elevation data in the table required by Comment 2.

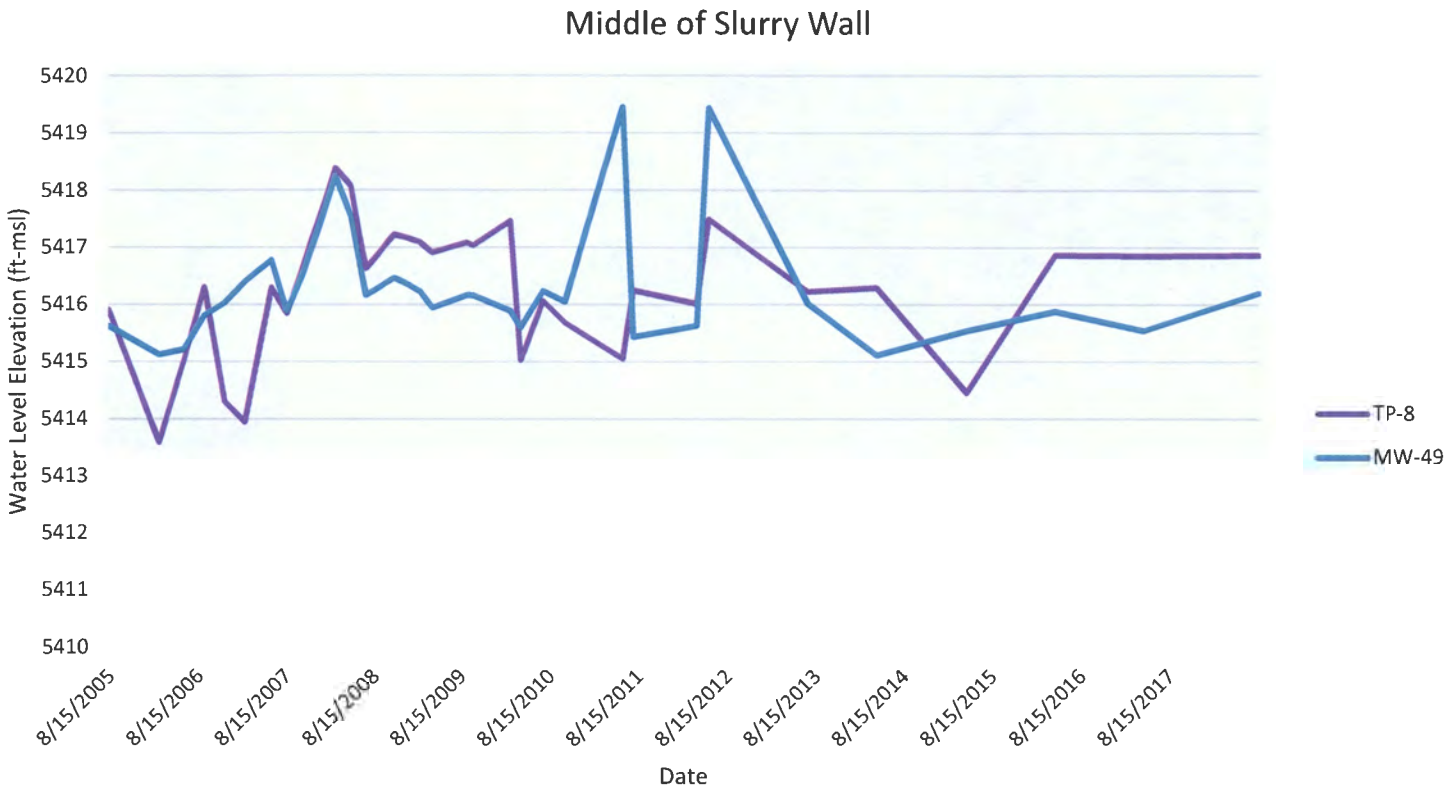
Western's Response No. 4 The groundwater elevation data is included in the revised table.

NMED Comment No. 5

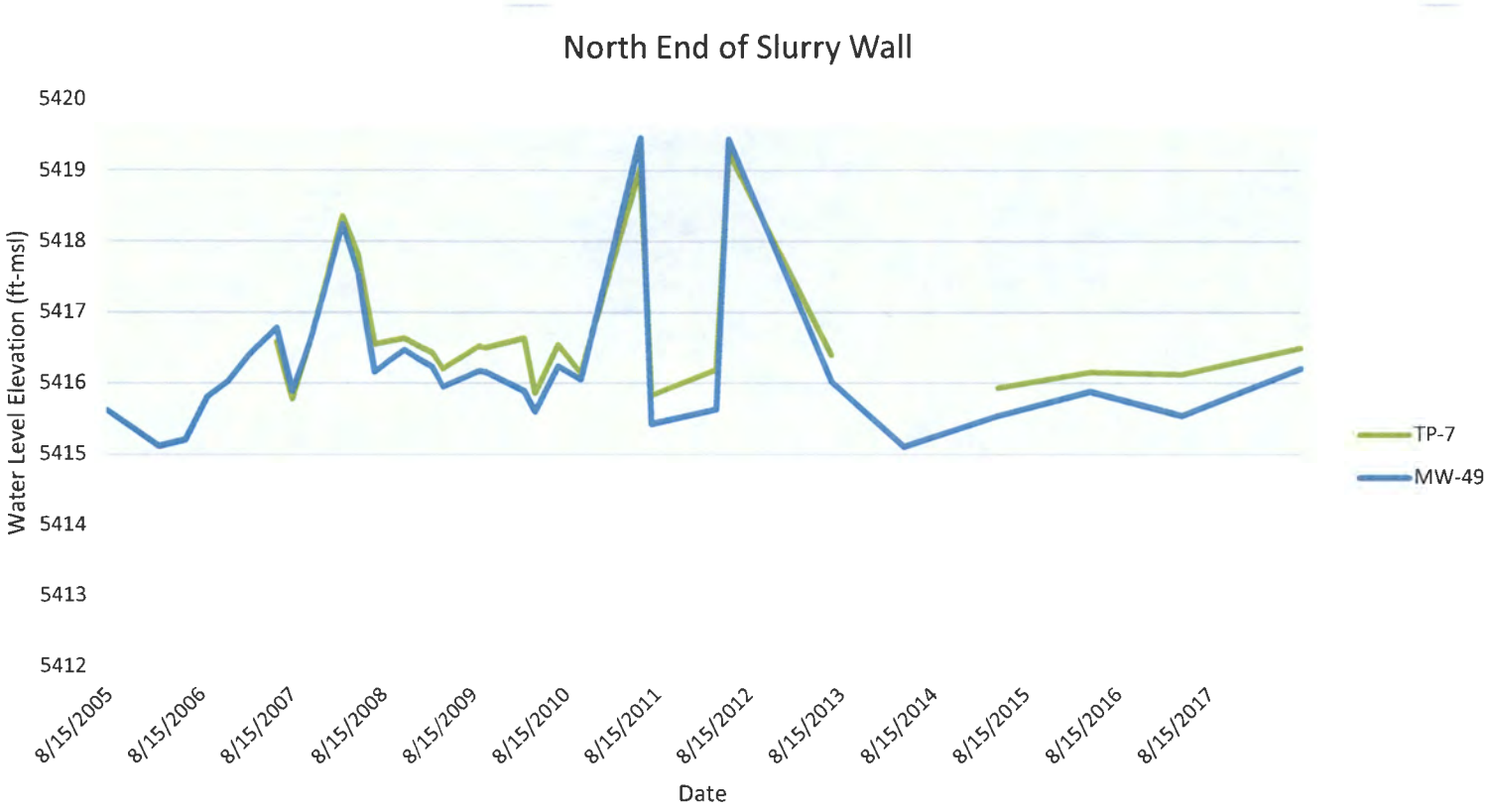
Western's response to NMED's *Disapproval* Comment 17 states, "[w]e were not able to locate as-built drawings [for sheet piling and slurry wall]." If the barrier wall was not installed to the Nacimiento Formation, groundwater would flow beneath the wall. Western must explain how the wall was appropriately installed to the impermeable layer without evaluating as-built drawings in the response letter.

Western's Response No. 5 The effectiveness of the barrier wall and the evidence that it was appropriately installed into the underlying impermeable bedrock is evident when examining water levels on opposite sides of the wall. A graph is enclosed showing water levels measured in MW-49, which is on the river side of the wall, and in TP-8, which is the nearest measuring point on the facility side of the wall. As can be seen, there a numerous times when there is significant separation in the water level elevations on opposite sides of the wall at this location.

For contrast, a second graph is enclosed that shows the water level elevations at MW-49 and TP-7. TP-7 was chosen as it is near the far north end of the slurry wall where the water level effect of the barrier wall would be less than at TP-8. In the second graph, the two water levels track each other very closely.



MW-49 is located on the river side of the slurry wall and TP-8 is located on the bank side of the slurry wall. The wells are approximately 40 feet apart. The separation in water levels indicates the effectiveness of the slurry wall in containing groundwater behind the slurry wall and controlling discharge of potentially impacted groundwater to surface water.



MW-49 is located on the river side of the slurry wall approximately mid way along the wall and TP-7 is located on the bank side of the slurry wall, but TP-7 is near the north end of the slurry wall. The two wells are approximately 80 feet apart. The fluctuations in water levels in MW-49 are interpreted to be influenced by the rise and fall of the discharge and water level in the adjacent San Juan River. The water level in TP-7, which is located near the north end of slurry, also indicates very similar fluctuations also interpreted to be associated with changes in the San Juan River water level. The fluctuations in water levels in TP-7 are anticipated, as this well is near the north end of the slurry wall where the influence of the surface water levels is expected.

NEW MEXICO
ENVIRONMENT DEPARTMENT

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Michelle Lujan Grisham
Governor

Howie C. Morales
Lt. Governor

James C. Kenney
Cabinet Secretary

Jennifer J. Pruett
Deputy Secretary

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

May 29, 2019

Gregory J. McCartney
Western Refining Southwest, Inc.
Bloomfield Terminal
#50 County Road 4490
Bloomfield, New Mexico 87413

RE: APPROVAL WITH MODIFICATIONS
RIVER TERRACE ANNUAL REPORT
VOLUNTARY BIOVENTING / AIR SPARGING SYSTEM
(JANUARY – DECEMBER 2017), REVISED JULY 2018
WESTERN REFINING SOUTHWEST, INC. - BLOOMFIELD TERMINAL
EPA ID# NMD089416416
HWB-WRB-18-001

Dear Mr. McCartney:

The New Mexico Environment Department (NMED) has received the Western Refining Southwest, Inc., Bloomfield Terminal (Western) *River Terrace Annual Report Voluntary Bioventing/Air Sparging System (January – December 2017)* (Report), revised on July 2018. NMED has reviewed the Report and hereby issues this Approval with Modifications with the following comments.

Comment 1

Western's response to NMED's *Disapproval* Comment 2 states that "upon further review, it was noted that none of these locations were designed and installed as bioventing wells and thus collection of "soil gas" from these locations may not be entirely possible. For example, the collection gallery is a long-perforated pipe placed below the water table with riser on the end to allow placement of a pump to recover groundwater, thus there is no entrance point for soil gas into the collection gallery." It should be noted that NMED's Comment 2 directs Western to

collect soil gas samples from all wells (e.g., TP, BV, DW and MW) at the site, rather than the collection gallery. Regardless, it is not clear why collection of soil gas is not possible from these wells unless the wells are not equipped to allow soil gas samples to be collected. Explain why collection of soil gas is not possible in the response letter.

Comment 2

Western's response to NMED's *Disapproval* Comment 8 states, "[t]he requested information along with the screened interval as measured from the ground surface has been added to Table 1 of the revised report for DW-1, DW-2, DW-3, and MW-49." Table 1 did not include the information regarding the depths of well-screen intervals. Provide this information in a separate table (see Comment 3) for all of the wells at the site, separating the analytical data from the measured groundwater levels and water quality measurements.

Comment 3

Western's response to NMED's *Disapproval* Comment 8 states, "[i]t is not clear how NMED compared the screen interval in TP-5 to the water level elevation without the land surface elevation. Perhaps the land surface elevation was presented in a historical document that is not reflected in Table 1 of the FWGWMP. If NMED can provide the source of the land surface elevation for the TP locations, then we will update Table 1." NMED did not use the land surface elevation to compare the depths of groundwater and screened interval in TP-5 because the information was not available. The screened interval elevation was calculated with information available in Table 1 and the Facility-wide Groundwater Monitoring Plan (FWGMP). According to Table 1, the depth to water (DTW) in TP-5 was recorded as 4.91 feet in the week of April 26, 2017 which was measured from the top of casing (TOC). The depth of screened interval relative to the TOC was calculated by adding the stickup length to the reported depth of screened interval in Table 1 (Well Summary) from the 2016 FWGMP. Then, the depth of screened interval relative to TOC in TP-5 was calculated as 3.83 – 8.83 feet, assuming a five-foot screen. Comparing the DTW and the calculated depth of screened interval below TOC in TP-5, NMED determined that the screened interval was not submerged. Comment 8 stating that the screen interval in TP-5 was submerged is not correct based on the available information. Western must evaluate whether the screened intervals of monitoring wells, temporary piezometers and dewatering wells are appropriate for SPH measurement at the River Terrace. Include the three most recent monitoring events that summarize the DTW data and depths of screened intervals in all of the wells at the River Terrace area in the table required by Comment 2 and evaluate whether each well-screen interval intersects the water table.

Comment 4

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however, the groundwater elevation data was not included in Table 1. NMED's *Disapproval* Comment 10 directs Western to include the elevation data. Since the TOC elevation data after 2006 is available (except TP-11), the groundwater elevation data can be calculated and added to the table using the information from Table 1 (Well Summary) of the 2016 FWGMP. Include the groundwater elevation data in the table required by Comment 2.

Comment 5

Western's response to NMED's *Disapproval* Comment 17 states, "[w]e were not able to locate as-built drawings [for sheet piling and slurry wall]." If the barrier wall was not installed to the Nacimiento Formation, groundwater would flow beneath the wall. Western must explain how the wall was appropriately installed to the impermeable layer without evaluating as-built drawings in the response letter.

Western must address all comments in this Approval with Modifications in a response letter cross-referencing NMED's numbered comments. The response letter and the tables required by Comments 2, 3, and 4 must be submitted no later than **July 31, 2019**.

This approval is based on the information presented in the document as it relates to the objectives of the work identified by NMED at the time of review. Approval of this document does not constitute agreement with all information or every statement presented in the document.

If you have questions regarding this Approval with Modifications, please contact Michiya Suzuki of my staff at 505-476-6059.

Sincerely,

John E. Kieling
Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
K. Van Horn, NMED HWB
L. Tsinnajinnie, NMED HWB
M. Suzuki, NMED HWB
C. Chavez, EMNRD OCD
K. Robinson, Western Refining Southwest, Inc., Bloomfield Terminal
L. King, EPA Region (6LCRRC)

File: Reading File and WRB 2019 File
WRB-18-001

TABLE 1 - Part 1
Groundwater Monitoring Data Summary

Sample Location	Sampling Event	Date	TOC elevation (ft-msl)	Ground Surface Elevation (ft-msl)	Depth to Water (ft below TOC)	Depth to Product (ft below TOC)	Water Level Elevation (ft-msl)	Total Well Depth (ft below TOC)	Screened Interval (ft-bgs)	Screened Interval Elevations (ft-msl)	Screen Submerged Yes/No
TP-1	***Decommissioned November 2012	November 2012	NA	NA	***	***	NA	***	NA	NA	***
TP-2	***Decommissioned November 2012	November 2012	NA	NA	***	***	NA	***	NA	NA	***
TP-3 (Bi-Annual)	2018	08/02/18	5423.88	5422.66	7.18	NPP	5416.70	12.37	4 - 9	5418.66 - 5413.66	No
	2017	04/28/17	5423.88	5422.66	7.16	NPP	5416.72	12.35	4 - 9	5418.66 - 5413.66	No
	2016	04/27/16	5423.88	5422.66	7.15	NPP	5416.73	12.35	4 - 9	5418.66 - 5413.66	No
	High Flow 2015	No High Flow	5423.88	5422.66	**	**	**	**	4 - 9	5418.66 - 5413.66	**
	Low Flow 2015	Week of 04/28/15	5423.88	5422.66	7.53	NPP	5416.35	12.35	4 - 9	5418.66 - 5413.66	No
	High Flow 2013 **	No High Flow	5423.88	5422.66	**	**	**	**	4 - 9	5418.66 - 5413.66	**
	Low Flow 2013	Week of 07/11/13	5423.88	5422.66	7.11	NPP	5416.77	12.35	4 - 9	5418.66 - 5413.66	No
TP-5	Low Flow 2018	Week of 10/15/18	5422.83	5422.00	4.75	NPP	5418.08	8.85	3 - 8	5419.00 - 5414.00	No
	Low Flow 2017	Week of 04/28/17	5422.83	5422.00	4.91	NPP	5417.92	8.84	3 - 8	5419.00 - 5414.00	No
	Low Flow 2016	Week of 04/28/16	5422.83	5422.00	4.87	NPP	5417.96	8.84	3 - 8	5419.00 - 5414.00	No
	High Flow 2015	No High Flow	5422.83	5422.00	**	**	**	**	3 - 8	5419.00 - 5414.00	**
	Low Flow 2015	Week of 04/28/15	5422.83	5422.00	5.13	NPP	5417.7	8.84	3 - 8	5419.00 - 5414.00	No
	High Flow 2014 **	No High Flow	5422.83	5422.00	**	**	**	**	3 - 8	5419.00 - 5414.00	**
	Low Flow 2014	Week of 04/22/14	5422.83	5422.00	5.19	NPP	5417.64	8.84	3 - 8	5419.00 - 5414.00	No
	High Flow 2013 **	No High Flow	5422.83	5422.00	**	**	**	**	3 - 8	5419.00 - 5414.00	**
	Low Flow 2013	Week of 07/11/13	5422.83	5422.00	4.95	NPP	5417.88	8.84	3 - 8	5419.00 - 5414.00	No
	High Flow 2012	Week of 05/29/12	5422.83	5422.00	3.42	NPP	5419.41	8.84	3 - 8	5419.00 - 5414.00	Yes
	Low Flow 2012	Week of 04/09/12	5422.83	5422.00	5.09	NPP	5417.74	8.84	3 - 8	5419.00 - 5414.00	No
	Low Flow 2011	Week of 07/26/11	5422.83	5422.00	5.69	NPP	5417.14	8.84	3 - 8	5419.00 - 5414.00	No
	High Flow 2011	Week of 06/13/11	5422.83	5422.00	4.95	NPP	5417.88	8.84	3 - 8	5419.00 - 5414.00	No
	4th Quarter 2010	Week of 10/18/10	5422.83	5422.00	5.65	NPP	5417.18	8.84	3 - 8	5419.00 - 5414.00	No
	3rd Quarter 2010	Week of 07/20/10	5422.83	5422.00	5.11	NPP	5417.72	8.84	3 - 8	5419.00 - 5414.00	No
	2nd Quarter 2010	Week of 04/19/10	5422.83	5422.00	5.98	NPP	5416.85	8.84	3 - 8	5419.00 - 5414.00	No
	1st Quarter 2010	Week of 03/08/10	5422.83	5422.00	4.41	NPP	5418.42	8.84	3 - 8	5419.00 - 5414.00	No
	4th Quarter 2009	Week of 10-05-09	5422.83	5422.00	4.57	NPP	5418.26	6.84	3 - 8	5419.00 - 5414.00	No
	3rd Quarter 2009	Week of 09/10/09	5422.83	5422.00	4.54	NPP	5418.29	8.84	3 - 8	5419.00 - 5414.00	No
	2nd Quarter 2009	Week of 04/20/09	5422.83	5422.00	4.96	NPP	5417.87	8.84	3 - 8	5419.00 - 5414.00	No
	1st Quarter 2009	Week of 03/02/09	5422.83	5422.00	4.66	NPP	5417.97	8.84	3 - 8	5419.00 - 5414.00	No
	4th Quarter 2008	Week of 11/10/08	5422.83	5422.00	4.54	NPP	5418.29	8.84	3 - 8	5419.00 - 5414.00	No
	3rd Quarter 2008	Week of 07/14/08	5422.83	5422.00	4.76	NPP	5418.07	8.84	3 - 8	5419.00 - 5414.00	No
	2nd Quarter 2008	Week of 05/12/08	5422.83	5422.00	3.43	NPP	5419.40	8.84	3 - 8	5419.00 - 5414.00	Yes
	1st Quarter 2008	Week of 03/10/08	5422.83	5422.00	3.15	NPP	5419.68	8.84	3 - 8	5419.00 - 5414.00	Yes
	4th Quarter 2007	Week of 10/29/07	5422.83	5422.00	4.78	NPP	5418.05	8.84	3 - 8	5419.00 - 5414.00	No
	3rd Quarter 2007	Week of 08/20/07	5422.83	5422.00	6.97	NPP	5415.88	8.84	3 - 8	5419.00 - 5414.00	No
	2nd Quarter 2007	Week of 06/18/07	5422.83	5422.00	6.62	NPP	5416.21	8.84	3 - 8	5419.00 - 5414.00	No
	1st Quarter 2007	Week of 02/26/07	5422.83	5422.00	5.59	NPP	5417.24	8.84	3 - 8	5419.00 - 5414.00	No
	4th Quarter 2006	Week of 12/04/06	5422.83	5422.00	5.95	NPP	5416.88	8.84	3 - 8	5419.00 - 5414.00	No
	3rd Quarter 2006	Week of 09/11/06	5422.83	5422.00	5.32	NPP	5417.51	8.84	3 - 8	5419.00 - 5414.00	No
	2nd Quarter 2006	Week of 06/17/06	5422.83	5422.00	5.24	NPP	5417.59	8.84	3 - 8	5419.00 - 5414.00	No
	1st Quarter 2006	Week of 03/06/06	5422.83	5422.00	7.81	NPP	5415.02	8.84	3 - 8	5419.00 - 5414.00	No
	Baseline	Week of 08/15/05	5422.83	5422.00	5.91	NPP	5416.92	8.84	3 - 8	5419.00 - 5414.00	No

TABLE 1 - Part 1
Groundwater Monitoring Data Summary

Sample Location	Sampling Event	Date	TOC elevation (ft-msl)	Ground Surface Elevation (ft-msl)	Depth to Water (ft below TOC)	Depth to Product (ft below TOC)	Water Level Elevation (ft-msl)	Total Well Depth (ft below TOC)	Screened Interval (ft-bgs)	Screened Interval Elevations (ft-msl)	Screen Submerged Yes/No
TP-6	Low Flow 2018	Week of 08/13/18	5422.55	5421.40	5.58	NPP	5416.99	9.94	5 - 10	5416.40 - 5411.40	Yes
	Low Flow 2017	Week of 04/26/17	5422.55	5421.40	5.71	NPP	5416.84	9.94	5 - 10	5416.40 - 5411.40	Yes
	Low Flow 2016	Week of 04/28/16	5422.55	5421.40	5.75	NPP	5416.80	9.94	5 - 10	5416.40 - 5411.40	Yes
	High Flow 2015	No High Flow	5422.55	5421.40	**	**	**	**	5 - 10	5416.40 - 5411.40	**
	Low Flow 2015	Week of 04/28/15	5422.55	5421.40	6.00	NPP	5416.55	9.94	5 - 10	5416.40 - 5411.40	Yes
	High Flow 2014 **	No High Flow	5422.55	5421.40	**	**	**	**	5 - 10	5416.40 - 5411.40	**
	Low Flow 2014	Week of 04/22/14	5422.55	5421.40	6.11	NPP	5416.44	9.94	5 - 10	5416.40 - 5411.40	Yes
	High Flow 2013 **	No High Flow	5422.55	5421.40	**	**	**	**	5 - 10	5416.40 - 5411.40	**
	Low Flow 2013	Week of 07/11/13	5422.55	5421.40	5.79	NPP	5416.76	9.94	5 - 10	5416.40 - 5411.40	Yes
TP-7 (Bi-Annual)	2018	08/02/18	5421.99	5420.90	5.49	NPP	5416.50	9.73	5 - 10	5415.90 - 5410.90	Yes
	Low Flow 2017	Week of 04/26/17****	5421.99	5420.90	5.86	NPP	5416.13	9.71	5 - 10	5415.90 - 5410.90	Yes
	2016	04/27/16	5421.99	5420.90	5.83	NPP	5416.16	9.72	5 - 10	5415.90 - 5410.90	Yes
	High Flow 2015	No High Flow	5421.99	5420.90	**	**	**	**	5 - 10	5415.90 - 5410.90	**
	Low Flow 2015	Week of 04/28/15	5421.99	5420.90	6.05	NPP	5415.94	9.72	5 - 10	5415.90 - 5410.90	Yes
	High Flow 2013 **	No High Flow	5421.99	5420.90	**	**	**	**	5 - 10	5415.90 - 5410.90	**
	Low Flow 2013	Week of 07/11/13	5421.99	5420.90	5.59	NPP	5416.40	9.72	5 - 10	5415.90 - 5410.90	Yes
TP-8	Low Flow 2018	Week of 08/13/18	5422.52	5421.13	5.65	NPP	5416.87	9.94	5 - 10	5416.13 - 5411.13	Yes
	Low Flow 2017	Week of 04/26/17	5422.52	5421.13	5.86	NPP	5416.86	9.72	5 - 10	5416.13 - 5411.13	Yes
	Low Flow 2016	Week of 04/28/16	5422.52	5421.13	5.65	NPP	5416.87	9.72	5 - 10	5416.13 - 5411.13	Yes
	High Flow 2015	No High Flow	5422.52	5421.13	**	**	**	**	5 - 10	5416.13 - 5411.13	**
	Low Flow 2015	Week of 04/28/15	5422.52	5421.13	8.06	NPP	5414.46	9.72	5 - 10	5416.13 - 5411.13	Yes
	High Flow 2014 **	No High Flow	5422.52	5421.13	**	**	**	**	5 - 10	5416.13 - 5411.13	**
	Low Flow 2014	Week of 04/22/14	5422.52	5421.13	6.22	NPP	5416.30	9.72	5 - 10	5416.13 - 5411.13	Yes
TP-9	Low Flow 2018	Week of 10/17/18	5422.14	5421.55	5.28	NPP	5416.86	10.95	5 - 10	5416.55 - 5411.55	Yes
	Low Flow 2017	Week of 04/26/17	5422.14	5421.55	5.81	NPP	5416.33	10.97	5 - 10	5416.55 - 5411.55	No
	Low Flow 2016	Week of 04/28/16	5422.14	5421.55	5.69	NPP	5416.45	10.97	5 - 10	5416.55 - 5411.55	No
	High Flow 2015	No High Flow	5422.14	5421.55	**	**	**	**	5 - 10	5416.55 - 5411.55	**
	Low Flow 2015	Week of 04/28/15	5422.14	5421.55	5.93	NPP	5416.21	10.97	5 - 10	5416.55 - 5411.55	No
	High Flow 2014 **	No High Flow	5422.14	5421.55	**	**	**	**	5 - 10	5416.55 - 5411.55	**
	Low Flow 2014	Week of 04/22/14	5422.14	5421.55	6.98	NPP	5415.16	10.97	5 - 10	5416.55 - 5411.55	No
	High Flow 2013 **	No High Flow	5422.14	5421.55	**	**	**	**	5 - 10	5416.55 - 5411.55	**
	Low Flow 2013	Week of 07/11/13	5422.14	5421.55	5.23	NPP	5416.91	10.97	5 - 10	5416.55 - 5411.55	Yes
TP-10	2018	08/02/18	5422.56	5422.56	5.15	NPP	5417.41	9.88	3.5 - 8.5	5419.06 - 5414.06	No
	2017	04/28/17	5422.56	5422.56	5.11	NPP	5417.45	9.95	3.5 - 8.5	5419.06 - 5414.06	No
	2016	04/27/16	5422.56	5422.56	5.12	NPP	5417.44	9.95	3.5 - 8.5	5419.06 - 5414.06	No
	High Flow 2015	No High Flow	5422.56	5422.56	**	**	**	**	3.5 - 8.5	5419.06 - 5414.06	**
	Low Flow 2015	Week of 04/28/15	5422.56	5422.56	5.50	NPP	5417.06	9.95	3.5 - 8.5	5419.06 - 5414.06	No
	High Flow 2013 **	No High Flow	5422.56	5422.56	**	**	**	**	3.5 - 8.5	5419.06 - 5414.06	**
	Low Flow 2013	Week of 07/11/13	5422.56	5422.56	4.99	NPP	5417.57	9.95	3.5 - 8.5	5419.06 - 5414.06	No

TABLE 1 - Part 1
Groundwater Monitoring Data Summary

Sample Location	Sampling Event	Date	TOC elevation (ft-msl)	Ground Surface Elevation (ft-msl)	Depth to Water (ft below TOC)	Depth to Product (ft below TOC)	Water Level Elevation (ft-msl)	Total Well Depth (ft below TOC)	Screened Interval (ft-bgs)	Screened Interval Elevations (ft-msl)	Screen Submerged Yes/No
TP-11	2018	08/02/18	NA	NA	5.61	NPP	NA	9.95	4.5 - 9.5	NA	NA
	2017	04/28/17	NA	NA	5.56	NPP	NA	9.98	4.5 - 9.5	NA	NA
	2016	04/27/16	NA	NA	5.58	NPP	NA	9.98	4.5 - 9.5	NA	NA
	High Flow 2015	No High Flow	NA	NA	**	**	**	**	4.5 - 9.5	NA	NA
	Low Flow 2015	Week of 04/28/15	NA	NA	5.84	NPP	NA	9.98	4.5 - 9.5	NA	NA
	High Flow 2013 **	No High Flow	NA	NA	**	**	**	**	4.5 - 9.5	NA	NA
	Low Flow 2013	Week of 07/11/13	NA	NA	5.45	NPP	NA	9.98	4.5 - 9.5	NA	NA
TP-12	2018	08/02/18	5424.97	5424.97	7.33	NPP	5417.64	11.58	7 - 12	NA	No
	2017	04/28/17	5424.97	5424.97	7.32	NPP	5417.65	11.79	7 - 12	NA	No
	2016	04/27/16	5424.97	5424.97	7.36	NPP	5417.61	11.79	7 - 12	NA	No
	High Flow 2015	No High Flow	5424.97	5424.97	**	**	**	**	7 - 12	NA	**
	Low Flow 2015	Week of 07/11/15	5424.97	5424.97	7.57	NPP	5417.40	11.79	7 - 12	NA	No
	High Flow 2013 **	No High Flow	5424.97	5424.97	**	**	**	**	7 - 12	NA	**
	Low Flow 2013	Week of 07/11/13	5424.97	5424.97	7.10	NPP	5417.87	11.79	7 - 12	NA	No
TP-13 (Bi-Annual)	2018	08/02/18	5423.88	5423.88	6.16	NPP	5417.72	12.78	4.5 - 14.5	NA	No
	2017	04/28/17	5423.88	5423.88	6.18	NPP	5417.70	12.73	4.5 - 14.5	NA	No
	2016	04/27/16	5423.88	5423.88	6.25	NPP	5417.63	16.09	4.5 - 14.5	NA	No
	High Flow 2015	No High Flow	5423.88	5423.88	**	**	**	**	4.5 - 14.5	NA	**
	Low Flow 2015	Week of 04/28/15	5423.88	5423.88	6.45	NPP	5417.43	16.09	4.5 - 14.5	NA	No
	High Flow 2013 **	No High Flow	5423.88	5423.88	**	**	**	**	4.5 - 14.5	NA	**
	Low Flow 2013	Week of 07/11/13	5423.88	5423.88	5.88	NPP	5418.00	16.09	4.5 - 14.5	NA	No
DW-1 (Bi-Annual)	2018	08/02/18	5422.97	5420.73	5.91	NPP	5417.06	15.60	5 - 14	5415.73 - 5406.73	Yes
	Low Flow 2017	Week of 04/26/17****	5422.97	5420.73	6.16	NPP	5416.81	15.62	5 - 14	5415.73 - 5406.73	Yes
	2016	04/27/16	5422.97	5420.73	6.15	NPP	5416.82	15.82	5 - 14	5415.73 - 5406.73	Yes
	High Flow 2015	No High Flow	5422.97	5420.73	**	**	**	**	5 - 14	5415.73 - 5406.73	**
	Low Flow 2015	Week of 04/28/15	5422.97	5420.73	8.30	NPP	5416.67	15.62	5 - 14	5415.73 - 5406.73	Yes
	High Flow 2013 **	No High Flow	5422.97	5420.73	**	**	**	**	5 - 14	5415.73 - 5406.73	**
	Low Flow 2013	Week of 07/11/13	5422.97	5420.73	9.64	NPP	5413.33	15.82	5 - 14	5415.73 - 5406.73	No
DW-2	Low Flow 2018	Week of 08/13/18	5423.81	5422.67	6.27	NPP	5417.54	15.50	4 - 14	5418.67 - 5408.67	No
	Special Event	12/29/17	5423.81	5422.67	NM	NM	NM	NM	4 - 14	5418.67 - 5408.67	NM
DW-3	Low Flow 2018	Week of 08/13/18	5424.79	5422.43	7.60	NPP	5417.19	NM	6 - 14	5416.43 - 5408.43	Yes
	Special Event	12/29/17	5424.79	5422.43	NM	NM	NM	NM	6 - 14	5416.43 - 5408.43	NM
	Low Flow 2017	Week of 04/26/17	5424.79	5422.43	7.61	NPP	5417.18	14.64	6 - 14	5416.43 - 5408.43	Yes
	Low Flow 2016	Week of 04/28/16	5424.79	5422.43	7.59	NPP	5417.20	14.64	6 - 14	5416.43 - 5408.43	Yes
	High Flow 2015	No High Flow	5424.79	5422.43	**	**	**	**	6 - 14	5416.43 - 5408.43	**
	Low Flow 2015	Week of 04/28/15	5424.79	5422.43	11.23	NPP	5413.56	14.64	6 - 14	5416.43 - 5408.43	No
	High Flow 2014 **	No High Flow	5424.79	5422.43	**	**	**	**	6 - 14	5416.43 - 5408.43	**
	Low Flow 2014	Week of 04/22/14	5424.79	5422.43	8.92	NPP	5417.87	14.64	6 - 14	5416.43 - 5408.43	Yes
	High Flow 2013 **	No High Flow	5424.79	5422.43	**	**	**	**	6 - 14	5416.43 - 5408.43	**
	Low Flow 2013	Week of 07/11/13	5424.79	5422.43	10.88	NPP	5413.93	14.84	6 - 14	5416.43 - 5408.43	No

TABLE 1 - Part 1
Groundwater Monitoring Data Summary

Sample Location	Sampling Event	Date	TOC elevation (ft-msl)	Ground Surface Elevation (ft-msl)	Depth to Water (ft below TOC)	Depth to Product (ft below TOC)	Water Level Elevation (ft-msl)	Total Well Depth (ft below TOC)	Screened Interval (ft-bgs)	Screened Interval Elevations (ft-msl)	Screen Submerged Yes/No
MW-48	Low Flow 2018	Week of 08/13/18	5424.83	5422.21	7.43	NPP	5417.40	16.81	5 - 15	5417.21 - 5407.21	Yes
MW-49	Low Flow 2018	Week of 08/13/18	5425.20	5422.52	8.99	NPP	5416.21	16.98	4 - 14	5418.52 - 5408.52	No
	Low Flow 2017	Week of 04/26/17	5425.20	5422.52	9.65	NPP	5415.55	16.48	4 - 14	5418.52 - 5408.52	No
	Low Flow 2016	Week of 04/28/16	5425.20	5422.52	9.31	NPP	5415.89	16.48	4 - 14	5418.52 - 5408.52	No
	High Flow 2015	No High Flow	5425.20	5422.52	**	**	**	**	4 - 14	5418.52 - 5408.52	**
	Low Flow 2015	Week of 04/28/15	5425.20	5422.52	9.65	NPP	5415.55	16.48	4 - 14	5418.52 - 5408.52	No
	High Flow 2014 **	No High Flow	5425.20	5422.52	**	**	**	**	4 - 14	5418.52 - 5408.52	**
	Low Flow 2014	Week of 04/22/14	5425.20	5422.52	10.08	NPP	5415.12	16.48	4 - 14	5418.52 - 5408.52	No
	High Flow 2013 **	No High Flow	5425.20	5422.52	**	**	**	**	4 - 14	5418.52 - 5408.52	**
Gallery	Low Flow 2018	Week of 08/21/18	NA	NA	6.26	NM	NA	15.11	NA	NA	NA
	Special Event	12/29/17	NA	NA	NM	NM	NA	NM	NA	NA	NA

Notes:

NPP = No Product Present
NM = Not measured
NA = Not Available
TOC - top of casing
ft-msl - feet above mean sea level
ft-bgs = feet below ground surface
** Due to drought, river conditions never met high flow requirements.
*** Well Decommissioned November 2012 as part of bioventing system enhancements.
**** Water level measured 4/26/2017, sample for chemical analysis collected 12/29/2017
(Bi-Annual) = Samples collected every other year starting in 2011.

TABLE 1 - Part 2
Groundwater Monitoring Data Summary

Sample Location	Sampling Event	Date	Conductivity (umhos/cm)	DO (mg/L)	ORP (mV)	pH	TEMP (°F)
TP-1	***Decommissioned November 2012	November 2012	***	***	***	***	***
TP-2	***Decommissioned November 2012	November 2012	***	***	***	***	***
TP-3 (Bi-Annual)	2017	04/28/17	Bi-Annual				
	2016	04/27/16	Bi-Annual				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	891	2.56	29.3	7.69	54.7
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	421	2.06	62	7.47	66.4
TP-5	Low Flow 2018	Week of 10/15/18	1,381	0.21	-358	7.89	63.5
	Low Flow 2017	Week of 04/26/17	1,165	2.37	-204	7.19	56.3
	Low Flow 2016	Week of 04/28/16	815	1.24	-279	7.03	56.2
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	828	2.28	-257	7.56	55.1
	High Flow 2014 **	No High Flow	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	526	0.34	-251	7.30	53.7
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	431	2.55	-210	7.56	68.1
	High Flow 2012	Week of 05/29/12	470	1.48	-33	6.30	61.1
	Low Flow 2012	Week of 04/09/12	363	0.93	-266	6.80	50.9
	Low Flow 2011	Week of 07/26/11	932	1.78	192	6.70	68.5
	High Flow 2011	Week of 06/13/11	561	0.72	273	6.95	62.2
	4th Quarter 2010	Week of 10/18/10	632	2.06	71	7.01	68.2
	3rd Quarter 2010	Week of 07/20/10	707	1.11	84	6.79	65.8
	2nd Quarter 2010	Week of 04/19/10	590	0.58	121	7.02	54.1
	1st Quarter 2010	Week of 03/08/10	807	0.67	253	7.05	48.5
	4th Quarter 2009	Week of 10-05-09	759	4.57	212	6.76	67.4
	3rd Quarter 2009	Week of 09/10/09	794	1.12	152	7.04	72.6
	2nd Quarter 2009	Week of 04/20/09	1,128	0.69	106	6.69	55.2
	1st Quarter 2009	Week of 03/02/09	1,092	3.33	176	7.07	49.2
	4th Quarter 2008	Week of 11/10/08	981	1.23	129	6.83	61.8
	3rd Quarter 2008	Week of 07/14/08	852	1.49	159	6.95	69.8
	2nd Quarter 2008	Week of 05/12/08	702	1.32	54	6.87	56.8
	1st Quarter 2008	Week of 03/10/08	656	2.34	216	6.82	47.4
	4th Quarter 2007	Week of 10/29/07	857	0.23	229	7.04	66.5
	3rd Quarter 2007	Week of 08/20/07	911	0.17	129	6.88	69.8
	2nd Quarter 2007	Week of 06/18/07	884	0.80	148	6.87	63.9
	1st Quarter 2007	Week of 02/26/07	1,027	0.79	219	6.87	49.6
	4th Quarter 2006	Week of 12/04/06	1,377	1.36	229	6.99	56.0
	3rd Quarter 2006	Week of 09/11/06	879	0.29	149	7.09	71.0
	2nd Quarter 2006	Week of 06/17/06	989	0.05	39	6.94	65.3
	1st Quarter 2006	Week of 03/06/06	747	0.52	-51	7.03	54.1
	Baseline	Week of 08/15/05	923	NR	NR	6.90	68.7

TABLE 1 - Part 2
Groundwater Monitoring Data Summary

Sample Location	Sampling Event	Date	Conductivity (umhos/cm)	DO (mg/L)	ORP (mV)	pH	TEMP (°F)
TP-6	Low Flow 2018	Week of 08/13/18	1,878	1.09	-268	7.41	70.9
	Low Flow 2017	Week of 04/26/17	999	2.45	-132	7.00	55.0
	Low Flow 2016	Week of 04/28/16	780	1.48	-231	8.04	55.9
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	800	1.77	-185	7.73	55.8
	High Flow 2014 **	No High Flow	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	552	4.25	-83	7.11	53.5
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	457	8.84	-7	7.71	70.2
TP-7 (Bi-Annual)	2018	Week of 08/13/18	Bi-Annual				
	Low Flow 2017	Week of 04/26/17****	978	5.25	183	7.78	49.5
	2016	04/27/16	Bi-Annual				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	773	3.09	-62.4	7.76	54.6
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	704	5.67	-56	7.40	64.9
TP-8	Low Flow 2018	Week of 08/13/18	1,627	0.99	-119	7.73	69.3
	Low Flow 2017	Week of 04/26/17	1,571	2.80	-80	7.27	52.5
	Low Flow 2016	Week of 04/28/16	1,084	2.57	-163	8.03	54.0
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	907	2.64	-93.6	7.76	54.0
	High Flow 2014 **	No High Flow	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	957	2.33	-226	7.56	53.6
TP-9	Low Flow 2018	Week of 10/15/18	2,050	0.69	-184	7.39	15.8
	Low Flow 2017	Week of 04/26/17	1,674	2.23	-63	7.33	50.9
	Low Flow 2016	Week of 04/28/16	1,715	2.00	-123	7.19	52.6
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	1,833	3.38	-104	7.35	51.9
	High Flow 2014 **	No High Flow	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	1,410	5.09	-54	7.05	50.8
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	1,330	4.80	65	7.00	65.5
TP-10	2016 - 2018	08/02/18	Groundwater Sampling Discontinued (NMED, 2015)				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	695	1.78	46.3	7.60	50.7
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	340	2.01	60	7.50	63.1

TABLE 1 - Part 2
Groundwater Monitoring Data Summary

Sample Location	Sampling Event	Date	Conductivity (umhos/cm)	DO (mg/L)	ORP (mV)	pH	TEMP (°F)
TP-11	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	797	2.06	34.4	7.67	51.9
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	500	1.92	-28	7.40	62.4
TP-12	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 07/11/15	1,064	2.51	-33.9	7.55	51.0
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	561	2.61	-32	7.60	56.6
TP-13 (Bi-Annual)	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	600	5.66	-15.7	7.83	50.5
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	365	3.23	-54	7.50	60.7
DW-1 (Bi-Annual)	2018	NA	Bi-Annual				
	Low Flow 2017	Week of 04/26/17****	981	2.79	144	7.91	55.4
	2016	NA	Bi-Annual				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	2,053	2.13	-114	7.26	53.5
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	1,936	2.43	-93	7.00	68.8
DW-2	Low Flow 2018	Week of 8/13/18	2,100	1.38	-180	7.73	70.1
	Special Event	12/29/17	1,426	2.22	-29	7.79	60.2
DW-3	Low Flow 2018	Week of 8/13/18	1,970	1.34	-326	7.59	69.3
	Special Event	12/29/17	1,654	0.68	41	7.78	70.1
	Low Flow 2017	Week of 04/26/17	1,975	1.45	-162	7.26	70.9
	Low Flow 2016	Week of 04/28/16	1,448	2.59	-269	7.60	52.6
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	1,507	6.74	-243	7.58	57.4
	High Flow 2014 **	No High Flow	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	1,048	0.68	-266	7.36	54.6
MW-48	Low Flow 2018	Week of 8/13/18	3,077	1.4	-246.3	7.80	68.4

TABLE 1 - Part 2
Groundwater Monitoring Data Summary

Sample Location	Sampling Event	Date	Conductivity (umhos/cm)	DO (mg/L)	ORP (mV)	pH	TEMP (°F)
MW-49	Low Flow 2018	Week of 8/13/18	1,527	0.81	-120.3	7.65	61.3
	Low Flow 2017	Week of 04/26/17	1,202	3.73	-85	7.18	52.3
	Low Flow 2016	Week of 04/28/16	942	3.63	-125.13	7.95	51.7
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	936	1.94	-140.80	7.65	52.90
	High Flow 2014 **	No High Flow	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	1,255	4.84	-111.2	7.45	51.08
	High Flow 2013 **	No High Flow	**	**	**	**	**
Gallery	Low Flow 2018	Week of 8/13/18	3,286	1.76	-145	7.62	66.9
	Special Event	12/29/17	1,552	1.85	-75	6.91	51.2

Notes:

DO = Dissolved Oxygen NA - Not Applicable
ORP = Oxidation Reduction Potential
** Due to drought, river conditions never met high flow requirements.
*** Well Decommissioned November 2012 as part of biovent system enhancements.
**** Water level measured 4/26/2017, sample for chemical analysis collected 12/29/2017
(Bi-Annual) = Samples collected every other year starting in 2011.

TABLE 1 - Part 3
Groundwater Monitoring Data Summary

			MCL	WQCC 20NMAC 6.2.3103	MCL	WQCC 20NMAC 6.2.3103	NMED Soil Screening Guidance	NMED Soil Screening Guidance Table 6-4			40 CFR 141.62 (MCL)	
			0.005	0.75	0.700	0.620	0.014	0.039		0.039	0.0150	0.002
Sample Location	Sampling Event	DATE	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)	Lead (mg/L)	Mercury (mg/L)
TP-1	***Decommissioned November 2012	November 2012	***	***	***	***	***	***	***	***	***	***
TP-2	***Decommissioned November 2012	November 2012	***	***	***	***	***	***	***	***	***	***
TP-3 (Bi-Annual)	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.05	< 2.5	<0.005	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.05	< 2.5	0.0051	NR[2]
TP-5	Low Flow 2018	Week of 10/17/18	<0.001	<0.001	0.069	0.085	<0.00021	1.7	1.5	<5.0	0.0130	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.010	<0.010	0.670	3.100	<0.010	1.6	13	< 2.5	0.068	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.010	<0.010	0.300	1.800	<0.010	1.4	11	< 2.5	0.027	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.010	<0.010	0.063	1.300	<0.010	0.75	7.1	< 2.5	0.019	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.005	<0.005	0.027	0.450	<0.005	2.2	4.0	< 2.5	0.012	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.010	<0.010	0.022	0.590	<0.010	0.69	4.6	< 2.5	0.013	NR[2]
	High Flow 2012	Week of 05/29/12	<0.005	<0.005	0.017	0.450	<0.005	1.10	4.20	< 2.5	0.0260	NR[2]
	Low Flow 2012	Week of 04/09/12	<0.005	<0.005	0.020	0.410	<0.005	0.60	1.80	< 2.5	0.3600	NR[2]
	Low Flow 2011	Week of 07/26/11	<0.010	<0.01	0.051	1.200	<0.025	0.24	4.9		0.0550	NR[2]
	High Flow 2011	Week of 06/13/11	<0.010	<0.01	0.350	4.200	<0.025	3.20	20		0.0580	NR[2]
	4th Quarter 2010	Week of 10/18/10	<0.005	<0.01	0.830	8.000	<0.025	3.10	30		0.0230	NR
	3rd Quarter 2010	Week of 07/20/10	<0.005	<0.01	0.310	8.300	<0.025	3.10	26		0.0830	NR
	2nd Quarter 2010	Week of 04/19/10	<0.005	<0.010	1.600	13.000	<0.025	9.00	38		0.1300	NR
	1st Quarter 2010	Week of 03/08/10	<0.005	0.0078	0.150	1.100	<0.013	9.10	31		0.0430	NR

TABLE 1 - Part 3
Groundwater Monitoring Data Summary

			MCL	WQCC 20NMAC 6.2.3103	MCL	WQCC 20NMAC 6.2.3103	NMED Soil Screening Guidance	NMED Soil Screening Guidance Table 6-4			40 CFR 141.62 (MCL)	
			0.005	0.75	0.700	0.620	0.014	0.039		0.039	0.0150	0.002
Sample Location	Sampling Event	DATE	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)	Lead (mg/L)	Mercury (mg/L)
	4th Quarter 2009	Week of 10-05-09	<0.005	<0.01	1.900	15.000	<0.025	7.10	40		0.0250	NR
	3rd Quarter 2009	Week of 09/10/09	<0.005	<0.01	1.300	13.000	<0.025	8.00	33		0.0330	NR
TP-5 (continued)	2nd Quarter 2009	Week of 04/20/09	0.025	0.011	2.400	15.000	<0.025	11.00	49		0.0260	NR
	1st Quarter 2009	Week of 03/02/09	0.019	<0.01	1.800	14.000	<0.025	12.00	37		0.0260	NR
	4th Quarter 2008	Week of 11/10/08	0.016	0.01	2.400	12.000	<0.025	8.50	38		0.0290	NR
	3rd Quarter 2008	Week of 07/14/08	<0.02	<0.02	1.900	18.000	<0.05	1.10	50		0.0430	NR
	2nd Quarter 2008	Week of 05/12/08	0.048	<0.02	1.100	13.000	<0.05	*<1.00	46		0.0390	NR
	1st Quarter 2008	Week of 03/10/08	<0.020	<0.020	1.600	17.000	<0.050	*<1.00	52		0.0510	NR
	4th Quarter 2007	Week of 10/29/07	<0.001	<0.001	2.600	17.000	<0.0025	1.20	56		0.0320	NR
	3rd Quarter 2007	Week of 08/20/07	0.300	<0.10	3.000	22.000	<0.25	*<1.00	69		0.0440	NR
	2nd Quarter 2007	Week of 06/18/07	0.340	<0.10	3.500	21.000	<0.25	*<1.00	78		0.0920	NR
	1st Quarter 2007	Week of 02/26/07	<0.01	<0.01	1.300	18.000	<0.025	*<1.00	85		NR	NR
	4th Quarter 2006	Week of 12/04/06	0.069	<0.050	1.200	10.000	<0.120	*<1.00	50		NR	NR
	3rd Quarter 2006	Week of 09/11/06	<0.01	<0.01	3.100	16.000	<0.025	*<1.00	110		NR	NR
	2nd Quarter 2006	Week of 06/17/06	0.054	<0.001	1.600	16.000	<0.025	*<1.00	34		NR	NR
	1st Quarter 2006	Week of 03/06/06	0.200	<0.02	0.280	20.000	<0.05	*<1.00	59		NR	NR
	Baseline	Week of 08/15/05	0.350	<0.005	3.500	21.000	<0.05	1.20	56		NR	NR

TABLE 1 - Part 3
Groundwater Monitoring Data Summary

			MCL	WQCC 20NMAC 6.2.3103	MCL	WQCC 20NMAC 6.2.3103	NMED Soil Screening Guidance	NMED Soil Screening Guidance Table 6-4			40 CFR 141.62 (MCL)	
			0.005	0.75	0.700	0.620	0.014	0.039		0.039	0.0150	0.002
Sample Location	Sampling Event	DATE	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)	Lead (mg/L)	Mercury (mg/L)
TP-6	Low Flow 2018	Week of 08/13/18	<0.001	0.0002J	0.00026J	<0.0015	<0.001	<0.31	0.82	<2.5	<0.005	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.001	<0.001	0.026	0.0038	<0.001	1.7	1.3	< 2.5	0.027	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.001	<0.001	0.068	<0.0015	<0.0010	0.75	0.99	< 2.5	0.033	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	0.0087	0.0048	<0.001	1.6	1.5	< 2.5	0.0150	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.001	<0.001	0.028	0.093	<0.001	1.7	3.5	< 2.5	0.0084	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	0.0100	NR[2]
TP-7 (Bi-Annual)	2018	NA	Bi-Annual									
	Low Flow 2017	Week of 04/26/17****	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.2	<0.05	<2.5	0.020	NR[2]
	2016	NA	Bi-Annual									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.002	<0.002	<0.002	<0.003	<0.002	<0.20	<0.50	< 2.5	<0.005	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.010	<0.010	<0.010	<0.020	<0.010	<0.20	<0.50	< 2.5	0.0014	NR[2]
TP-8	Low Flow 2018	Week of 08/13/18	<0.005	<0.005	0.0028J	< 0.0075	<0.005	<0.31	2.1	< 2.5	0.0068	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.005	<0.005	0.011	< 0.0075	<0.005	1.3	1.6	< 2.5	0.038	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.005	<0.005	0.029	0.026	<0.005	1.0	2.9	< 2.5	0.034	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.005	<0.005	0.0099	0.044	<0.005	1.3	1.4	< 2.5	0.0091	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.005	<0.005	0.019	0.083	<0.005	2.3	4.0	< 2.5	0.0080	NR[2]

TABLE 1 - Part 3
Groundwater Monitoring Data Summary

			MCL	WQCC 20NMAC 6.2.3103	MCL	WQCC 20NMAC 6.2.3103	NMED Soil Screening Guidance	NMED Soil Screening Guidance Table 6-4			40 CFR 141.62 (MCL)	
			0.005	0.75	0.700	0.620	0.014	0.039		0.039	0.0150	0.002
Sample Location	Sampling Event	DATE	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)	Lead (mg/L)	Mercury (mg/L)
TP-9	Low Flow 2018	Week of 10/17/18	<0.0001	<0.001	<0.001	<0.0025	<0.001	<0.63	0.056	<5.0	0.00026J	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	0.11	< 2.5	0.017	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	0.092	< 2.5	0.052	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	0.35	<0.050	< 2.5	0.0056	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	<0.0050	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	0.0091	NR[2]
TP-10	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	0.024	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	0.0013	NR[2]
TP-11	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	<0.0050	NR[1]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	0.0130	NR[1]
TP-12	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 07/11/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	<0.0050	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	0.0058	NR[2]

TABLE 1 - Part 3
Groundwater Monitoring Data Summary

			MCL	WQCC 20NMAC 6.2.3103	MCL	WQCC 20NMAC 6.2.3103	NMED Soil Screening Guidance	NMED Soil Screening Guidance Table 6-4			40 CFR 141.62 (MCL)	
			0.005	0.75	0.700	0.620	0.014	0.039		0.039	0.0150	0.002
Sample Location	Sampling Event	DATE	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)	Lead (mg/L)	Mercury (mg/L)
TP-13	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.002	<0.002	<0.002	<0.003	<0.002	0.22	<0.050	< 2.5	0.0064	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	0.0068	NR[2]
DW-1 (Bi-Annual)	2018	NA	Bi-Annual									
	Low Flow 2017	Week of 04/26/17****	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 25	0.0068	NR[2]
	2016	NA	Bi-Annual									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 25	****	<0.0002
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	0.0014	<0.0002
DW-2	Low Flow 2018	Week of 08/13/18	<0.001	<0.001	<0.001	0.00091J	<0.001	<0.31	0.21	<2.5	0.016	
	Special Event	12/29/17	<0.001	<0.001	0.0036	0.0039	<0.001	0.4	1	< 2.5	0.0041	NR
DW-3	Low Flow 2018	Week of 08/13/18	0.0095	0.00019J	0.032	0.170	0.00063J	<0.31	1.5	<2.5	0.0091	NR
	Special Event	12/29/17	<0.001	<0.001	0.0040	0.0020	<0.001	<0.2	0.23	< 2.5	0.00083	NR
	Low Flow 2017	Week of 04/26/17	<0.001	<0.001	0.0032	<0.0015	<0.001	<0.20	0.099	< 2.5	0.0110	NR[2]
	Low Flow 2016	Week of 04/28/16	0.0049	<0.001	0.034	0.011	<0.001	0.35	0.33	< 2.5	0.014	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	0.082	<0.010	0.400	0.290	<0.010	0.76	2.1	<2.5	<0.0050	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	0.067	<0.010	0.720	1.300	<0.010	1.7	8.8	<2.5	<0.0050	NR[2]
MW-48	Low Flow 2018	Week of 08/13/18	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.31	0.29	<2.5	0.012	NR[2]

TABLE 1 - Part 3
Groundwater Monitoring Data Summary

			MCL	WQCC 20NMAC 6.2.3103	MCL	WQCC 20NMAC 6.2.3103	NMED Soil Screening Guidance	NMED Soil Screening Guidance Table 6-4			40 CFR 141.62 (MCL)	
			0.005	0.75	0.700	0.620	0.014	0.039		0.039	0.0150	0.002
Sample Location	Sampling Event	DATE	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)	Lead (mg/L)	Mercury (mg/L)
MW-49	Low Flow 2018	Week of 08/13/18	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.31	0.019J	< 2.5	<0.005	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	0.029	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	0.040	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	<0.0050	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	0.0064	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
Gallery	Low Flow 2018	Week of 08/13/18	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.31	0.22	<2.5	<0.005	NR
	Special Event	12/29/17	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	0.11	< 2.5	0.11	NR

Notes:

NR = Not Required (Voluntary Corrective Measures - Revised Monitoring Plan - October 2005)

NR[1]= Not Required (Approval With Direction - June 2009)

NR[2]= Not Required (Approval With Direction - May 2011)

** Due to drought, river conditions never met high flow requirements.

*** Well Decommissioned November 2012 as part of biovent system enhancements.

**** Water level measured 4/26/2017, sample for chemical analysis collected 12/29/2017

(Bi-Annual) = Samples collected every other year starting in 2011.

***** Analyte inadvertently not included in sample analysis. □

Per NMED letter "Approval with Modifications Facility-Wide Groundwater Monitoring plan - June 2014" dated June 15, 2015, groundwater sampling discontinued.

1. Per NMED letter "Approval with Modifications Facility-Wide Groundwater Monitoring plan - June 2014" dated June 15, 2015, high flow sampling is no longer required at the River Terrace.

0.670 Constituent detected at concentration above method detection limit

3.100 Constituent detected at concentration above screening level

Western Refining

WNR LISTED NYSE

February 14, 2019

John E. Kieling, Bureau Chief
New Mexico Environmental Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East
Santa Fe, NM 87505

Carl Chavez
New Mexico Oil Conservation Division
Environmental Bureau
1220 South St. Francis Dr.
Santa Fe, NM 87505

FEDEX delivery to NMED
FEDEX delivery to OCD

Re: 2018 Groundwater Remediation and Monitoring Annual Report and River Terrace Voluntary Corrective Measures Bioventing / Air Sparging System Annual Report
January 2018 through December 2018
EPA ID# NMD089416416
OCD Discharge Permit GW-01

Dear Mr. Kieling and Mr. Chavez:

Western Refining Southwest, Inc. - Bloomfield Terminal submits the Groundwater Remediation and Monitoring Report pursuant to Section IV.A.2. of the July 2007 Consent Order and the River Terrace Voluntary Corrective Measures Bioventing System Annual Report pursuant to Section V.B.1. of the July 2007 Consent Order. Both reports summarize groundwater monitoring and remediation activities in 2018.

If you have questions or would like to discuss any aspect of the report, please contact Gregory McCartney at (419) 421-2338.

Sincerely,

ALLEN S. HAINS
Manager Remediation Projects
Western Refining Southwest, Inc.

Enc.

RIVER TERRACE ANNUAL REPORT
Voluntary Bioventing / Air Sparging System

January – December 2018

Bloomfield Terminal
(Former Bloomfield Refinery)

Western Refining Southwest, Inc.
#50 Rd 4990
Bloomfield, New Mexico 87413

Submitted: February 2019

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List of Acronyms

benzene, toluene, ethylbenzene, and total xylene (BTEX)

below grade surface (bgs)

biovent well (BV)

carbon dioxide (CO_2)

central federal register (CFR)

cubic feet per second (cfs)

dewatering well (DW)

diesel range organics (DRO)

dissolved oxygen (DO)

feet (ft)

degrees Fahrenheit (°F)

gasoline range organics (GRO)

granulated activated carbon (GAC)

investigation derived waste (IDW)

liters (L)

liquid petroleum gas (LPG)

maximum contaminant level (MCL)

methyl tert-butyl ether (MTBE)

micrograms per liter (ug/L)

micro mhos per centimeter (umhos/cm)

milligrams per liter (mg/L)

millivolts (mV)

monitoring well (MW)

motor oil range organics (MRO)

New Mexico Administrative Code (NMAC)

No Product Present (NPP)

New Mexico Environment Department Hazardous Waste Bureau (NMED-HWB)

Oxidation reduction potential (ORP)

parts per million (ppm)

photoionization detector (PID)

polyvinyl chloride (PVC)

pounds per square inch (psi)

Resource Conservation and Recovery Act (RCRA)

separate phase hydrocarbon (SPH)

Solid Waste Management Units (SWMUs)

Temperature (TEMP)

Temporary piezometer (TP)

top of casing (TOC)

total petroleum hydrocarbon (TPH)

United States Environmental Protection Agency (USEPA)

Water Quality Control Commission (WQCC)

Executive Summary

This Report is a summary of monitoring activities conducted in 2018 at the River Terrace Bioventing / Air Sparging System located at the Bloomfield Terminal (Former Bloomfield Refinery). The following is a synopsis of activities performed at the River Terrace in 2018.

Groundwater Monitoring

Groundwater samples were collected at specific wells and analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX), methyl tert-butyl ether (MTBE), Total Petroleum Hydrocarbons (TPH) Diesel Range Organics (DRO), TPH Gasoline Range Organics (GRO), TPH Motor Oil Range Organics (MRO), and total lead. The analytical results for samples collected in 2018 during San Juan River low-flow conditions were below their respective screening levels with the following exceptions. There were no high-flow events in 2018.

- Lead was detected at a concentration slightly above the respective MCL (0.015 mg/l) at DW-2 (0.016 mg/L).
- TPH-DRO was detected above the NMED screening level (0.039 mg/l) at TP-5 (1.7 mg/L).
- Benzene was detected at a concentration of 0.0095 mg/l in the groundwater sample collected at DW-3, which exceeds the screening level of 0.005 mg/l.

Soil Vapor Monitoring

Soil gas monitoring is no longer conducted at the River Terrace pursuant to prior approval from the New Mexico Environment Department (NMED) in a response letter dated June 15, 2015.

Biovent / Air Sparging System Monitoring

The River Terrace System currently consists of the following:

- Five biovent wells (BV-1, BV-3, BV-4, BV-5, and BV-6);
- Ten temporary piezometers (TP-3, and TP-5 thru TP-13);
- Three dewatering wells (DW-1, DW-2, and DW-3);
- Two monitoring wells (MW-48, and MW-49);
- Two air sparging lines (Air Sparging Line A, and Air Sparging Line B); and
- One groundwater collection gallery.

The active dewatering system consists of two dewatering wells (DW-2 and DW-3) and a collection gallery, each equipped with variable-speed submersible pumps. Groundwater

pumped by the dewatering system is pumped through two filters containing granular activated carbon (GAC), which are operated in series before discharging into the facility raw water ponds. The purpose of the dewatering system is to enhance the effectiveness of the bioventing system by dewatering the influenced area and remove impacted groundwater for treatment. A total of 193,892 gallons of impacted groundwater was removed and treated through the GAC filters in 2018. Results from the analytical sampling of the GAC system show that the GAC filters continue to be effective in treating the extracted groundwater prior to discharging into the facility raw water ponds.

The air injection system ran consistently throughout 2018 and required no changes to the air distribution. Pressure readings remain consistent at or near 3.0 psi when compared to readings collected in 2017. The consistent pressure affirms that there exists an even distribution of air throughout the biovent / air sparging area of influence.

Section 1
Introduction

1.1 Site Location and Description

Owner: San Juan Refining Company, a New Mexico Corporation
1250 Washington Street
Tempe, Arizona 85281

Operator: Western Refining Southwest, Inc.
(Formerly Giant Industries Arizona, Inc.), an Arizona Corporation
1250 Washington Street
Tempe, Arizona 85281

Facility: Bloomfield Terminal (Former Bloomfield Refinery) (physical address)
50 Road 4990
Bloomfield, New Mexico 87413

Western Refining Southwest, Inc. (postal address)
P.O. Box 159
Bloomfield, New Mexico 87413

US EPA ID: NMD089416416

SIC Code: 5171 (Previously Operated under 2911)

The former Bloomfield Refinery facility is currently owned by San Juan Refining Company, a New Mexico corporation, and operated by Western Refining Southwest, Inc. formerly known as Giant Industries Arizona, Inc., an Arizona corporation. The former Bloomfield Refinery had an approximate refining capacity of 18,000 barrels per day. Various process units operated at the facility, including crude distillation, reforming, fluidized catalytic cracking, sulfur recovery, merox treater, catalytic polymerization, and diesel hydrotreating. Products produced at the refinery included gasoline, diesel fuels, jet fuels, kerosene, propane, butane, naphtha, residual fuel, fuel oils, and LPG.

The Facility is located on approximately 263 acres south of Bloomfield, New Mexico in San Juan County (Figure 1). The Facility complex is bisected by County Road 4990 (Sullivan Road), which runs east-west. The former process units, tank farm, wastewater treatment system, raw water ponds, and fire training area are located north of the county road. The crude oil and product unloading areas, loading racks, maintenance buildings/90-day storage area, pipeline offices, transportation truck shop, and Class I injection well are located north of the country road (Figure 2).

The facility is located on a bluff 120 feet above the south side of the San Juan River. The top of the bluff is relatively flat and is at an elevation of 5,540 feet above sea level. Based on the available site-specific and regional subsurface information, the site is underlain by the Quaternary Jackson Lake terrace deposits, which unconformably overlie the tertiary Nacimiento Formation. The Jackson Lake deposits consist of fine grained sand, silt, and clay that grades to course sand, gravel and cobble size material closer to the contact with the Nacimiento Formation. The Jackson Lake Formation is over 40 feet thick near the southeast portion of the site and generally thins to the northwest toward the San Juan River. The Nacimiento Formation is primarily composed of fine grained materials (e.g., carbonaceous mudstone/claystone with interbedded sandstones) with a reported local thickness of approximately 570 feet (Groundwater Technology, 1994).

The River Terrace Area is located north of the Hammond Ditch, approximately 120 feet lower in elevation than the former Refinery process and tank farm areas. Since 2006, Western has operated a bioventing system for the purpose of providing oxygen to the subsurface and supporting aerobic biodegradation of petroleum hydrocarbons that were identified in soil along the western portion of the River Terrace to a depth of approximately 8 feet below existing grade surface (bgs). Impacted groundwater was also recovered and treated using granular activated carbon (GAC).

In 2013, optimization activities to the biovent system were completed, which included removal of impacted soil, installation of an air sparging system, and installation of an additional dewatering well (DW-3). These enhancements allowed for the system to continue to target the subsurface soils, as well as enhance the groundwater remediation efforts through additional pumping and air sparging.

The River Terrace System currently consists of the following:

- Five biovent wells (BV-1, BV-3, BV-4, BV-5, and BV-6);
- Ten temporary piezometers (TP-3, and TP-5 thru TP-13);
- Three dewatering wells (DW-1, DW-2, and DW-3);
- Two monitoring wells (MW-48, and MW-49);
- Two air sparging lines (Air Sparging Line A, and Air Sparging Line B); and
- One groundwater collection gallery.

The active dewatering system consists of two dewatering wells (DW-2 and DW-3) and a collection gallery, each equipped with variable-speed submersible pumps. The collection gallery, consisting of a horizontal 4-inch perforated pipe with an 8-inch diameter vertical riser pipe and submersible pump, was installed and placed into operation by early October 2009. Dewatering well DW-3 was installed as part of the most recent optimization activities, and is constructed with a 4-inch machine slotted PVC well casing that is placed inside a 5.5-inch diameter steel pipe. The steel pipe is packed with pebbles, allowing for better groundwater pumping efficiency.

The dewatering wells operate off of independent level control systems. As each individual pump senses a low water column level, the pump will shut down for a period of time to allow the well to recover before resuming pumping. The cycle of operation frequency for the dewatering pumps is directly reflective of the operational level of the San Juan River. Groundwater pumped by the dewatering system is pumped through two GAC filters operating in series before discharging into the facility raw water ponds. The purpose of the dewatering system is to enhance the effectiveness of the bioventing system by dewatering the influenced area and remove impacted groundwater for treatment.

Installation of the air sparging component of the biovent system was completed in late 2012, and consists of two air sparging lines (Air Sparging Line A and Air Sparging Line B). Each air sparging line consists of air sparging tubes that extend down into the groundwater (Western Refining, 2013). Air from the biovent main air blower is pushed into each sparging tube, causing a bubbling effect in the groundwater while also oxygenating the surrounding subsurface.

The biovent portion of the system continues to remain active, although the majority of the impacted soils within the subsurface were removed as part of the 2013 optimization activities. The main air blower injects air into the subsurface (vadose and phreatic zones) through the BV wells. The air supply promotes aerobic biodegradation within the subsurface.

Section 2
Background

This section presents a summary of the events and activities conducted at the River Terrace Area since 1999.

1999

- Installation of a bentonite slurry and sheet pile barrier wall adjacent to the San Juan River was completed. The barrier, which was installed into the top of the Nacimiento Formation, extends approximately 200 feet around the perimeter of the riverbank from the bluff opposite the west end of the process area to the river inlet station. The bentonite slurry and sheet pile barrier wall was installed to prevent hydrocarbons from migrating into the San Juan River.

2004

- Two groundwater monitoring wells (MW-48 and MW-49) were installed in October 2004 to replace two piezometers (P-4 and P-5). Additionally in October 2004, eight temporary piezometers were installed (TP-1 through TP-8). The purpose of installing the monitoring wells and piezometers was to determine the extent of hydrocarbon impacts in soil on the refinery side of the bentonite slurry wall and sheet pile barrier.

2005

- Bloomfield Refinery initiated construction of the River Terrace Bioventing Project to provide oxygen to the subsurface and support aerobic biodegradation of petroleum hydrocarbons existing in the soil and groundwater at the River Terrace. Construction activities included the following:
    - Installation of five additional piezometers (TP-9 through TP-13) within the eastern portion of the River Terrace area in April 2005.
    - Construction of an aeration system designed to increase bioremediation in the subsurface. The aeration system included installation of 13 bioventing wells (BV-1 through BV-13), all located within the western portion of the River Terrace area. The bioventing wells were installed in August 2005.
    - Construction of a dewatering system designed to expand the bio-remedial vadose zone. The dewatering system included installation of two dewatering wells (DW-1 and DW-2). The dewatering wells were installed in August 2005.

2006

- Operation of the Bioventing System commenced in January 2006. System monitoring activities were conducted in compliance with the approved River Terrace Voluntary

Corrective Measures Monitoring Plan (Revised) dated October 28, 2005 (Malcolm Pirnie, 2005).

- An In-Situ Respiration Test was conducted in May 2006. The results of the In-Situ Test were used to evaluate progress of the bio-remedial activity.
- Quarterly performance monitoring was conducted in March, June, September, and December of 2006.

2007

- Quarterly performance monitoring of the Bioventing System was conducted in February, June, August, and October 2007.
- An In-Situ Respiration Test was conducted in September 2007. The results of the In-Situ Test were used to evaluate progress of the bio-remedial activity.
- The dewatering pumps were replaced in February 2007.
- Breakthrough in the lead GAC (V-612) was detected in April 2007. Upon confirmation of breakthrough, GAC filter V-611 became the lead GAC filter. V-612 was replaced and placed back in service in June as the lag filter.

2008

- Quarterly performance monitoring activities for the Bioventing System were conducted in March, May, July, and November 2008.
- The aeration system blower bearings were replaced in February 2008.
- The monitoring well MW-48 dewatering pump was replaced in August 2008.
- Blower piping was upgraded in October 2008.

2009

- Quarterly performance monitoring for the Bioventing System was conducted in March, April, September, and October 2009.
- An In-Situ Respiration Test was conducted during the week of October 26, 2009.
- In order to improve and optimize the dewatering system, a collection gallery, pump, and piping system were installed in the southwest portion of the River Terrace and put in service October 13, 2009.

2010

- Quarterly performance monitoring for the Bioventing System was conducted in March, April, July, and October of 2010.

- Following suspension of refining operations on November 23, 2009, operation of the River Pump station decreased, thus impacting the frequency of the River Terrace dewatering system. Although the aeration system continued to operate consistently, operation of the dewatering system has become infrequent due to the decreased demand for fresh water to support current facility operations.

2011

- In March 2011, Western received approval from NMED-HWB to modify the piping of the River Terrace dewatering system. Piping modifications included installation of a 3,000-gallon surge tank and booster pump, which allows the treated water from the River Terrace dewatering system to discharge directly into the Refinery's fresh water ponds. Piping modifications were completed in April 2011.

- Approved modifications to on-going monitoring at the River Terrace (NMED, 2011) were implemented as part of the 2011 sampling program for the River Terrace. The approved sampling modifications included the following:

    - Soil gas sampling to be conducted annually at all TP wells, DW-1, and MW-49. The sampling is to be performed during San Juan River low-flow conditions;

    - Soil gas monitoring (O_2, CO_2, and PID readings) for TP-1, TP-2, DW-1, MW-49, and TP-5 through TP-9 is to be performed semi-annually. The monitoring is to be performed during San Juan River high and low-flow conditions;

    - Groundwater monitoring of TP-3, -7, -9, -10, -11, -12, -13, and DW-1 is to be conducted biennially (beginning 2011). Samples are to be collected during low-flow conditions of the San Juan River;

    - Groundwater monitoring of TP-1, -2, -5, -6, -8, and MW-49 is to be conducted semi-annually. The monitoring is to be performed during San Juan River high and low-flow conditions;

    - Discontinue analysis of barium and chromium analysis for all TP wells, MW-49, and DW-1; and

    - Samples at the GAC in-let, outlet of lead vessel, and outlet of lag vessel are to be collected quarterly.

- High and low-flow monitoring events were conducted in June 2011 and July 2011, respectively.

- Quarterly performance monitoring of the Biovent System GAC filters inlet and outlet occurred in March, May, July, and October of 2011.

- Additional samples outside of what was required were collected at the discharge of the lead GAC filter on a monthly basis, with the exception that a sample was not collected in April 2011 due to the dewatering system being off-line.

2012

- In June 2012, the lead GAC filter was exchanged for a new filter. The biovent dewatering system consists of two GAC filters that operate in series. The new filter was placed in the lag position, and the previous lag filter was placed in the lead position.

- In October 2012, Western submitted a Work Plan that summarized proposed activities to optimize the remediation progress at the River Terrace. Approval of the Work Plan was issued by NMED-HWB on October 12, 2012. Field activities commenced on October 20, 2012 and included the following activities:

    - Removal of impacted clay soil at the River Terrace;

    - Installation of a sparging piping to target areas of the river terrace where groundwater is impacted;

    - Decommissioning of TP-1, TP-2, BV-2, and BV-7 through BV-13 in association with the excavation activities; and

    - Air Sparging Line A and Air Sparging Line B were added to system.

2013

- Western completed and put into service dewatering well DW-3 located within the southwest corner of the River Terrace. This new dewatering well adds additional value to the current dewatering system at the river terrace as historical analysis have shown this area to contain higher concentrations of impacted groundwater.

- The High-Flow Monitoring Event did not take place in 2013. The one week spring peak release (5,000 cfs) did not take place because of the threat of a water shortage in the San Juan River Basin. San Juan County is experiencing a severe drought.

2014

- Quarterly performance monitoring of the GAC filters for the Bioventing System was conducted in March, April, July, and October of 2014.

- The High-flow Monitoring Event did not take place in 2014. The one week spring peak release (5,000 cfs) did not take place because of the threat of a water shortage in the San Juan River Basin. San Juan County was experiencing a severe drought.

2015

- Monthly and Quarterly performance monitoring of the GAC filters for the Bioventing System was conducted. Samples in addition to the required frequency were collected at the GAC filters to monitor their operations.

- The High-flow Monitoring Event did not take place in 2015. The one week spring peak release (5,000 cfs) did not take place because of the threat of a water shortage in the San Juan River Basin.

- General pump maintenance was performed on the recovered water transfer pump in March 2015.

- A section of the blower discharge piping was replaced due to a crack at a joint connection.

- Western received approval to discontinue sampling of groundwater at piezometers TP-3, TP-10, TP-11, TP-12, and TP-13; however groundwater elevation information will continue to be collected from these locations (NMED, 2015).

- Western received approval to discontinue soil gas monitoring at the River Terrace System (NMED, 2015).

- Western received approval not to replace TP-2 with an additional well until further notice (NMED, 2015).

2016

- Monthly and Quarterly performance monitoring of the GAC filters for the Bioventing System was conducted. Samples in addition to the required frequency were collected at the GAC filters to monitor their operations.

2017

- Quarterly performance monitoring of the GAC filters for the Bioventing System was conducted. In addition and beyond the required frequency, monthly samples were collected at the GAC inlet and GAC lead filter.

- The low-flow groundwater sampling event was conducted in April 2017. A special groundwater sampling event was conducted in December 2017 pursuant to NMED comments on past monitoring reports.

2018

- Performance monitoring of the GAC filters for the Bioventing System was conducted. In addition and beyond the required frequency, monthly samples were collected at the GAC inlet and GAC lead filer.

- The low-flow groundwater sampling event was conducted in August 2018. Two piezometers, TP-5 and TP-9 were not located during the August sampling event. The piezometers were subsequently located and groundwater samples were collected in

October 2018, also under low-flow conditions. There was no high-flow discharge event in 2018.

Section 3
Performance Monitoring

Performance monitoring at the River Terrace area includes collecting groundwater samples for laboratory analysis, collecting field measurements and system readings, and evaluating system treatment performance by the GAC filter system. The location of the river terrace wells and aeration system is shown in Figure 3 and Figure 4. A summary of the field methods used to conduct performance monitoring at the River Terrace is provided in Appendix A. The following is a summary of monitoring activities conducted at the River Terrace area in 2018.

3.1 Groundwater Monitoring

Groundwater samples were collected in August 2018 during low-flow operation of the San Juan River [i.e., with a river flow rate of approximately 900 cubic feet per second (cfs)] for all required wells. Piezometers TP-5 and TP-9 were not located during the August sampling event. The piezometers were subsequently located and groundwater samples collected in October 2018. There was no high-flow event in 2018. The following is a summary of activities performed during the groundwater monitoring event conducted in 2018.

3.1.1 Fluid Level Measurements

Depth-to-groundwater, depth-to-product measurements, and well depth were collected from TP-3, TP-5 through TP-13, DW-1, DW-2, DW-3, MW-48, and MW-49. No product was detected in any of the wells. The measurements were collected prior to the collection of groundwater samples during the San Juan River low-flow sampling events. The fluid level measurements collected in 2018 and previous events are provided in Table 1.

3.1.2 Groundwater Field Parameters

Groundwater field parameters (temperature, pH, conductivity, DO, and ORP) were recorded during the low-flow well purging procedure prior to collecting groundwater samples. Groundwater field parameters were collected from TP-5 thru TP-9, DW-2, DW-3, MW-48, MW-49, and the collection gallery. A summary of the groundwater field parameters collected during the 2018 sampling events and previous events are included in Table 2. In the past, bailers were used to purge the wells prior to sample collection. Due to detections of concentrations of metals above screening levels in some samples and the concern the detections may be related to the

well purging procedures using bailers, the 2018 sampling event was conducted using low-methods consistent with NMED guidance (NMED, 2001)

3.1.3 Groundwater Sampling

Groundwater samples were collected from TP-5, TP-6, TP-7, TP-8, TP-9, DW-2, DW-3, MW-48, MW-49, and the collection gallery. Groundwater samples were submitted to Hall Environmental Analytical Laboratory and analyzed for the following constituents:

- Volatile Organic Compounds – BTEX and MTBE by EPA Method 8260,
- TPH – GRO by EPA Modified Method 8015D,
- TPH – DRO by EPA Modified Method 8015D,
- TPH – MRO by EPA Modified Method 8015D, and
- Total lead by EPA Method 6010B.

A summary of the groundwater analyses is provided in Table 3 and the analytical reports are provided as Appendix B.

3.2 Soil Vapor Monitoring

Soil gas monitoring is no longer conducted at the River Terrace pursuant approval by MNED in correspondence dated June 15, 2015.

3.3 Bioventing / Air Sparging System Performance Monitoring

3.3.1 GAC Sampling

Extracted groundwater from the active dewatering wells and collection gallery is treated prior to discharging to the raw water ponds, located within the east portion of the terminal. Extracted groundwater is pumped through two GAC filters positioned in series for removal of dissolved-phase hydrocarbons.

GAC influent (GAC-Inlet) samples, lead GAC filter effluent samples (GAC-Lead) and lag GAC filter effluent samples (GAC-Lag) were collected quarterly, as required with the exception of the first quarter of 2018. A GAC-Lag sample was not collected in the first quarter. In addition, samples were collected monthly (with the exception of January, March, April, and July 2018) at the GAC Inlet, GAC lead filter, and GAC lag filter to monitor system performance. Samples were submitted to Hall Environmental Analytical Laboratory and analyzed for the following parameters:

- Volatile Organic Compounds – BTEX and MTBE by EPA Method 8260; and
- Total Petroleum Hydrocarbons – TPH-GRO, TPH-DRO, and TPH-MRO by EPA Method 8015D.

Detected concentrations of TPH, BTEX and MTBE at the inlet of the GAC filters were below the respective screening levels in 2018, with the exception of TPH-DRO results from the February, September, and October 2018 sampling events as shown in Table 4. The analytical results for the lead GAC filter samples were mostly non-detect with the exception of GRO in the August and September sampling events, DRO in the September and October sampling events, and ethylbenzene and xylenes in the October 2018 sampling event. The DRO results in September and October exceeded the screening level for TPH-DRO (0.04 mg/L). TPH-GRO was detected at low concentrations during the August and September 2018 sampling events for the Lag GAC filter. After the detections in the August and September events, the results were non-detect in October, November and December.

The total amount of groundwater extracted and pumped through the GAC filter system is monitored via a downstream in-line totalizer meter prior to discharging into the facility raw water ponds. A total of 193,892 gallons of impacted groundwater was removed and treated through the GAC filters in 2018.

3.3.2 Aeration System Monitoring

The air pressure reading of 3.0 psi is similar to previous readings of 2.8 in 2017 and indicates the system is continuing to supply oxygen to subsurface to support biodegradation.

Section 4
Conclusions and Recommendations

This section summarizes and provides an evaluation of the results shown in field monitoring data and analytical data. The analytical reports for groundwater are provided in Appendix B.

4.1 Conclusions

4.1.1 Groundwater Monitoring

Groundwater samples were collected at specific wells and analyzed for BTEX, MTBE, TPH-DRO, TPH-GRO, TPH-MRO, and total lead. The analytical results for samples collected in 2018 during San Juan River low-flow conditions were below their respective screening levels with the exceptions discussed below.

- Lead was detected at a concentration above the respective MCL (0.0150 mg/l) at DW-2 (0.016 mg/L).
- TPH-DRO was detected above the NMED screening level (0.039 mg/l) at TP-5 (1.7 mg/L).
- Benzene was detected above the screening level of 0.005 mg/l at DW-3 with a reported concentration of 0.0095 mg/l.

Table 3 provides a summary of the analytical groundwater results. A concentration map showing the BTEX and TPH-DRO concentrations for the River Terrace wells during low-flow conditions is provided in Figure 5.

The analyses for lead were all below the screening level with one exception at DW-2, where lead slightly exceeded the screening level of 0.015 mg/l with a concentration of 0.016 mg/l. In comparison, there were seven samples with concentrations exceeding the screening level in 2017 with reported concentrations ranging from 0.0068 mg/l to 0.068 mg/l. The decrease in reported concentrations in 2018 is attributed to the change in collecting samples using low-flow procedures instead of using a bailer.

A significant drop in reported concentrations of ethylbenzene and xylenes was also observed at TP-5, which had the highest concentrations of all locations in 2017. Ethylbenzene decreased from 0.670 mg/l to 0.069 mg/l and xylenes decreased from 3.1 mg/l to 0.085 mg/l. Similar concentrations of ethylbenzene were observed in the past from 2011 through 2015; however, the concentration of xylenes is the lowest reported since sampling began in 2005. The

concentration of TPH-DRO remained consistent at TP-5 with 1.7 mg/l detected in 2018 in comparison to 1.6 mg/l in 2017.

Concentrations of BTEX and TPH-GRO increased in the groundwater sample collected at DW-3 with benzene going slightly above the screening level (0.0095 mg/l vs. 0.005 mg/l). The concentrations appeared to return to levels similar to those reported in 2015.

4.1.2 Bioventing / Air Sparging Performance Monitoring

Groundwater Treatment System

A total of 193,892 gallons of impacted groundwater was removed and treated through the GAC filters. The presence of constituents above the screening levels in the GAC inlet samples indicates the groundwater recovery system remains effective in capturing and removing contaminant mass. The decreasing concentrations in samples collected at the GAC inlet, as well as in individual wells, also shows the effectiveness of the system since installation.

Aeration System

The air injection system ran consistently throughout 2018 and required no changes to the air distribution. Pressure readings remain generally consistent near or at 3.0 psi when compared to readings collected in 2017 of 2.8 psi.

4.2 Recommendations

Concentrations in the extracted groundwater and at the most of the monitoring wells remain relatively low, with xylenes and TPH-DRO being the most persistent organic constituents. Western will continue to look for means of optimizing the air sparging system to increase remediation efficiency.

Section 5
References

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Tables

TABLE 1
Fluid Levels

Sample Location	Sampling Event	Date	TOC elevation (ft-msl)	Ground Surface Elevation (ft-msl)	Depth to Water (ft below TOC)	Depth to Product (ft below TOC)	Water Level Elevation (ft-msl)	Total Well Depth (ft below TOC)	Screened Interval (ft-bgs)	Screened Interval Elevations (ft-msl)
TP-1	***Decommissioned November 2012	November 2012	NA	NA	***	***	NA	***	NA	NA
TP-2	***Decommissioned November 2012	November 2012	NA	NA	***	***	NA	***	NA	NA
TP-3 (Bi-Annual)	2018	08/02/18	5423.88	NA	7.18	NPP	5416.70	12.37	4 - 9	NA
	2017	04/28/17	5423.88	NA	7.16	NPP	5416.72	12.35	4 - 9	NA
	2016	04/27/16	5423.88	NA	7.15	NPP	5416.73	12.35	4 - 9	NA
	High Flow 2015	No High Flow	5423.88	NA	**	**	**	**	4 - 9	NA
	Low Flow 2015	Week of 04/28/15	5423.88	NA	7.53	NPP	5416.35	12.35	4 - 9	NA
	High Flow 2013 **	No High Flow	5423.88	NA	**	**	**	**	4 - 9	NA
	Low Flow 2013	Week of 07/11/13	5423.88	NA	7.11	NPP	5416.77	12.35	4 - 9	NA
TP-5	Low Flow 2018	Week of 10/15/18	5422.83	NA	4.75	NPP	5418.08	8.85	3 - 8	NA
	Low Flow 2017	Week of 04/26/17	5422.83	NA	4.91	NPP	5417.92	8.84	3 - 8	NA
	Low Flow 2016	Week of 04/28/16	5422.83	NA	4.87	NPP	5417.96	8.84	3 - 8	NA
	High Flow 2015	No High Flow	5422.83	NA	**	**	**	**	3 - 8	NA
	Low Flow 2015	Week of 04/28/15	5422.83	NA	5.13	NPP	5417.7	8.84	3 - 8	NA
	High Flow 2014 **	No High Flow	5422.83	NA	**	**	**	**	3 - 8	NA
	Low Flow 2014	Week of 04/22/14	5422.83	NA	5.19	NPP	5417.64	8.84	3 - 8	NA
	High Flow 2013 **	No High Flow	5422.83	NA	**	**	**	**	3 - 8	NA
	Low Flow 2013	Week of 07/11/13	5422.83	NA	4.95	NPP	5417.88	8.84	3 - 8	NA
	High Flow 2012	Week of 05/29/12	5422.83	NA	3.42	NPP	5419.41	8.84	3 - 8	NA
	Low Flow 2012	Week of 04/09/12	5422.83	NA	5.09	NPP	5417.74	8.84	3 - 8	NA
	Low Flow 2011	Week of 07/26/11	5422.83	NA	5.69	NPP	5417.14	8.84	3 - 8	NA
	High Flow 2011	Week of 06/13/11	5422.83	NA	4.95	NPP	5417.88	8.84	3 - 8	NA
	4th Quarter 2010	Week of 10/18/10	5422.83	NA	5.65	NPP	5417.18	8.84	3 - 8	NA
	3rd Quarter 2010	Week of 07/20/10	5422.83	NA	5.11	NPP	5417.72	8.84	3 - 8	NA
	2nd Quarter 2010	Week of 04/19/10	5422.83	NA	5.98	NPP	5416.85	8.84	3 - 8	NA
	1st Quarter 2010	Week of 03/08/10	5422.83	NA	4.41	NPP	5418.42	8.84	3 - 8	NA
	4th Quarter 2009	Week of 10-05-09	5422.83	NA	4.57	NPP	5418.26	8.84	3 - 8	NA
	3rd Quarter 2009	Week of 09/10/09	5422.83	NA	4.54	NPP	5418.29	8.84	3 - 8	NA
	2nd Quarter 2009	Week of 04/20/09	5422.83	NA	4.96	NPP	5417.87	8.84	3 - 8	NA
	1st Quarter 2009	Week of 03/02/09	5422.83	NA	4.86	NPP	5417.97	8.84	3 - 8	NA
	4th Quarter 2008	Week of 11/10/08	5422.83	NA	4.54	NPP	5418.29	8.84	3 - 8	NA
	3rd Quarter 2008	Week of 07/14/08	5422.83	NA	4.76	NPP	5418.07	8.84	3 - 8	NA
	2nd Quarter 2008	Week of 05/12/08	5422.83	NA	3.43	NPP	5419.4	8.84	3 - 8	NA
	1st Quarter 2008	Week of 03/10/08	5422.83	NA	3.15	NPP	5419.68	8.84	3 - 8	NA
	4th Quarter 2007	Week of 10/29/07	5422.83	NA	4.78	NPP	5418.05	8.84	3 - 8	NA
	3rd Quarter 2007	Week of 08/20/07	5422.83	NA	6.97	NPP	5415.86	8.84	3 - 8	NA
	2nd Quarter 2007	Week of 06/18/07	5422.83	NA	6.62	NPP	5416.21	8.84	3 - 8	NA
	1st Quarter 2007	Week of 02/26/07	5422.83	NA	5.59	NPP	5417.24	8.84	3 - 8	NA
	4th Quarter 2006	Week of 12/04/06	5422.83	NA	5.95	NPP	5416.88	8.84	3 - 8	NA
	3rd Quarter 2006	Week of 09/11/06	5422.83	NA	5.32	NPP	5417.51	8.84	3 - 8	NA
	2nd Quarter 2006	Week of 06/17/06	5422.83	NA	5.24	NPP	5417.59	8.84	3 - 8	NA
	1st Quarter 2006	Week of 03/06/06	5422.83	NA	7.81	NPP	5415.02	8.84	3 - 8	NA
	Baseline	Week of 08/15/05	5422.83	NA	5.91	NPP	5416.92	8.84	3 - 8	NA

TABLE 1
Fluid Levels

Sample Location	Sampling Event	Date	TOC elevation (ft-msl)	Ground Surface Elevation (ft-msl)	Depth to Water (ft below TOC)	Depth to Product (ft below TOC)	Water Level Elevation (ft-msl)	Total Well Depth (ft below TOC)	Screened Interval (ft-bgs)	Screened Interval Elevations (ft-msl)
TP-6	Low Flow 2018	Week of 08/13/18	5422.55	NA	5.56	NPP	5416.99	9.94	5 - 10	NA
	Low Flow 2017	Week of 04/26/17	5422.55	NA	5.71	NPP	5416.84	9.94	5 - 10	NA
	Low Flow 2016	Week of 04/28/16	5422.55	NA	5.75	NPP	5416.8	9.94	5 - 10	NA
	High Flow 2015	No High Flow	5422.55	NA	**	**	**	**	5 - 10	NA
	Low Flow 2015	Week of 04/28/15	5422.55	NA	6.00	NPP	5416.55	9.94	5 - 10	NA
	High Flow 2014 **	No High Flow	5422.55	NA	**	**	**	**	5 - 10	NA
	Low Flow 2014	Week of 04/22/14	5422.55	NA	6.11	NPP	5416.44	9.94	5 - 10	NA
	High Flow 2013 **	No High Flow	5422.55	NA	**	**	**	**	5 - 10	NA
	Low Flow 2013	Week of 07/11/13	5422.55	NA	5.79	NPP	5416.76	9.94	5 - 10	NA
TP-7 (Bi-Annual)	2018	08/02/18	5421.99	NA	5.49	NPP	5416.5	9.73	5 - 10	NA
	Low Flow 2017	Week of 04/26/17****	5421.99	NA	5.86	NPP	5416.13	9.71	5 - 10	NA
	2016	04/27/16	5421.99	NA	5.83	NPP	5416.16	9.72	5 - 10	NA
	High Flow 2015	No High Flow	5421.99	NA	**	**	**	**	5 - 10	NA
	Low Flow 2015	Week of 04/28/15	5421.99	NA	6.05	NPP	5415.94	9.72	5 - 10	NA
	High Flow 2013 **	No High Flow	5421.99	NA	**	**	**	**	5 - 10	NA
	Low Flow 2013	Week of 07/11/13	5421.99	NA	5.59	NPP	5416.4	9.72	5 - 10	NA
TP-8	Low Flow 2018	Week of 08/13/18	5422.52	NA	5.65	NPP	5416.87	9.94	5 - 10	NA
	Low Flow 2017	Week of 04/26/17	5422.52	NA	5.66	NPP	5416.86	9.72	5 - 10	NA
	Low Flow 2016	Week of 04/28/16	5422.52	NA	5.65	NPP	5416.87	9.72	5 - 10	NA
	High Flow 2015	No High Flow	5422.52	NA	**	**	**	**	5 - 10	NA
	Low Flow 2015	Week of 04/28/15	5422.52	NA	8.06	NPP	5414.46	9.72	5 - 10	NA
	High Flow 2014 **	No High Flow	5422.52	NA	**	**	**	**	5 - 10	NA
	Low Flow 2014	Week of 04/22/14	5422.52	NA	6.22	NPP	5416.3	9.72	5 - 10	NA
TP-9	Low Flow 2018	Week of 10/17/18	5422.14	NA	5.28	NPP	5416.86	10.95	5 - 10	NA
	Low Flow 2017	Week of 04/26/17	5422.14	NA	5.81	NPP	5416.33	10.97	5 - 10	NA
	Low Flow 2016	Week of 04/28/16	5422.14	NA	5.69	NPP	5416.45	10.97	5 - 10	NA
	High Flow 2015	No High Flow	5422.14	NA	**	**	**	**	5 - 10	NA
	Low Flow 2015	Week of 04/28/15	5422.14	NA	5.93	NPP	5416.21	10.97	5 - 10	NA
	High Flow 2014 **	No High Flow	5422.14	NA	**	**	**	**	5 - 10	NA
	Low Flow 2014	Week of 04/22/14	5422.14	NA	6.98	NPP	5415.16	10.97	5 - 10	NA
	High Flow 2013 **	No High Flow	5422.14	NA	**	**	**	**	5 - 10	NA
	Low Flow 2013	Week of 07/11/13	5422.14	NA	5.23	NPP	5416.91	10.97	5 - 10	NA
TP-10	2018	08/02/18	5422.56	NA	5.15	NPP	5417.41	9.88	3.5 - 8.5	NA
	2017	04/28/17	5422.56	NA	5.11	NPP	5417.45	9.95	3.5 - 8.5	NA
	2016	04/27/16	5422.56	NA	5.12	NPP	5417.44	9.95	3.5 - 8.5	NA
	High Flow 2015	No High Flow	5422.56	NA	**	**	**	**	3.5 - 8.5	NA
	Low Flow 2015	Week of 04/28/15	5422.56	NA	5.50	NPP	5417.06	9.95	3.5 - 8.5	NA
	High Flow 2013 **	No High Flow	5422.56	NA	**	**	**	**	3.5 - 8.5	NA
	Low Flow 2013	Week of 07/11/13	5422.56	NA	4.99	NPP	5417.57	9.95	3.5 - 8.5	NA

TABLE 1
Fluid Levels

Sample Location	Sampling Event	Date	TOC elevation (ft-msl)	Ground Surface Elevation (ft-msl)	Depth to Water (ft below TOC)	Depth to Product (ft below TOC)	Water Level Elevation (ft-msl)	Total Well Depth (ft below TOC)	Screened Interval (ft-bgs)	Screened Interval Elevations (ft-msl)
TP-11	2018	08/02/18	NA	NA	5.61	NPP	NA	9.95	4.5 - 9.5	NA
	2017	04/28/17	NA	NA	5.56	NPP	NA	9.98	4.5 - 9.5	NA
	2016	04/27/16	NA	NA	5.58	NPP	NA	9.98	4.5 - 9.5	NA
	High Flow 2015	No High Flow	NA	NA	**	**	**	**	4.5 - 9.5	NA
	Low Flow 2015	Week of 04/28/15	NA	NA	5.84	NPP	NA	9.98	4.5 - 9.5	NA
	High Flow 2013 **	No High Flow	NA	NA	**	**	**	**	4.5 - 9.5	NA
	Low Flow 2013	Week of 07/11/13	NA	NA	5.45	NPP	NA	9.98	4.5 - 9.5	NA
TP-12	2018	08/02/18	5424.97	NA	7.33	NPP	5417.64	11.58	7 - 12	NA
	2017	04/28/17	5424.97	NA	7.32	NPP	5417.65	11.79	7 - 12	NA
	2016	04/27/16	5424.97	NA	7.36	NPP	5417.61	11.79	7 - 12	NA
	High Flow 2015	No High Flow	5424.97	NA	**	**	**	**	7 - 12	NA
	Low Flow 2015	Week of 07/11/15	5424.97	NA	7.57	NPP	5417.4	11.79	7 - 12	NA
	High Flow 2013 **	No High Flow	5424.97	NA	**	**	**	**	7 - 12	NA
	Low Flow 2013	Week of 07/11/13	5424.97	NA	7.10	NPP	5417.87	11.79	7 - 12	NA
TP-13 (Bi-Annual)	2018	08/02/18	5423.88	NA	6.16	NPP	5417.72	12.78	4.5 - 14.5	NA
	2017	04/28/17	5423.88	NA	6.18	NPP	5417.7	12.73	4.5 - 14.5	NA
	2016	04/27/16	5423.88	NA	6.25	NPP	5417.63	16.09	4.5 - 14.5	NA
	High Flow 2015	No High Flow	5423.88	NA	**	**	**	**	4.5 - 14.5	NA
	Low Flow 2015	Week of 04/28/15	5423.88	NA	6.45	NPP	5417.43	16.09	4.5 - 14.5	NA
	High Flow 2013 **	No High Flow	5423.88	NA	**	**	**	**	4.5 - 14.5	NA
	Low Flow 2013	Week of 07/11/13	5423.88	NA	5.88	NPP	5418	16.09	4.5 - 14.5	NA
DW-1 (Bi-Annual)	2018	08/02/18	5422.97	5420.73	5.91	NPP	5417.06	15.60	5 - 14	5415.73 - 5406.73
	Low Flow 2017	Week of 04/26/17****	5422.97	5420.73	6.16	NPP	5416.81	15.62	5 - 14	5415.73 - 5406.73
	2016	04/27/16	5422.97	5420.73	6.15	NPP	5416.82	15.62	5 - 14	5415.73 - 5406.73
	High Flow 2015	No High Flow	5422.97	5420.73	**	**	**	**	5 - 14	5415.73 - 5406.73
	Low Flow 2015	Week of 04/28/15	5422.97	5420.73	6.30	NPP	5416.67	15.62	5 - 14	5415.73 - 5406.73
	High Flow 2013 **	No High Flow	5422.97	5420.73	**	**	**	**	5 - 14	5415.73 - 5406.73
	Low Flow 2013	Week of 07/11/13	5422.97	5420.73	9.64	NPP	5413.33	15.62	5 - 14	5415.73 - 5406.73
DW-2	Low Flow 2018	Week of 08/13/18	5423.81	5422.67	6.27	NPP	5417.54	15.50	4 - 14	5418.67 - 5408.67
	Special Event	12/29/17	5423.81	5422.67	NM	NM	NM	NM	4 - 14	5418.67 - 5408.67
DW-3	Low Flow 2018	Week of 08/13/18	5424.79	5422.43	7.60	NPP	5417.19	NM	6 - 14	5416.43 - 5408.43
	Special Event	12/29/17	5424.79	5422.43	NM	NM	NM	NM	6 - 14	5416.43 - 5408.43
	Low Flow 2017	Week of 04/26/17	5424.79	5422.43	7.61	NPP	5417.18	14.64	6 - 14	5416.43 - 5408.43
	Low Flow 2016	Week of 04/28/16	5424.79	5422.43	7.59	NPP	5417.2	14.64	6 - 14	5416.43 - 5408.43
	High Flow 2015	No High Flow	5424.79	5422.43	**	**	**	**	6 - 14	5416.43 - 5408.43
	Low Flow 2015	Week of 04/28/15	5424.79	5422.43	11.23	NPP	5413.56	14.64	6 - 14	5416.43 - 5408.43
	High Flow 2014 **	No High Flow	5424.79	5422.43	**	**	**	**	6 - 14	5416.43 - 5408.43
	Low Flow 2014	Week of 04/22/14	5424.79	5422.43	6.92	NPP	5417.87	14.64	6 - 14	5416.43 - 5408.43
	High Flow 2013 **	No High Flow	5424.79	5422.43	**	**	**	**	6 - 14	5416.43 - 5408.43
	Low Flow 2013	Week of 07/11/13	5424.79	5422.43	10.86	NPP	5413.93	14.64	6 - 14	5416.43 - 5408.43

TABLE 1
Fluid Levels

Sample Location	Sampling Event	Date	TOC elevation (ft-msl)	Ground Surface Elevation (ft-msl)	Depth to Water (ft below TOC)	Depth to Product (ft below TOC)	Water Level Elevation (ft-msl)	Total Well Depth (ft below TOC)	Screened Interval (ft-bgs)	Screened Interval Elevations (ft-msl)
MW-48	Low Flow 2018	Week of 08/13/18	--	--	7.43	NPP	--	16.81	--	--
MW-49	Low Flow 2018	Week of 08/13/18	5425.20	5422.52	8.99	NPP	5416.21	16.98	4 - 14	5418.52 - 5408.52
	Low Flow 2017	Week of 04/26/17	5425.20	5422.52	9.65	NPP	5415.55	16.48	4 - 14	5418.52 - 5408.52
	Low Flow 2016	Week of 04/28/16	5425.20	5422.52	9.31	NPP	5415.89	16.48	4 - 14	5418.52 - 5408.52
	High Flow 2015	No High Flow	5425.20	5422.52	**	**	**	**	4 - 14	5418.52 - 5408.52
	Low Flow 2015	Week of 04/28/15	5425.20	5422.52	9.65	NPP	5415.55	16.48	4 - 14	5418.52 - 5408.52
	High Flow 2014 **	No High Flow	5425.20	5422.52	**	**	**	**	4 - 14	5418.52 - 5408.52
	Low Flow 2014	Week of 04/22/14	5425.20	5422.52	10.08	NPP	5415.12	16.48	4 - 14	5418.52 - 5408.52
	High Flow 2013 **	No High Flow	5425.20	5422.52	**	**	**	**	4 - 14	5418.52 - 5408.52
Gallery	Low Flow 2018	Week of 08/21/18	NA	NA	6.26	NM	NA	15.11	NA	NA
	Special Event	12/29/17	NA	NA	NM	NM	NA	NM	NA	NA

Notes:

NPP = No Product Present
NM = Not measured
NA = Not Available
TOC - top of casing
ft-msl - feet above mean sea level
ft-bgs = feet below ground surface
** Due to drought, river conditions never met high flow requirements.
*** Well Decommissioned November 2012 as part of biovent system enhancements.
**** Water level measured 4/26/2017, sample for chemical analysis collected 12/29/2017
(Bi-Annual) = Samples collected every other year starting in 2011.

TABLE 2
Field Measurements

Sample Location	Sampling Event	Date	Conductivity (umhos/cm)	DO (mg/L)	ORP (mV)	pH	TEMP (ºF)
TP-1	***Decommissioned November 2012	November 2012	***	***	***	***	***
TP-2	***Decommissioned November 2012	November 2012	***	***	***	***	***
TP-3 (Bi-Annual)	2017	04/28/17	Bi-Annual				
	2016	04/27/16	Bi-Annual				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	891	2.56	29.3	7.69	54.7
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	421	2.06	62	7.47	66.4
TP-5	Low Flow 2018	Week of 10/15/18	1,381	0.21	-358	7.89	63.5
	Low Flow 2017	Week of 04/26/17	1,165	2.37	-204	7.19	56.3
	Low Flow 2016	Week of 04/28/16	815	1.24	-279	7.03	56.2
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	828	2.28	-257	7.56	55.1
	High Flow 2014 **	No High Flow	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	526	0.34	-251	7.30	53.7
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	431	2.55	-210	7.56	68.1
	High Flow 2012	Week of 05/29/12	470	1.48	-33	6.30	61.1
	Low Flow 2012	Week of 04/09/12	363	0.93	-266	6.80	50.9
	Low Flow 2011	Week of 07/26/11	932	1.78	192	6.70	68.5
	High Flow 2011	Week of 06/13/11	561	0.72	273	6.95	62.2
	4th Quarter 2010	Week of 10/18/10	632	2.06	71	7.01	68.2
	3rd Quarter 2010	Week of 07/20/10	707	1.11	84	6.79	65.8
	2nd Quarter 2010	Week of 04/19/10	590	0.58	121	7.02	54.1
	1st Quarter 2010	Week of 03/08/10	807	0.67	253	7.05	48.5
	4th Quarter 2009	Week of 10-05-09	759	4.57	212	6.76	67.4
	3rd Quarter 2009	Week of 09/10/09	794	1.12	152	7.04	72.6
	2nd Quarter 2009	Week of 04/20/09	1,128	0.69	106	6.69	55.2
	1st Quarter 2009	Week of 03/02/09	1,092	3.33	176	7.07	49.2
	4th Quarter 2008	Week of 11/10/08	981	1.23	129	6.83	61.8
	3rd Quarter 2008	Week of 07/14/08	852	1.49	159	6.95	69.8
	2nd Quarter 2008	Week of 05/12/08	702	1.32	54	6.87	56.8
	1st Quarter 2008	Week of 03/10/08	656	2.34	216	6.82	47.4
	4th Quarter 2007	Week of 10/29/07	857	0.23	229	7.04	66.5
	3rd Quarter 2007	Week of 08/20/07	911	0.17	129	6.88	69.8
	2nd Quarter 2007	Week of 06/18/07	884	0.80	148	6.87	63.9
	1st Quarter 2007	Week of 02/26/07	1,027	0.79	219	6.87	49.6
	4th Quarter 2006	Week of 12/04/06	1,377	1.36	229	6.99	56.0
	3rd Quarter 2006	Week of 09/11/06	879	0.29	149	7.09	71.0
	2nd Quarter 2006	Week of 06/17/06	989	0.05	39	6.94	65.3
	1st Quarter 2006	Week of 03/06/06	747	0.52	-51	7.03	54.1
	Baseline	Week of 08/15/05	923	NR	NR	6.90	68.7

TABLE 2
Field Measurements

Sample Location	Sampling Event	Date	Conductivity (umhos/cm)	DO (mg/L)	ORP (mV)	pH	TEMP (ºF)
TP-6	Low Flow 2018	Week of 08/13/18	1,878	1.09	-268	7.41	70.9
	Low Flow 2017	Week of 04/26/17	999	2.45	-132	7.00	55.0
	Low Flow 2016	Week of 04/28/16	780	1.48	-231	8.04	55.9
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	800	1.77	-185	7.73	55.8
	High Flow 2014 **	No High Flow	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	552	4.25	-83	7.11	53.5
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	457	6.84	-7	7.71	70.2
TP-7 (Bi-Annual)	2018	Week of 08/13/18	Bi-Annual				
	Low Flow 2017	Week of 04/26/17****	978	5.25	163	7.78	49.5
	2016	04/27/16	Bi-Annual				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	773	3.09	-62.4	7.76	54.8
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	704	5.67	-56	7.40	64.9
TP-8	Low Flow 2018	Week of 08/13/18	1,627	0.99	-119	7.73	69.3
	Low Flow 2017	Week of 04/26/17	1,571	2.80	-80	7.27	52.5
	Low Flow 2016	Week of 04/28/16	1,084	2.57	-163	8.03	54.0
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	907	2.64	-93.6	7.76	54.0
	High Flow 2014 **	No High Flow	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	957	2.33	-226	7.56	53.6
TP-9	Low Flow 2018	Week of 10/15/18	2,050	0.69	-164	7.39	15.8
	Low Flow 2017	Week of 04/26/17	1,674	2.23	-83	7.33	50.9
	Low Flow 2016	Week of 04/28/16	1,715	2.00	-123	7.19	52.6
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	1,833	3.38	-104	7.35	51.9
	High Flow 2014 **	No High Flow	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	1,410	5.09	-54	7.05	50.8
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	1,330	4.80	65	7.00	65.5
TP-10	2016 - 2018	08/02/18	Groundwater Sampling Discontinued (NMED, 2015)				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	695	1.78	46.3	7.60	50.7
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	340	2.01	60	7.50	63.1

TABLE 2
Field Measurements

Sample Location	Sampling Event	Date	Conductivity (umhos/cm)	DO (mg/L)	ORP (mV)	pH	TEMP (ºF)
TP-11	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	797	2.06	34.4	7.67	51.9
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	500	1.92	-28	7.40	62.4
TP-12	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 07/11/15	1,064	2.51	-33.9	7.55	51.0
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	561	2.61	-32	7.60	56.6
TP-13 (Bi-Annual)	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	600	5.66	-15.7	7.83	50.5
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	365	3.23	-54	7.50	60.7
DW-1 (Bi-Annual)	2018	NA	Bi-Annual				
	Low Flow 2017	Week of 04/26/17****	981	2.79	144	7.91	55.4
	2016	NA	Bi-Annual				
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	2,053	2.13	-114	7.26	53.5
	High Flow 2013 **	No High Flow	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	1,936	2.43	-93	7.00	68.8
DW-2	Low Flow 2018	Week of 8/13/18	2,100	1.38	-180	7.73	70.1
	Special Event	12/29/17	1,426	2.22	-29	7.79	60.2
DW-3	Low Flow 2018	Week of 8/13/18	1,970	1.34	-326	7.59	69.3
	Special Event	12/29/17	1,654	0.68	41	7.78	70.1
	Low Flow 2017	Week of 04/26/17	1,975	1.45	-162	7.26	70.9
	Low Flow 2016	Week of 04/28/16	1,448	2.59	-269	7.60	52.6
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	1,507	6.74	-243	7.58	57.4
	High Flow 2014 **	No High Flow	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	1,048	0.68	-266	7.36	54.6
MW-48	Low Flow 2018	Week of 8/13/18	3,077	1.4	-246.3	7.80	68.4

TABLE 2
Field Measurements

Sample Location	Sampling Event	Date	Conductivity (umhos/cm)	DO (mg/L)	ORP (mV)	pH	TEMP (ºF)
MW-49	Low Flow 2018	Week of 8/13/18	1,527	0.81	-120.3	7.65	61.3
	Low Flow 2017	Week of 04/26/17	1,202	3.73	-85	7.18	52.3
	Low Flow 2016	Week of 04/28/16	942	3.63	-125.13	7.95	51.7
	High Flow 2015	No High Flow	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	936	1.94	-140.80	7.65	52.90
	High Flow 2014 **	No High Flow	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	1,255	4.84	-111.2	7.45	51.08
	High Flow 2013 **	No High Flow	**	**	**	**	**
Gallery	Low Flow 2018	Week of 8/13/18	3,286	1.76	-145	7.62	66.9
	Special Event	12/29/17	1,552	1.85	-75	6.91	51.2

Notes:

DO = Dissolved Oxygen NA - Not Applicable

ORP = Oxidation Reduction Potential

** Due to drought, river conditions never met high flow requirements.

*** Well Decommissioned November 2012 as part of biovent system enhancements.

**** Water level measured 4/26/2017, sample for chemical analysis collected 12/29/2017

(Bi-Annual) = Samples collected every other year starting in 2011.

TABLE 3
Groundwater Monitoring Data Summary

			MCL	WQCC 20NMAC 6.2.3103	MCL	WQCC 20NMAC 6.2.3103	NMED Soil Screening Guidance	NMED Soil Screening Guidance Table 6-4			40 CFR 141.62 (MCL)	
			0.005	0.75	0.700	0.620	0.014	0.039		0.039	0.0150	0.002
Sample Location	Sampling Event	DATE	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)	Lead (mg/L)	Mercury (mg/L)
TP-1	***Decommissioned November 2012	November 2012	***	***	***	***	***	***	***	***	***	***
TP-2	***Decommissioned November 2012	November 2012	***	***	***	***	***	***	***	***	***	***
TP-3 (Bi-Annual)	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.05	< 2.5	<0.005	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.05	< 2.5	**0.0051**	NR[2]
TP-5	Low Flow 2018	Week of 10/17/18	<0.001	<0.001	**0.069**	**0.085**	<0.00021	**1.7**	**1.5**	<5.0	**0.0130**	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.010	<0.010	**0.670**	**3.100**	<0.010	**1.6**	**13**	< 2.5	**0.068**	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.010	<0.010	**0.300**	**1.800**	<0.010	**1.4**	**11**	< 2.5	**0.027**	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.010	<0.010	**0.063**	**1.300**	<0.010	**0.75**	**7.1**	< 2.5	**0.019**	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.005	<0.005	**0.027**	**0.450**	<0.005	**2.2**	**4.0**	< 2.5	**0.012**	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.010	<0.010	**0.022**	**0.590**	<0.010	**0.69**	**4.6**	< 2.5	**0.013**	NR[2]
	High Flow 2012	Week of 05/29/12	<0.005	<0.005	**0.017**	**0.450**	<0.005	**1.10**	**4.20**	< 2.5	**0.0260**	NR[2]
	Low Flow 2012	Week of 04/09/12	<0.005	<0.005	**0.020**	**0.410**	<0.005	**0.60**	**1.80**	< 2.5	**0.3600**	NR[2]
	Low Flow 2011	Week of 07/26/11	<0.010	<0.01	**0.051**	**1.200**	<0.025	**0.24**	**4.9**		**0.0550**	NR[2]
	High Flow 2011	Week of 06/13/11	<0.010	<0.01	**0.350**	**4.200**	<0.025	**3.20**	**20**		**0.0580**	NR[2]
	4th Quarter 2010	Week of 10/18/10	<0.005	<0.01	**0.830**	**8.000**	<0.025	**3.10**	**30**		**0.0230**	NR
	3rd Quarter 2010	Week of 07/20/10	<0.005	<0.01	0.310	**8.300**	<0.025	**3.10**	**26**		**0.0830**	NR
	2nd Quarter 2010	Week of 04/19/10	<0.005	<0.010	**1.600**	**13.000**	<0.025	**9.00**	**38**		**0.1300**	NR
	1st Quarter 2010	Week of 03/08/10	<0.005	**0.0078**	0.150	**1.100**	<0.013	**9.10**	**31**		**0.0430**	NR
	4th Quarter 2009	Week of 10-05-09	<0.005	<0.01	**1.900**	**15.000**	<0.025	**7.10**	**40**		**0.0250**	NR
	3rd Quarter 2009	Week of 09/10/09	<0.005	<0.01	**1.300**	**13.000**	<0.025	**8.00**	**33**		**0.0330**	NR

TABLE 3
Groundwater Monitoring Data Summary

			MCL	WQCC 20NMAC 6.2.3103	MCL	WQCC 20NMAC 6.2.3103	NMED Soil Screening Guidance	NMED Soil Screening Guidance Table 6-4			40 CFR 141.62 (MCL)	
			0.005	0.75	0.700	0.620	0.014	0.039		0.039	0.0150	0.002
Sample Location	Sampling Event	DATE	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)	Lead (mg/L)	Mercury (mg/L)
TP-5 (continued)	2nd Quarter 2009	Week of 04/20/09	0.025	0.011	2.400	15.000	<0.025	11.00	49		0.0260	NR
	1st Quarter 2009	Week of 03/02/09	0.019	<0.01	1.800	14.000	<0.025	12.00	37		0.0260	NR
	4th Quarter 2008	Week of 11/10/08	0.016	0.01	2.400	12.000	<0.025	8.50	38		0.0290	NR
	3rd Quarter 2008	Week of 07/14/08	<0.02	<0.02	1.900	18.000	<0.05	1.10	50		0.0430	NR
	2nd Quarter 2008	Week of 05/12/08	0.048	<0.02	1.100	13.000	<0.05	*<1.00	46		0.0390	NR
	1st Quarter 2008	Week of 03/10/08	<0.020	<0.020	1.600	17.000	<0.050	*<1.00	52		0.0510	NR
	4th Quarter 2007	Week of 10/29/07	<0.001	<0.001	2.600	17.000	<0.0025	1.20	56		0.0320	NR
	3rd Quarter 2007	Week of 08/20/07	0.300	<0.10	3.000	22.000	<0.25	*<1.00	69		0.0440	NR
	2nd Quarter 2007	Week of 06/18/07	0.340	<0.10	3.500	21.000	<0.25	*<1.00	78		0.0920	NR
	1st Quarter 2007	Week of 02/26/07	<0.01	<0.01	1.300	18.000	<0.025	*<1.00	85		NR	NR
	4th Quarter 2006	Week of 12/04/06	0.069	<0.050	1.200	10.000	<0.120	*<1.00	50		NR	NR
	3rd Quarter 2006	Week of 09/11/06	<0.01	<0.01	3.100	16.000	<0.025	*<1.00	110		NR	NR
	2nd Quarter 2006	Week of 06/17/06	0.054	<0.001	1.600	16.000	<0.025	*<1.00	34		NR	NR
	1st Quarter 2006	Week of 03/06/06	0.200	<0.02	0.280	20.000	<0.05	*<1.00	59		NR	NR
	Baseline	Week of 08/15/05	0.350	<0.005	3.500	21.000	<0.05	1.20	56		NR	NR
TP-6	Low Flow 2018	Week of 08/13/18	<0.001	0.0002J	0.00026J	<0.0015	<0.001	<0.31	0.82	<2.5	<0.005	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.001	<0.001	0.026	0.0038	<0.001	1.7	1.3	< 2.5	0.027	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.001	<0.001	0.068	<0.0015	<0.0010	0.75	0.99	< 2.5	0.033	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	0.0087	0.0048	<0.001	1.6	1.5	< 2.5	0.0150	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.001	<0.001	0.028	0.093	<0.001	1.7	3.5	< 2.5	0.0084	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	0.0100	NR[2]

TABLE 3
Groundwater Monitoring Data Summary

			MCL	WQCC 20NMAC 6.2.3103	MCL	WQCC 20NMAC 6.2.3103	NMED Soil Screening Guidance	NMED Soil Screening Guidance Table 6-4			40 CFR 141.62 (MCL)	
			0.005	0.75	0.700	0.620	0.014	0.039		0.039	0.0150	0.002
Sample Location	Sampling Event	DATE	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)	Lead (mg/L)	Mercury (mg/L)
TP-7 (Bi-Annual)	2018	NA	Bi-Annual									
	Low Flow 2017	Week of 04/26/17****	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.2	<0.05	<2.5	**0.020**	NR[2]
	2016	NA	Bi-Annual									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.002	<0.002	<0.002	<0.003	<0.002	<0.20	<0.50	< 2.5	<0.005	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.010	<0.010	<0.010	<0.020	<0.010	<0.20	<0.50	< 2.5	**0.0014**	NR[2]
TP-8	Low Flow 2018	Week of 08/13/18	<0.005	<0.005	**0.0028J**	< 0.0075	<0.005	<0.31	**2.1**	< 2.5	**0.0068**	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.005	<0.005	**0.011**	< 0.0075	<0.005	**1.3**	**1.6**	< 2.5	**0.038**	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.005	<0.005	**0.029**	**0.026**	<0.005	**1.0**	**2.9**	< 2.5	**0.034**	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.005	<0.005	**0.0099**	**0.044**	<0.005	**1.3**	**1.4**	< 2.5	**0.0091**	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.005	<0.005	**0.019**	**0.083**	<0.005	**2.3**	**4.0**	< 2.5	**0.0080**	NR[2]
TP-9	Low Flow 2018	Week of 10/17/18	<0.0001	<0.001	<0.001	<0.0025	<0.001	<0.63	**0.056**	<5.0	**0.00026J**	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	**0.11**	< 2.5	**0.017**	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	**0.092**	< 2.5	**0.052**	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	**0.35**	<0.050	< 2.5	**0.0056**	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	<0.0050	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0091**	NR[2]

TABLE 3
Groundwater Monitoring Data Summary

			MCL	WQCC 20NMAC 6.2.3103	MCL	WQCC 20NMAC 6.2.3103	NMED Soil Screening Guidance	NMED Soil Screening Guidance Table 6-4			40 CFR 141.62 (MCL)	
			0.005	0.75	0.700	0.620	0.014	0.039		0.039	0.0150	0.002
Sample Location	Sampling Event	DATE	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)	Lead (mg/L)	Mercury (mg/L)
TP-10	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	**0.024**	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0013**	NR[2]
TP-11	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	<0.0050	NR[1]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0130**	NR[1]
TP-12	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 07/11/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	<0.0050	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0058**	NR[2]
TP-13	2016 - 2018	NA	Groundwater Sampling Discontinued (NMED, 2015)									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.002	<0.002	<0.002	<0.003	<0.002	**0.22**	<0.050	< 2.5	**0.0064**	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0068**	NR[2]
DW-1 (Bi-Annual)	2018	NA	Bi-Annual									
	Low Flow 2017	Week of 04/26/17****	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 25	**0.0068**	NR[2]
	2016	NA	Bi-Annual									
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 25	****	<0.0002
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2013	Week of 07/11/13	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0014**	<0.0002

TABLE 3
Groundwater Monitoring Data Summary

			MCL	WQCC 20NMAC 6.2.3103	MCL	WQCC 20NMAC 6.2.3103	NMED Soil Screening Guidance	NMED Soil Screening Guidance Table 6-4			40 CFR 141.62 (MCL)	
			0.005	0.75	0.700	0.620	0.014	0.039		0.039	0.0150	0.002
Sample Location	Sampling Event	DATE	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	MTBE (mg/L)	TPH-DRO (mg/L)	TPH-GRO (mg/L)	TPH-MRO (mg/L)	Lead (mg/L)	Mercury (mg/L)
DW-2	Low Flow 2018	Week of 08/13/18	<0.001	<0.001	<0.001	**0.00091J**	<0.001	<0.31	**0.21**	<2.5	**0.016**	
	Special Event	12/29/17	<0.001	<0.001	**0.0036**	**0.0039**	<0.001	**0.4**	**1**	< 2.5	**0.0041**	NR
DW-3	Low Flow 2018	Week of 08/13/18	**0.0095**	**0.00019J**	**0.032**	**0.170**	**0.00063J**	<0.31	**1.5**	<2.5	**0.0091**	NR
	Special Event	12/29/17	<0.001	<0.001	**0.0040**	**0.0020**	<0.001	<0.2	**0.23**	< 2.5	**0.00083**	NR
	Low Flow 2017	Week of 04/26/17	<0.001	<0.001	**0.0032**	<0.0015	<0.001	<0.20	**0.099**	< 2.5	**0.0110**	NR[2]
	Low Flow 2016	Week of 04/28/16	**0.0049**	<0.001	**0.034**	**0.011**	<0.001	**0.35**	**0.33**	< 2.5	**0.014**	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	**0.082**	<0.010	**0.400**	**0.290**	<0.010	**0.76**	**2.1**	<2.5	<0.0050	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	**0.067**	<0.010	**0.720**	**1.300**	<0.010	**1.7**	**8.8**	<2.5	<0.0050	NR[2]
MW-48	Low Flow 2018	Week of 08/13/18	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.31	**0.29**	<2.5	**0.012**	NR[2]
MW-49	Low Flow 2018	Week of 08/13/18	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.31	**0.019J**	< 2.5	<0.005	NR[2]
	Low Flow 2017	Week of 04/26/17	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	**0.029**	NR[2]
	Low Flow 2016	Week of 04/28/16	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	**0.040**	NR[2]
	High Flow 2015	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2015	Week of 04/28/15	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.20	<0.050	< 2.5	<0.0050	NR[2]
	High Flow 2014 **	No High Flow	**	**	**	**	**	**	**	**	**	**
	Low Flow 2014	Week of 04/22/14	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	<0.050	< 2.5	**0.0064**	NR[2]
	High Flow 2013 **	No High Flow	**	**	**	**	**	**	**	**	**	**
Gallery	Low Flow 2018	Week of 08/13/18	<0.001	<0.001	<0.001	<0.0015	<0.001	<0.31	**0.22**	<2.5	<0.005	NR
	Special Event	12/29/17	<0.001	<0.001	<0.001	<0.002	<0.001	<0.20	**0.11**	< 2.5	**0.11**	NR

Notes: NR = Not Required (Voluntary Corrective Measures - Revised Monitoring Plan - October 2005)

NR[1]= Not Required (Approval With Direction - June 2009)

NR[2]= Not Required (Approval With Direction - May 2011)

** Due to drought, river conditions never met high flow requirements.

*** Well Decommissioned November 2012 as part of biovent system enhancements.

**** Water level measured 4/26/2017, sample for chemical analysis collected 12/29/2017

(Bi-Annual) = Samples collected every other year starting in 2011.

**** Analyte inadvertently not included in sample analysis.

Per NMED letter "Approval with Modifications Facility-Wide Groundwater Monitoring plan - June 2014" dated June 15, 2015, groundwater sampling discontinued.

1. Per NMED letter "Approval with Modifications Facility-Wide Groundwater Monitoring plan - June 2014" dated June 15, 2015, high flow sampling is no longer required at the River Terrace.

0.670 Constituent detected at concentration above method detection limit

3.100 Constituent detected at concentration above screening level

TABLE 4
GAC Filter Monitoring

			MCL	WQCC 20NMAC 6.2.3103	MCL	WQCC 20NMAC 6.2.3103	NMED Soil Screening Guidance Table 6-4			NMED Soil Screening Guidance
Sample Location	**Sampling Event**	**Date**	**Benzene (mg/L)**	**Toluene (mg/L)**	**Ethylbenzene (mg/L)**	**Xylene (mg/L)**	**TPH-DRO (mg/L)**	**TPH-GRO (mg/L)**	**TPH-MRO (mg/L)**	**MTBE (mg/L)**
			0.005	**0.750**	**0.700**	**0.620**	**0.04**		**0.04**	**0.014**
GAC-INLET	4th Quarter	12/19/18	<0.001	<0.001	**0.0019**	**0.0054**	<0.40	**0.62**	<2.5	<0.001
		11/21/18	<0.001	<0.001	**0.096**	**0.290**	<1.0	**1.6**	<5.0	<0.001
		10/24/18	**0.00027J**	**0.00029J**	**0.011**	**0.035**	**0.48**	**0.37**	<2.5	<0.001
	3rd Quarter	09/26/18	<0.001	**0.00017J**	**0.00052J**	**0.0015**	**0.36J**	**0.28**	<2.5	<0.001
		08/08/18	<0.001	<0.001	**0.0038**	<0.0015	<0.40	**0.39**	<2.5	<0.001
	2nd Quarter	06/13/18	<0.001	<0.001	<0.001	<0.0015	<0.40	**0.13**	<2.5	<0.001
		05/16/18	<0.001	<0.001	**0.001**	<0.0015	<0.40	**0.95**	<2.5	<0.001
	1st Quarter	02/21/18	<0.001	<0.001	**0.00023J**	<0.0015	**0.34J**	**0.76**	<2.5	<0.001
GAC-LEAD	4th Quarter	12/19/18	<0.001	<0.001	<0.001	<0.0015	<0.40	<0.050	<2.5	<0.001
		11/21/18	<0.001	<0.001	<0.001	<0.0015	<1.0	<0.050	<5.0	<0.001
		10/24/18	<0.001	<0.001	**0.00062J**	**0.0019**	**0.82**	<0.050	<2.5	**0.00075J**
	3rd Quarter	09/26/18	<0.001	<0.001	<0.001	<0.0015	**2.5**	**0.22**	<2.5	<0.001
		08/08/18	<0.001	<0.001	<0.001	<0.0015	<0.40	**0.098**	<2.5	<0.001
	2nd Quarter	06/13/18	<0.001	<0.001	<0.001	<0.0015	<0.40	<0.050	<2.5	<0.001
		05/16/18	<0.001	<0.001	<0.001	<0.0015	<0.40	<0.050	<2.5	<0.001
	1st Quarter	02/21/18	<0.001	<0.001	<0.001	<0.0015	<0.40	**0.024J**	<2.5	**0.00062J**
GAC-LAG	4th Quarter	12/19/18	<0.001	<0.001	<0.001	<0.0015	<0.40	<0.050	<2.5	<0.001
		11/21/18	<0.001	<0.001	<0.001	<0.0015	<0.40	<0.050	<2.5	<0.001
		10/24/18	<0.001	<0.001	<0.001	<0.0015	<0.40	<0.050	<2.5	<0.001
	3rd Quarter	09/26/18	<0.001	<0.001	<0.001	<0.0015	<0.40	**0.20**	<2.5	<0.001
		08/08/18	<0.001	<0.001	<0.001	<0.0015	<0.40	**0.087**	<2.5	<0.001
	2nd Quarter	06/13/18	<0.001	<0.001	<0.001	<0.0015	<0.40	<0.050	<2.5	<0.001
	1st Quarter	02/21/18	NOT SAMPLED							

Notes:

= Analytical result exceeds the respective screening level.

--- = Not analyzed

MTBE = Methyl tert-butyl ether

MCL = Maximum Contaminant Level

TPH-DRO = Total Petroleum Hydrocarbons - Diesel Range Organics

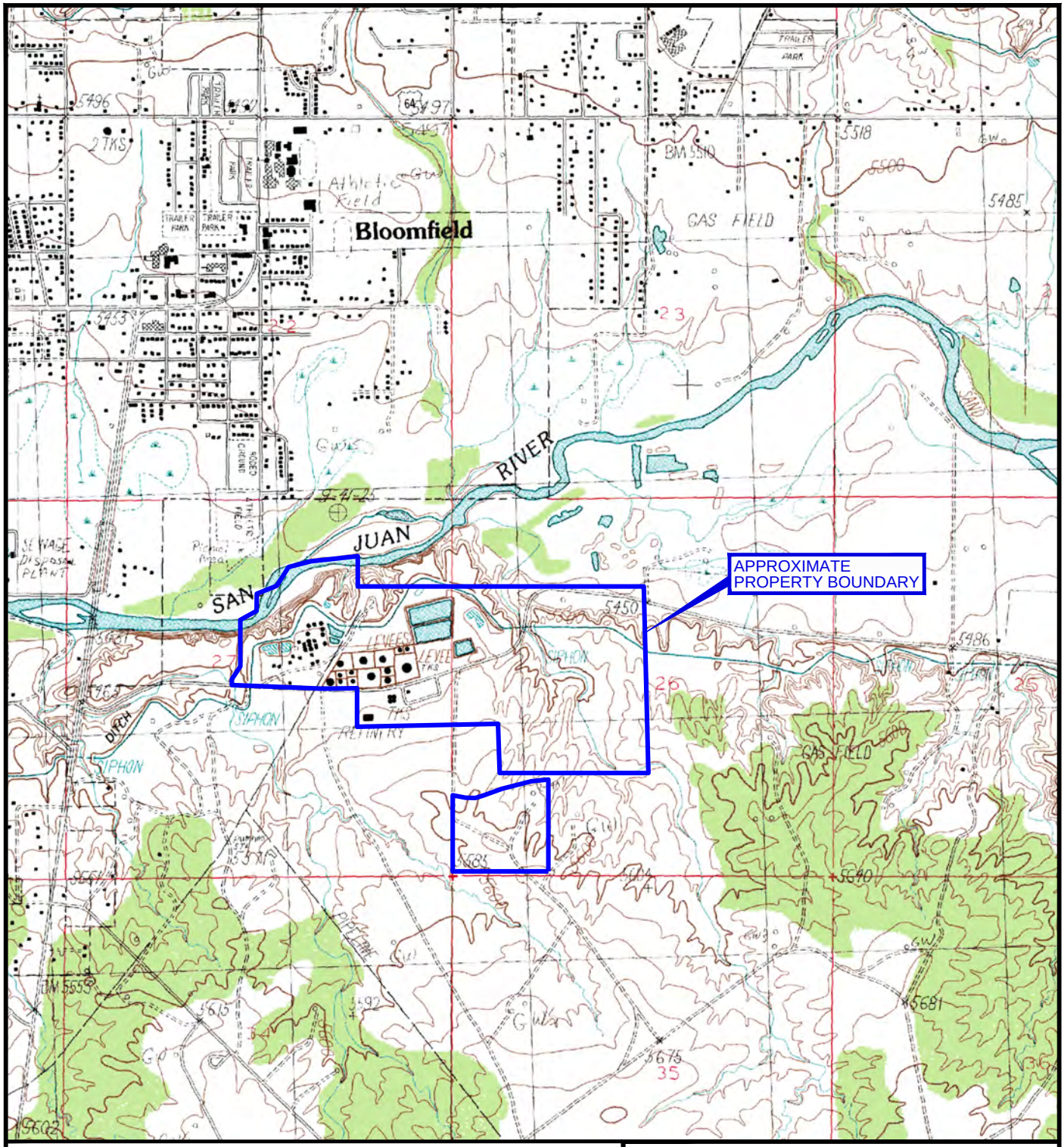
TPH-GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics

TPH-MRO = Total Petroleum Hydrocarbons - Motor Oil Range Organics

J = estimated concentration reported below quantitation limit

WQCC = Water Quality Control Commission

Figures



Map Source: USGS 7.5 Min. Quad Sheet BLOOMFIELD, NM., 1985.

N

0 2000

SCALE IN FEET

NEW MEXICO

QUADRANGLE LOCATION

Western Refining

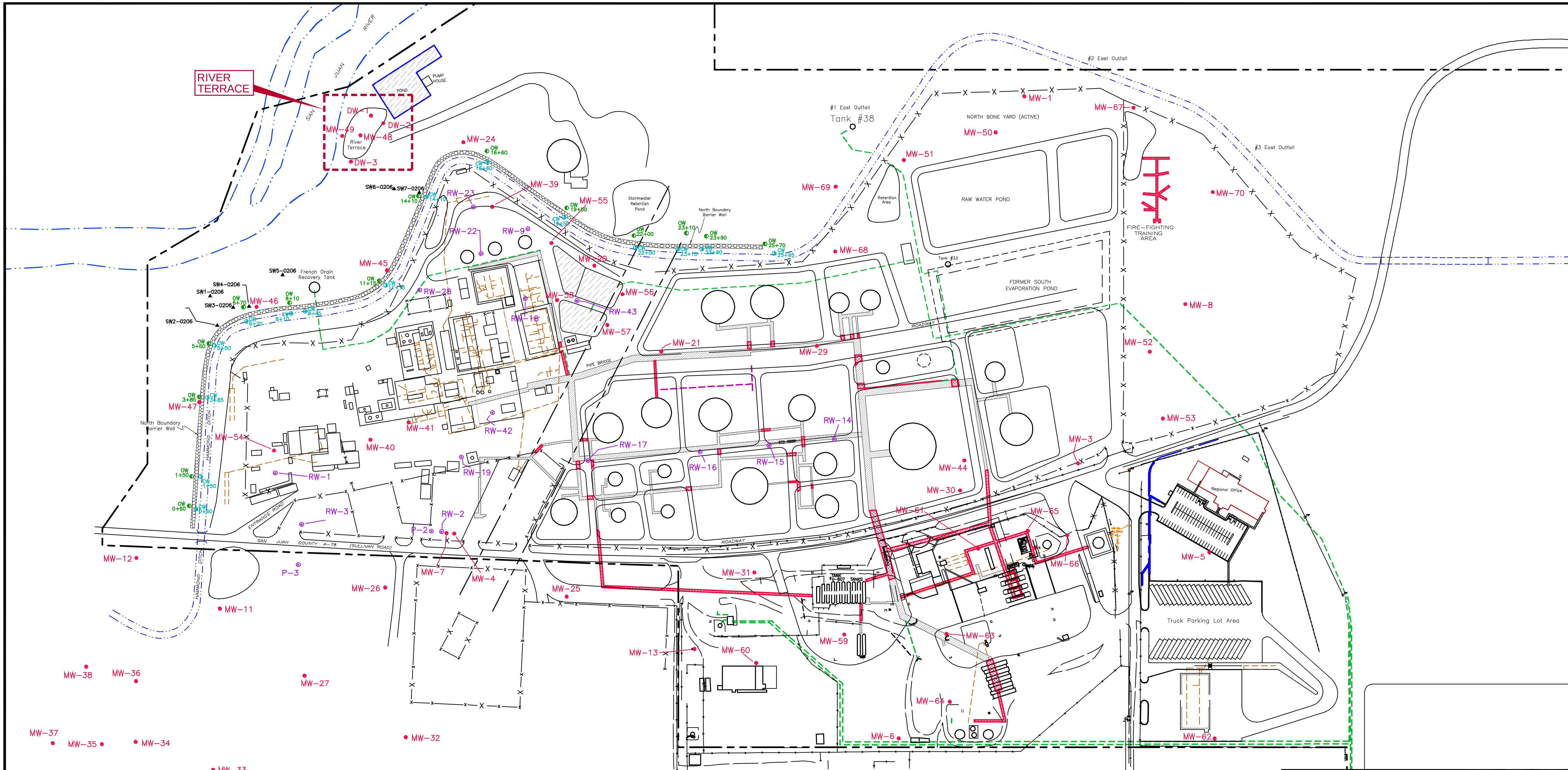
WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining	DATE:08/27/14	FILE: WestRef-dA01

FIGURE 1
SITE LOCATION MAP
BLOOMFIELD TERMINAL

DiSorbo
Environmental Consulting Firm

8501 N. MoPac Expy.
Suite 300
Austin, Texas 78759


RIVER TERRACE
SAN JUAN RIVER
POND
PUMP HOUSE
DW-1
DW-2
DW-3
MW-48
MW-49
River Terrace
Stormwater Retention Pond
North Boundary Barrier Wall
French Drain Recovery Tank
Retention Area
RAW WATER POND
NORTH BONE YARD (ACTIVE)
FORMER SOUTH EVAPORATION POND
FIRE-FIGHTING TRAINING AREA
Tank #38
Tank #33
#1 East Outfall
#2 East Outfall
#3 East Outfall
Regional Office
Truck Parking Lot Area
PIPE BRIDGE
ROADWAY
ENTRANCE ROAD
SAN JUAN COUNTY A-78 (SULLIVAN ROAD)
HAMMOND DITCH
MW-1
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-11
MW-12
MW-13
MW-20
MW-21
MW-24
MW-25
MW-26
MW-27
MW-29
MW-30
MW-31
MW-32
MW-33
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MW-41
MW-44
MW-45
MW-46
MW-47
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MW-59
MW-60
MW-61
MW-62
MW-63
MW-64
MW-65
MW-66
MW-67
MW-68
MW-69
MW-70
RW-1
RW-2
RW-3
RW-9
RW-14
RW-15
RW-16
RW-17
RW-18
RW-19
RW-22
RW-23
RW-28
RW-42
RW-43
P-2
P-3
SW1-0206
SW2-0206
SW3-0206
SW4-0206
SW5-0206
SW6-0206
SW7-0206
OW 0+60
OW 1+50
OW 3+85
OW 5+60
OW 8+10
OW 11+10
OW 14+10
OW 16+60
OW 19+60
OW 22+00
OW 23+10
OW 23+90
OW 25+70

LEGEND

MW-1	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER		UNDER GROUND PIPING (HYDROCARBONS)
RW-1	RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER		ABOVE GROUND PIPE-WAY
OW 1+50	OBSERVATION WELL LOCATION AND IDENTIFICATION NUMBER		SLURRY BARRIER WALL
CW 1+50	COLLECTION WELL LOCATION AND IDENTIFICATION NUMBER		FORMER TANK LOCATION
SW1-0206	SUMP WELL LOCATION AND IDENTIFICATION NUMBER		ABANDONED UNDERGROUND PIPING
P-2	PIEZOMETER IDENTIFICATION		UNDER GROUND WASTEWATER PIPING
	WESTERN PROPERTY BOUNDARY		UNDER GROUND DRAIN PIPING
—X—X—	FENCE		

0 300
SCALE IN FEET

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining | DATE:02/03/18 | FILE:WestRef-dB157

FIGURE 2
FACILITY SITE PLAN
RIVER TERRACE ANNUAL REPORT
BLOOMFIELD TERMINAL

DiSorbo
Environmental Consulting Firm
8501 N. MoPac Expy.
Suite 300
Austin, Texas 78759

Map Source: Google Aerial, 03-15-2015.

N

0 50
SCALE IN FEET

LEGEND

- BV-1 — BIOVENTING WELL LOCATION AND IDENTIFICATION NUMBER
- DW-2 — ACTIVE DE-WATERING WELL LOCATION AND IDENTIFICATION NUMBER
- DW-1 — INACTIVE DE-WATERING WELL LOCATION AND IDENTIFICATION NUMBER
- MW-48 — MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- TP-5 — TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining | DATE:02/03/18 | FILE:WestRef-dB158

FIGURE 3
RIVER TERRACE WELL LOCATION MAP
RIVER TERRACE ANNUAL REPORT
BLOOMFIELD TERMINAL

DiSorbo
Environmental Consulting Firm
8501 N. MoPac Expy.
Suite 300
Austin, Texas 78759

Map Source: Google Aerial, 03-15-2015.

N

0 30

SCALE IN FEET

LEGEND

BV-1	BIOVENTING WELL LOCATION AND IDENTIFICATION NUMBER
DW-2	ACTIVE DE-WATERING WELL LOCATION AND IDENTIFICATION NUMBER
DW-1	INACTIVE DE-WATERING WELL LOCATION AND IDENTIFICATION NUMBER
MW-48	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
TP-5	TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER

Western Refining

WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining	DATE:02/03/18	FILE:WestRef-dA131

FIGURE 4

BIOVENT / AIR SPARGE SYSTEM LAYOUT
RIVER TERRACE ANNUAL REPORT
BLOOMFIELD TERMINAL

DiSorbo
Environmental Consulting Firm

8501 N. MoPac Expy.
Suite 300
Austin, Texas 78759

Map Source: Google Aerial, 03-15-2015.

0 50
SCALE IN FEET

LEGEND

BV-1 BIOVENTING WELL LOCATION AND IDENTIFICATION NUMBER

DW-2 ACTIVE DE-WATERING WELL LOCATION AND IDENTIFICATION NUMBER

DW-1 INACTIVE DE-WATERING WELL LOCATION AND IDENTIFICATION NUMBER

MW-48 MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

TP-5 TEMPORARY WELL LOCATION AND IDENTIFICATION NUMBER

B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	XYLENES
DRO	DIESEL RANGE ORGANICS

NOTE:
SAMPLES COLLECTED AUGUST 2018, EXCEPT TP-5 AND TP-9 COLLECTED OCTOBER 2018

NR 1 NOT REQUIRED (BI-ANNUAL SAMPLING)

NR 2 NOT REQUIRED (APPROVAL WITH DIRECTION - MAY 2011)
(ALL CONCENTRATIONS IN mg/L)

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining | DATE:02/05/19 | FILE:WestRef-dB204

FIGURE 5
GROUNDWATER BTEX CONCENTRATION MAP
RIVER TERRACE ANNUAL REPORT
BLOOMFIELD TERMINAL

DiSorbo
Environmental Consulting Firm
8501 N. MoPac Expy.
Suite 300
Austin, Texas 78759

Appendices

Appendix A Field Methods

Appendix B Analytical Reports

Appendix A

Field Methods

Appendix A - Field Methods

Groundwater Sampling – Low-Flow Purging and Sampling

Equipment and Supplies

- Job Safety Analysis Form
- Safe Work Permit
- Well Sampling Worksheet
- Portable tank and discharge line for waste water
- Disposable Nitrile Gloves
- Work table and chair
- Plastic sheeting
- Alconox soap (or similar)
- Clean 5-gallon bucket and lid for soap/potable water mixture
- 5-gallon bucket for rinse water
- Distilled water
- Interface Probe
- YSI Professional Plus water quality meter (or similar)
- Calibration standards for water quality meter
- Flow-thru cell for water quality meter
- Peristaltic pump – Geopump II with EZ Load II pumphead and case
- 12 Volt battery and charger
- Flex Silicone Tubing – 15 feet
- Rigid Polyethylene Tubing – 1/4 – inch – 170 feet
- Decontaminated PVC piping
- Zipties
- Electrical tape
- Measuring container
- 5-gallon bucket for purged water
- Bottle kits with preservatives (provided by contract laboratory)
- Labels for sample bottles
- Permanent marker
- Chain-of-custody forms
- Cooler(s) ice
- Sealable plastic bags – 1 gallon
- Garbage bags
- Paper towels
- Shipping tape / duct tape

Water Quality Parameters

Water quality parameters are measured using an YSI Professional Plus water quality meter attached to a flow-thru cell. Calibration of the YSI Professional Plus occurs at the beginning of each day of sampling. The probe is powered on and allowed to stabilize. The calibration menu is selected. The LCD screen runs through a list of selections to specify units, calibration solutions, etc. The calibrations procedures outlined in the YSI Professional Plus instruction manual are followed.

Electrical conductance, oxidation-reduction potential (ORP), pH, temperature, and dissolved oxygen are monitored during purging. The water quality meter and flow-thru cell are rinsed with potable water before and after calibration and after each sampling location.

Fluid Level Measurements

All water/product levels are determined to an accuracy of 0.01 foot using a Geotech Interface Meter. The technician records separate phase hydrocarbon, depth to water, and total well depth using this probe. The total well depth should be measured and recorded after the collection of the samples and the removal of the tubing. The probe and line are decontaminated with a soap and potable water mixture. The probe and line are triple rinsed with distilled water and wiped dry with paper towels. The probe is decontaminated after each sampling location.

Installation of Equipment

The peristaltic pump tubing is placed in the approximate mid-portion of the screened interval of the well. Prior to initiation of pumping, a properly decontaminated water level meter should be lowered into the well to monitor the static water level prior to and during the purging process. Ideally, there should be only a slight and stable drawdown of the water column after pumping begins.

The following step-by-step procedures describe the process of purging with a peristaltic pump:

1. Unfold work table and cover surface with clean plastic sheeting that is either taped or clamped down. Place pump, flow-thru cell, and water quality meter on table.

2. Cut a length of rigid tubing equal to approximate one foot from the bottom of the well plus an additional ten feet. Attach a 3-feet section of decontaminated PVC pipe to the end of the tubing with zipties. The PVC pipe adds weight to the tubing for a more accurate positioning of the tubing intake. Lower the end of the tubing into the well until the end of the tubing is positioned approximately in the mid-portion of the screened interval of the well. Secure the tubing to the well casing or other secure object using electrician's tape or a ziptie. This will prevent the tubing from being lost in the well should the tubing detach from the pump head.

3. Place one end of the rigid tubing existing the well into one end of silicone flexible tubing (approximately one foot in length). Proper sizing of the tubing should allow for a snug

fit of the rigid tubing inside the flexible tubing mounted in the pump head. This connection will be positioned on the vacuum side of the peristaltic pump.

4. Place the flexible tubing in the pump head and lock in place.

5. Cut two pieces of flexible tubing (four inches in length) and attach them to the flow thru cell.

6. Cut a 3-feet section of rigid tubing and insert it into the discharge side of the flex tubing which has been locked into the pump. Insert the other end of the rigid tubing into the flex tubing on the intake port (bottom port) of the flow thru cell.

7. Cut a 3-feet section of rigid tubing and insert it into flex tubing that is connected to the discharge port (top port) on the flow thru cell. Clamp the free end of the tubing onto the inside of a plastic bucket to be used to contain the purged water.

8. Lower the interface probe into the well and position the probe approximately 6-inches below the top of the fluid column and turn the probe on.

9. Turn on the water quality meter.

10. Turn on the pump to produce a vacuum on the well side of the pump head and begin the purge. Adjust the pump speed to pump as slow as possible. Observe pump direction to ensure that a vacuum is being applied to the purge line. If the purge line is being pressurized, either switch the tubing at the pump head or reverse the polarity of the cables on the pump or on the battery.

11. Introducing the tubing into the screened interval may dislodge sediment or fines which may be purged/vacuumed through the line. Observe the fluid in the rigid tubing and stop the purging if sediment or fines have entered the tubing. Disconnect the rigid tubing from intake of the flow-thru cell and turn the pump back on to direct the water to the purge bucket and not the flow-thru cell. Once the sediment has been removed from the line turn off the pump and reconnect the rigid line to the intake port of the flow-thru cell.

12. Allow the flow-thru cell to fill up and begin to discharge to the purged water bucket. Measure the amount of groundwater being purged in one minute. The target flow rate is 0.1 liter per minute.

13. Begin recording the water quality parameters and collect readings every three minutes. If the pumping rate exceeds the recovery rate of the well, lower the tubing into the well, as needed, until the drawdown stabilizes. The end of the tubing should not be lowered to a depth less than one foot from the bottom of the well.

Purge Volume Criteria

The purge water criteria will be project specific and will not be based on volume but rather only on groundwater chemistry. An adequate purge is achieved when the pH and specific conductance of the ground water have stabilized.

Because groundwater temperature is subject to rapid changes when collected for parameter measurement, its usefulness is subject to question for the purpose of determining parameter stability. Even though temperature may or may not be used to determine stability during well purging, it is still advisable to record the sample temperature, along with the other groundwater chemistry parameters during well purging, as it may be needed to interpret other chemical parameter results in some situations.

Stabilization occurs when, for at least three consecutive measurements, the pH remains constant within 0.1 Standard Unit (SU) and specific conductance varies no more than approximately 10 percent. Other parameters, such as dissolved oxygen (DO), may also be used as a purge adequacy parameter. Normal goals for DO are 0.2 mg/L or 10% saturation, whichever is greater. DO measurements must be conducted using either a flow-through cell or an over-topping cell to minimize or reduce any oxygenation of the sample during measurement. Oxidation Reduction Potential (ORP) should not be used as a purge stabilization parameter but may be measured during purging to obtain the measurement of record for ORP for the sampling event.

A minimum of three total sets of measurements are considered to be adequate to document stability of parameters. The measurements should be taken frequently enough (three-minute intervals) to provide a sufficient number of measurements to evaluate stability.

If five sets of measurements (15 minutes) have been collected and the chemical parameters have not stabilized according to the above criteria, purging should be discontinued and the well should be sampled.

Sampling Procedures

After purging of the well is completed, the groundwater collected directly into the laboratory-provided sample containers. The rigid tubing that connects the pump to the intake of the flow-thru cell should be cut in half. The samples are not collected after the water has flowed thru the flow-thru cell.

The sample containers will be filled in the following order based on volatilization sensitivity.

- Volatile organic compounds – Three 40-ml glass vials with Teflon septa will be used. Each vial will be filled so that it has a positive meniscus and the cap screwed on carefully to avoid leaving any airspace in the vial. If an air bubble forms in the bottle, an additional separate sample will be collected.

- Semi-volatile organic compounds – One or two, 1-liter amber glass containers with Teflon-lined lids will be used to collect the sample.

- Total Metals – One, 500-ml or 1-liter plastic container. The sample will be preserved to pH less than 2 using nitric acid.

- Dissolved Metals – One 500-ml or 1-liter plastic container. The sample will be field filtered and placed in a container with preservative.

- Inorganic Parameters – The containers for the inorganic parameters such as nitrite, nitrate, total dissolved solids, etc. will be filled at the end and will vary in size and preservation methods.

Once filled and sealed, the sample containers will be labelled with the well number. The sample designation will be cross-referenced to field documents that describe the locations of the samples. The documents include site maps, well sampling forms, chain-of-custody forms, field notebook and well logs.

The date and time the sample is collected and the sampler's name/initials will be indicated on the label. All labels will be made in waterproof ink and then covered with clear packaging tape to minimize the potential loss of sample identity.

The sample containers will be secured in bubble wrap and then placed in new sealable bags. The bags will be placed into a cooler filled with ice packed in sealable bags. All samples will be kept cold (at 4^{o}C or below) and delivered by hand, transported to the laboratory or transported by overnight courier under standard custody protocols. Shipment of samples to the laboratory will be done as soon as possible.

For those coolers shipped to a laboratory, bubble wrap will be placed on the bottom and sides of the cooler to minimize breakage. A clean, plastic garbage bag will then be placed in the cooler. The sample containers secured in bubble wrap and sealable bags will then be placed inside the garbage bags. Ice packed in sealable bags will be placed around the sample containers until the cooler is filled. The garbage bag will be sealed with a zip tie and the excess portion will be cut off. The chain of custody form (minus the sampler's copy) will be placed in a sealable bag and then taped to the inside of the top of the cooler. The cooler will be closed and secured with reinforced shipping tape or duct tape. A custody seal will be signed and dated and placed across the gap formed between the cooler lid and the shell of the cooler. If the cooler is equipped with a drain spout the spout must be closed and covered with tape to prevent accidental opening.

All groundwater samples will be collected, as close to the well head as is practical. Water removed during the sampling will be added to the purge water bucket.

Quality Assurance Samples

Quality assurance samples will be collected during the collection of groundwater samples. The collection of these will be project specific:

- Duplicate Sample – One duplicate sample of will be collected per each sampling event. The analyses conducted on the duplicate sample will be the same as those conducted on the groundwater samples. The sample and its duplicate name will be recorded on the groundwater sampling worksheet.

- Trip Blank – One trip blank be submitted for each shipment of samples. The trip blank will be provided by the laboratory and is maintained in the cooler at all times. Trip blanks are not opened. The trip blanks for each cooler will consist of two distilled water-filled 40-ml glass vials with Teflon-lined septum caps and hydrochloric acid preservative

(VOA vials). A trip blank will not be used if volatile organic constituents are not part of the analytical suite.

- Field Blank – One field blank will be obtained per each sampling event. The field blank will be analyzed for the same constituents being analyzed for those samples collected on that specific day. At a representative area the sample containers will be filled with distilled water.

- Equipment Blank – One equipment blank will be obtained per each sampling event. The equipment blank will be analyzed for the same constituents being analyzed for those samples collected on that specific day.

Post Sampling Procedures

After the samples have been collected and packed in coolers the following steps will be taken.

1. Cut zipties and remove the tubing from the well and from the peristaltic pump and place in trash bags.
2. Measure the total well depth and record the data on the well sampling worksheet. Decontaminate the Interface probe by washing with soap and potable water and triple rinsing with distilled water.
3. Discard the water in the flow-thru cell into the purged water bucket. Remove the water quality sonde from the flow-thru cell and rinse with potable water. Install the protective cover, dry off sonde and water quality meter and store in case.
4. Decontaminate the flow-thru cell with soap and potable water and triple rinse with distilled water. Dry off flow-thru cell and store in case.
5. Remove plastic sheeting from table and discard.
6. Empty purge water bucket into portable tank. The tank will be emptied into the facility waste water treatment system at the end of the sampling day or if it becomes full. All disposable sampling equipment, supplies, and non-reusable personal protective equipment will be placed in the appropriate container as directed by the facility's environmental staff.

Appendix B

Analytical Reports

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

February 04, 2019

Allen Hains

Andeavor Bloomfield
111 CR 4990
Bloomfield, NM 87413
TEL: (505) 801-5616
FAX

RE: River Terrace 10 17 18 OrderNo.: 1810A00

Dear Allen Hains:

Hall Environmental Analysis Laboratory received 6 sample(s) on 10/18/2018 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued October 24, 2018.

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. 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 Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1810A00**
Date Reported: **2/4/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Andeavor Bloomfield
Client Sample ID: EB01
Project: River Terrace 10 17 18
Collection Date: 10/17/2018 9:10:00 AM
Lab ID: 1810A00-001
Matrix: AQUEOUS
Received Date: 10/18/2018 7:30:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	0.63	1.0		mg/L	1	10/22/2018 1:10:12 PM	41094
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	10/22/2018 1:10:12 PM	41094
Surr: DNOP	117	0	76.7-135		%Rec	1	10/22/2018 1:10:12 PM	41094
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.024	0.050		mg/L	1	10/19/2018 12:55:30 P	G55023
Surr: BFB	91.6	0	69.3-150		%Rec	1	10/19/2018 12:55:30 P	G55023
EPA METHOD 8021B: VOLATILES							Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.21	2.5		µg/L	1	10/19/2018 12:55:30 P	B55023
Benzene	ND	0.21	1.0		µg/L	1	10/19/2018 12:55:30 P	B55023
Toluene	ND	0.19	1.0		µg/L	1	10/19/2018 12:55:30 P	B55023
Ethylbenzene	ND	0.18	1.0		µg/L	1	10/19/2018 12:55:30 P	B55023
Xylenes, Total	ND	0.51	2.0		µg/L	1	10/19/2018 12:55:30 P	B55023
Surr: 4-Bromofluorobenzene	105	0	76.6-136		%Rec	1	10/19/2018 12:55:30 P	B55023
EPA 200.8: METALS							Analyst: **DBK**	
Lead	ND	0.00023	0.00050		mg/L	1	10/23/2018 1:41:22 PM	B55099

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Andeavor Bloomfield
Client Sample ID: TP-5
Project: River Terrace 10 17 18
Collection Date: 10/17/2018 9:55:00 AM
Lab ID: 1810A00-002
Matrix: AQUEOUS
Received Date: 10/18/2018 7:30:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: **lrm**	
Diesel Range Organics (DRO)	1.7	0.63	1.0		mg/L	1	10/22/2018 1:34:34 PM	41094
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	10/22/2018 1:34:34 PM	41094
Surr: DNOP	119	0	76.7-135		%Rec	1	10/22/2018 1:34:34 PM	41094
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	1.5	0.024	0.050		mg/L	1	10/19/2018 1:18:13 PM	G55023
Surr: BFB	462	0	69.3-150	S	%Rec	1	10/19/2018 1:18:13 PM	G55023
EPA METHOD 8021B: VOLATILES							Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.21	2.5		µg/L	1	10/19/2018 1:18:13 PM	B55023
Benzene	ND	0.21	1.0		µg/L	1	10/19/2018 1:18:13 PM	B55023
Toluene	ND	0.19	1.0		µg/L	1	10/19/2018 1:18:13 PM	B55023
Ethylbenzene	69	0.18	1.0		µg/L	1	10/19/2018 1:18:13 PM	B55023
Xylenes, Total	85	0.51	2.0		µg/L	1	10/19/2018 1:18:13 PM	B55023
Surr: 4-Bromofluorobenzene	240	0	76.6-136	S	%Rec	1	10/19/2018 1:18:13 PM	B55023
EPA 200.8: METALS							Analyst: **DBK**	
Lead	0.013	0.00023	0.00050		mg/L	1	10/24/2018 4:22:37 PM	41155

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Andeavor Bloomfield
Client Sample ID: TP-9
Project: River Terrace 10 17 18
Collection Date: 10/17/2018 11:15:00 AM
Lab ID: 1810A00-003
Matrix: AQUEOUS
Received Date: 10/18/2018 7:30:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	0.63	1.0		mg/L	1	10/22/2018 1:58:53 PM	41094
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	10/22/2018 1:58:53 PM	41094
Surr: DNOP	114	0	76.7-135		%Rec	1	10/22/2018 1:58:53 PM	41094
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	0.056	0.024	0.050		mg/L	1	10/19/2018 1:40:48 PM	G55023
Surr: BFB	124	0	69.3-150		%Rec	1	10/19/2018 1:40:48 PM	G55023
EPA METHOD 8021B: VOLATILES							Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.21	2.5		µg/L	1	10/19/2018 1:40:48 PM	B55023
Benzene	ND	0.21	1.0		µg/L	1	10/19/2018 1:40:48 PM	B55023
Toluene	ND	0.19	1.0		µg/L	1	10/19/2018 1:40:48 PM	B55023
Ethylbenzene	ND	0.18	1.0		µg/L	1	10/19/2018 1:40:48 PM	B55023
Xylenes, Total	ND	0.51	2.0		µg/L	1	10/19/2018 1:40:48 PM	B55023
Surr: 4-Bromofluorobenzene	122	0	76.6-136		%Rec	1	10/19/2018 1:40:48 PM	B55023
EPA 200.8: METALS							Analyst: **DBK**	
Lead	0.00026	0.00023	0.00050	J	mg/L	1	10/24/2018 4:24:58 PM	41155

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Andeavor Bloomfield
Client Sample ID: FB01
Project: River Terrace 10 17 18
Collection Date: 10/17/2018 11:30:00 AM
Lab ID: 1810A00-004
Matrix: AQUEOUS
Received Date: 10/18/2018 7:30:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	0.63	1.0		mg/L	1	10/22/2018 2:23:09 PM	41094
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	10/22/2018 2:23:09 PM	41094
Surr: DNOP	117	0	76.7-135		%Rec	1	10/22/2018 2:23:09 PM	41094
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.024	0.050		mg/L	1	10/19/2018 5:27:07 PM	G55023
Surr: BFB	92.9	0	69.3-150		%Rec	1	10/19/2018 5:27:07 PM	G55023
EPA METHOD 8021B: VOLATILES							Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.21	2.5		µg/L	1	10/19/2018 5:27:07 PM	B55023
Benzene	ND	0.21	1.0		µg/L	1	10/19/2018 5:27:07 PM	B55023
Toluene	ND	0.19	1.0		µg/L	1	10/19/2018 5:27:07 PM	B55023
Ethylbenzene	ND	0.18	1.0		µg/L	1	10/19/2018 5:27:07 PM	B55023
Xylenes, Total	ND	0.51	2.0		µg/L	1	10/19/2018 5:27:07 PM	B55023
Surr: 4-Bromofluorobenzene	107	0	76.6-136		%Rec	1	10/19/2018 5:27:07 PM	B55023
EPA 200.8: METALS							Analyst: **DBK**	
Lead	ND	0.00023	0.00050		mg/L	1	10/23/2018 1:48:28 PM	B55099

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Andeavor Bloomfield
Client Sample ID: DUP01
Project: River Terrace 10 17 18
Collection Date: 10/17/2018
Lab ID: 1810A00-005
Matrix: AQUEOUS
Received Date: 10/18/2018 7:30:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: **lrm**	
Diesel Range Organics (DRO)	1.7	0.63	1.0		mg/L	1	10/22/2018 2:47:39 PM	41094
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	10/22/2018 2:47:39 PM	41094
Surr: DNOP	122	0	76.7-135		%Rec	1	10/22/2018 2:47:39 PM	41094
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	1.6	0.024	0.050		mg/L	1	10/19/2018 5:49:40 PM	G55023
Surr: BFB	459	0	69.3-150	S	%Rec	1	10/19/2018 5:49:40 PM	G55023
EPA METHOD 8021B: VOLATILES							Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.21	2.5		µg/L	1	10/19/2018 5:49:40 PM	B55023
Benzene	ND	0.21	1.0		µg/L	1	10/19/2018 5:49:40 PM	B55023
Toluene	ND	0.19	1.0		µg/L	1	10/19/2018 5:49:40 PM	B55023
Ethylbenzene	90	0.18	1.0		µg/L	1	10/19/2018 5:49:40 PM	B55023
Xylenes, Total	120	0.51	2.0		µg/L	1	10/19/2018 5:49:40 PM	B55023
Surr: 4-Bromofluorobenzene	244	0	76.6-136	S	%Rec	1	10/19/2018 5:49:40 PM	B55023
EPA 200.8: METALS							Analyst: **DBK**	
Lead	0.013	0.00023	0.00050		mg/L	1	10/24/2018 4:27:18 PM	41155

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Andeavor Bloomfield
Client Sample ID: TRIP BLANK
Project: River Terrace 10 17 18
Collection Date:
Lab ID: 1810A00-006
Matrix: TRIP BLANK
Received Date: 10/18/2018 7:30:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.024	0.050		mg/L	1	10/19/2018 6:12:14 PM	G55023
Surr: BFB	96.3	0	69.3-150		%Rec	1	10/19/2018 6:12:14 PM	G55023
EPA METHOD 8021B: VOLATILES							Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.21	2.5		µg/L	1	10/19/2018 6:12:14 PM	B55023
Benzene	ND	0.21	1.0		µg/L	1	10/19/2018 6:12:14 PM	B55023
Toluene	ND	0.19	1.0		µg/L	1	10/19/2018 6:12:14 PM	B55023
Ethylbenzene	ND	0.18	1.0		µg/L	1	10/19/2018 6:12:14 PM	B55023
Xylenes, Total	ND	0.51	2.0		µg/L	1	10/19/2018 6:12:14 PM	B55023
Surr: 4-Bromofluorobenzene	111	0	76.6-136		%Rec	1	10/19/2018 6:12:14 PM	B55023

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810A00**

04-Feb-19

Client: Andeavor Bloomfield

Project: River Terrace 10 17 18

Sample ID	**MB**	SampType:	**MBLK**	TestCode:	**EPA 200.8: Metals**					
Client ID:	**PBW**	Batch ID:	**B55099**	RunNo:	**55099**					
Prep Date:		Analysis Date:	**10/23/2018**	SeqNo:	**1831432**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.00050								

Sample ID	**LCS**	SampType:	**LCS**	TestCode:	**EPA 200.8: Metals**					
Client ID:	**LCSW**	Batch ID:	**B55099**	RunNo:	**55099**					
Prep Date:		Analysis Date:	**10/23/2018**	SeqNo:	**1831434**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.012	0.00050	0.01250	0	97.7	85	115			

Sample ID	**1810A00-001CMS**	SampType:	**MS**	TestCode:	**EPA 200.8: Metals**					
Client ID:	**EB01**	Batch ID:	**B55099**	RunNo:	**55099**					
Prep Date:		Analysis Date:	**10/23/2018**	SeqNo:	**1831437**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.012	0.00050	0.01250	0	98.2	70	130			

Sample ID	**1810A00-001CMSD**	SampType:	**MSD**	TestCode:	**EPA 200.8: Metals**					
Client ID:	**EB01**	Batch ID:	**B55099**	RunNo:	**55099**					
Prep Date:		Analysis Date:	**10/23/2018**	SeqNo:	**1831438**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.012	0.00050	0.01250	0	98.0	70	130	0.240	20	

Sample ID	**LLLCS**	SampType:	**LCSLL**	TestCode:	**EPA 200.8: Metals**					
Client ID:	**BatchQC**	Batch ID:	**B55099**	RunNo:	**55099**					
Prep Date:		Analysis Date:	**10/23/2018**	SeqNo:	**1831449**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00049	0.00050	0.0005000	0	97.9	50	150			J

Sample ID	**MB-41155**	SampType:	**MBLK**	TestCode:	**EPA 200.8: Metals**					
Client ID:	**PBW**	Batch ID:	**41155**	RunNo:	**55133**					
Prep Date:	**10/23/2018**	Analysis Date:	**10/24/2018**	SeqNo:	**1832838**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.00050								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810A00**

04-Feb-19

Client: Andeavor Bloomfield

Project: River Terrace 10 17 18

Sample ID	**MSLLLCS-41155**	SampType:	**LCSLL**		TestCode:	**EPA 200.8: Metals**				
Client ID:	**BatchQC**	Batch ID:	**41155**		RunNo:	**55133**				
Prep Date:	**10/23/2018**	Analysis Date:	**10/24/2018**		SeqNo:	**1832839**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00052	0.00050	0.0005000	0	103	50	150			

Sample ID	**MSLCS-41155**	SampType:	**LCS**		TestCode:	**EPA 200.8: Metals**				
Client ID:	**LCSW**	Batch ID:	**41155**		RunNo:	**55133**				
Prep Date:	**10/23/2018**	Analysis Date:	**10/24/2018**		SeqNo:	**1832840**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.013	0.00050	0.01250	0	101	85	115			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810A00**

04-Feb-19

Client: Andeavor Bloomfield

Project: River Terrace 10 17 18

Sample ID	**LCS-41094**	SampType:	**LCS**		TestCode:	**EPA Method 8015M/D: Diesel Range**					
Client ID:	**LCSW**	Batch ID:	**41094**		RunNo:	**55057**					
Prep Date:	**10/19/2018**	Analysis Date:	**10/22/2018**		SeqNo:	**1830557**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)		5.1	1.0	5.000	0	103	70	130			
Surr: DNOP		0.51		0.5000		103	76.7	135			

Sample ID	**MB-41094**	SampType:	**MBLK**		TestCode:	**EPA Method 8015M/D: Diesel Range**					
Client ID:	**PBW**	Batch ID:	**41094**		RunNo:	**55057**					
Prep Date:	**10/19/2018**	Analysis Date:	**10/22/2018**		SeqNo:	**1830558**	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		1.1		1.000		106	76.7	135			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810A00**

04-Feb-19

Client: Andeavor Bloomfield

Project: River Terrace 10 17 18

Sample ID **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **G55023**	RunNo: **55023**
Prep Date:	Analysis Date: **10/19/2018**	SeqNo: **1829534** 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	18		20.00		92.3	69.3	150			

Sample ID **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **G55023**	RunNo: **55023**
Prep Date:	Analysis Date: **10/19/2018**	SeqNo: **1829535** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.47	0.050	0.5000	0	94.8	79.5	127			
Surr: BFB	21		20.00		107	69.3	150			

Sample ID **1810A00-002AMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **TP-5**	Batch ID: **G55023**	RunNo: **55023**
Prep Date:	Analysis Date: **10/19/2018**	SeqNo: **1829545** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	1.9	0.050	0.5000	1.535	76.3	52.5	149			
Surr: BFB	94		20.00		472	69.3	150			S

Sample ID **1810A00-002AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **TP-5**	Batch ID: **G55023**	RunNo: **55023**
Prep Date:	Analysis Date: **10/19/2018**	SeqNo: **1829546** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	1.9	0.050	0.5000	1.535	65.8	52.5	149	2.77	20	
Surr: BFB	81		20.00		406	69.3	150	0	0	S

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810A00**

04-Feb-19

Client: Andeavor Bloomfield

Project: River Terrace 10 17 18

Sample ID **RB**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBW**	Batch ID: **B55023**	RunNo: **55023**
Prep Date:	Analysis Date: **10/19/2018**	SeqNo: **1829554** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	2.5								
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	21		20.00		103	76.6	136			

Sample ID **100NG BTEX LCS**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSW**	Batch ID: **B55023**	RunNo: **55023**
Prep Date:	Analysis Date: **10/19/2018**	SeqNo: **1829555** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	16	2.5	20.00	0	81.8	68.4	116			
Benzene	19	1.0	20.00	0	92.5	73.9	120			
Toluene	19	1.0	20.00	0	96.5	77.3	117			
Ethylbenzene	19	1.0	20.00	0	94.0	78.8	119			
Xylenes, Total	56	2.0	60.00	0	93.0	76.9	121			
Surr: 4-Bromofluorobenzene	22		20.00		109	76.6	136			

Sample ID **1810A00-003AMS**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **TP-9**	Batch ID: **B55023**	RunNo: **55023**
Prep Date:	Analysis Date: **10/19/2018**	SeqNo: **1829565** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	14	2.5	20.00	0	67.9	49.8	143			
Benzene	19	1.0	20.00	0	94.5	75	121			
Toluene	20	1.0	20.00	0	99.3	78.1	119			
Ethylbenzene	20	1.0	20.00	0	97.7	78.8	125			
Xylenes, Total	58	2.0	60.00	0	97.3	76.4	128			
Surr: 4-Bromofluorobenzene	25		20.00		127	76.6	136			

Sample ID **1810A00-003AMSD**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **TP-9**	Batch ID: **B55023**	RunNo: **55023**
Prep Date:	Analysis Date: **10/19/2018**	SeqNo: **1829566** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	16	2.5	20.00	0	78.3	49.8	143	14.4	20	
Benzene	18	1.0	20.00	0	92.4	75	121	2.19	20	
Toluene	19	1.0	20.00	0	96.5	78.1	119	2.83	20	
Ethylbenzene	19	1.0	20.00	0	94.5	78.8	125	3.36	20	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810A00**

04-Feb-19

Client: Andeavor Bloomfield

Project: River Terrace 10 17 18

Sample ID	**1810A00-003AMSD**	SampType:	**MSD**		TestCode:	**EPA Method 8021B: Volatiles**				
Client ID:	**TP-9**	Batch ID:	**B55023**		RunNo:	**55023**				
Prep Date:		Analysis Date:	**10/19/2018**		SeqNo:	**1829566**	Units:	**µg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Xylenes, Total	57	2.0	60.00	0	94.2	76.4	128	3.18	20	
Surr: 4-Bromofluorobenzene	27		20.00		133	76.6	136	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	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: ANDEAVOR BLOOMFIEL Work Order Number: 1810A00 RcptNo: 1

Received By: Victoria Zellar 10/18/2018 7:30:00 AM Victoria Zellar

Completed By: Ashley Gallegos 10/18/2018 11:45:37 AM

Reviewed By: EJM 10/18/18 Labeled by: JO 10/18/18

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH: 5
(<2 or >12 unless noted)
Adjusted? NO
Checked by: JO 10/18/18

Special Handling (if applicable)

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

Person Notified: ____ Date: ____
By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: ____
Client Instructions: ____

16. Additional remarks:

CUSTODY SEALS INTACT ON ALL SAMPLE BOTTLES/at 8/14/18

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.1	Good	Yes			
2	0.5	Good	Yes			

Chain-of-Custody Record

Client: **Andeavor - Bloomfield Terminal**

Mailing Address: **50 CR 4990**
Bloomfield, NM 87413

Phone #: **915-534-1483**

email or Fax#: **Allen.S.Hains@Andeavor.com**

QA/QC Package:
☐ Standard X Level 4 (Full Validation)
☐ Other _____
X EDD (Type) **EXCEL**

Turn-Around Time:
X Standard ☐ Rush _____

Project Name: **River Terrace**

Date: 10-17-18

Project #: **Annual Event**

PO# 12623266

Project Manager: **Allen Hains**

Sampler: **Tracy Payne**

On Ice: ☑ Yes ☐ No

Sample Temperature: 1.1, 0.5

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1810A00	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)	Air Bubbles (Y or N)
10/17/18	0910	H_2O	EB01	40ml VOA-5	HCl	-001			X							X		
				250 ml amber-1	Neat	-001			X									
				250 ml plastic-1	HNO_3	1							X					

Analysis Request

Date	Time	Relinquished by	Received by	Date	Time
10/17/18	1402		Christina Walters	10/17/18	1402
10/17/18	1814		Victoria Ballen VVZ 10/18/18	10/18/18	7:30

Remarks: See Analytical Methods and Target Analytes. VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: **Andeavor - Bloomfield Terminal**

Mailing Address: **50 CR 4990**
Bloomfield, NM 87413

Phone #: **915-534-1483**

email or Fax#: **Allen.S.Hains@Andeavor.com**

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
☐ Other _____
☒ EDD (Type) **EXCEL**

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name: **River Terrace**

Date: **10-17-18**

Project #: **Annual Event**

PO# 12623266

Project Manager: **Allen Hains**

Sampler: **Tracy Payne**

On Ice: ☑ Yes ☐ No

Sample Temperature: **1.1, 0.5**

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)					Air Bubbles (Y or N)
10/17/18	0955	H_2O	TP-5	40ml VOA-5	HCl	1810A00 -002			X							X						
				250 ml amber-1	Neat	1			X													
				250 ml plastic-1	HNO_3	1							X									

Date:	Time:	Relinquished by	Received by	Date	Time
10/17/18	1402			10/17/18	1402
10/17/18	1814		Courier	10/18/18	7:30

Remarks: See Analytical Methods and Target Analytes.
VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: **Andeavor - Bloomfield Terminal**

Mailing Address: **50 CR 4990**
Bloomfield, NM 87413

Phone #: **915-534-1483**

email or Fax#: **Allen.S.Hains@Andeavor.com**

QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: **River Terrace**

Date: 10-17-18

Project #: **Annual Event**
PO# 12623266

Project Manager: **Allen Hains**

Sampler: **Tracy Payne**
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.1, 0.5

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)	Air Bubbles (Y or N)
10/17/18	1115	H_2O	TP-9	40ml VOA-5	HCl	1810A00-003			X							X		
				250 ml amber-1	Neat				X									
				250 ml plastic-1	HNO_3								X					

Remarks: See Analytical Methods and Target Analytes.
VOC's Target List analyzed by EPA Method 8021B.

Date	Time	Relinquished by:	Received by	Date	Time
10/17/18	1402			10/17/18	1402
10/17/18	1814		VVZ 10/18/18 7:30	10/18/18	7:30

Chain-of-Custody Record

Client: Andeavor - Bloomfield Terminal

Mailing Address: 50 CR 4990

Bloomfield, NM 87413

Phone #: 915-534-1483

email or Fax#: Allen.S.Hains@Andeavor.com

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other ____

X EDD (Type) EXCEL

Turn-Around Time:

X Standard ☐ Rush

Project Name: River Terrace

Date: 10-17-18

Project #: Annual Event

PO# 12623266

Project Manager: Allen Hains

Sampler: Tracy Payne

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.1, 0.5

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1810A00	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)					Air Bubbles (Y or N)
10/17/18	1130	H_2O	FB01	40ml VOA-5	HCl	-004			X							X						
↓	↓	↓	↓	250 ml amber-1	Neat	↓			X													
↓	↓	↓	↓	250 ml plastic-1	HNO_3	↓							X									

Date	Time	Relinquished by	Received by	Date	Time
10/17/18	1402	[signature]	Christine Woods	10/17/18	1402
10/17/18	1814	[signature]	[signature] (Coyier WE 10/18/18)	10/18/18	7:30

Remarks: See Analytical Methods and Target Analytes. VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: **Andeavor - Bloomfield Terminal**

Mailing Address: **50 CR 4990**
Bloomfield, NM 87413

Phone #: **915-534-1483**

email or Fax#: **Allen.S.Hains@Andeavor.com**

QA/QC Package:
☐ Standard X Level 4 (Full Validation)
☐ Other
X EDD (Type) EXCEL

Turn-Around Time:
X Standard ☐ Rush

Project Name: **River Terrace**

Date: 10-17-18

Project #: **Annual Event**

PO# 12623266

Project Manager: **Allen Hains**

Sampler: **Tracy Payne**

On Ice: X Yes ☐ No

Sample Temperature: 1.1, 0.5

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)	Air Bubbles (Y or N)
10/17/18	—	H_2O	DUP01	40ml VOA-5	HCl	1810A00-005			X							X		
				250 ml amber-1	Neat				X									
				250 ml plastic-1	HNO_3								X					
10/17/18	—	H_2O	TRIP BLANK	40 mL VOA-3	HCl	-006										X		

Date	Time	Relinquished by:	Received by	Date	Time
10/17/18	1402			10/17/18	1402
10/17/18	1814			10/18/18	7:30

Remarks: See Analytical Methods and Target Analytes. VOC's Target List analyzed by EPA Method 8021B.

TABLE 2
Analytical Methods and Target Analytes
Facility-Wide Groundwater Monitoring Plan - June 2018
Western Refining Southwest, Inc. - Bloomfield Refinery

VOCs (EPA Method 8260B) [1]
- Target List
  - *Benzene*
  - *Toluene*
  - *Ethylbenzene*
  - *Xylenes*
  - *Methyl tert butyl ether (MTBE)*

SVOCs - (EPA Method 8270)
- Method List

TPH-GRO (EPA Method 8015B)
- Gasoline Range Organics

TPH-DRO (EPA Method 8015B)
- Diesel Range Organics
- Motor Oil Range Organics

Total Carbon Dioxide (Laboratory Calculated)
- Dissolved CO2

Specific Conductivity (EPA Method 120.1 or field measurement)
- Specific conductance

TDS (EPA Method 160.1 or field measurement)
- Total dissolved solids

General Chemistry - Anions (EPA Method 300.0)
- *Fluoride*
- *Chloride*
- *Bromide*
- *Nitrogen, Nitrite (as N)*
- *Nitrogen, Nitrate (as N)*
- *Phosphorous, Orthophosphate (As P)*
- *Sulfate*

General Chemistry - Alkalinity (EPA Method 310.1)
- *Alkalinity, Total*
- *Carbonate*
- *Bicarbonate*

Total Recoverable Metals (EPA Method 6010B/7470)
- Target List (not applicable to River Terrace Sampling Events)
  - *Arsenic*
  - *Barium*
  - *Cadmium*
  - *Chromium*
  - *Lead*
  - *Mercury*
  - *Selenium*
  - *Silver*
- Target List (for River Terrace Sampling Events Only)
  - *Lead*
  - *Mercury (DW-1 ONLY)*

Dissolved Metals (EPA Method 6010B / 7470)
- Target List (for Refinery Complex, Outfalls, and River)
  - *Arsenic*
  - *Barium*
  - *Cadmium*
  - *Calcium*
  - *Chromium*
  - *Copper*
  - *Iron*
  - *Lead*
  - *Magnesium*
  - *Manganese*
  - *Mercury*
  - *Potassium*
  - *Selenium*
  - *Silver*
  - *Sodium*
  - *Uranium*
  - *Zinc*

TPH = total petroleum hydrocarbons
GRO = gasoline range organics
VOCs = volatile organic compounds
DRO = diesel range organics
TDS = total dissolved solids

NOTES:

(1) VOCs Target List for River Terrace samples are analyzed by EPA Method 8021B per NMED's letter Approval with Direction dated June 16, 2009.

(2) Target List for San Juan River Terrace Monitoring Wells and Piezometer Wells only, per the River Terrace Bioventing System Monitoring Plan.

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

February 04, 2019

Allen Hains

Andeavor Bloomfield
111 CR 4990
Bloomfield, NM 87413
TEL: (915) 534-1483
FAX

RE: River Terrace 8 13 18 OrderNo.: 1808812

Dear Allen Hains:

Hall Environmental Analysis Laboratory received 11 sample(s) on 8/14/2018 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued September 11, 2018.

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. 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 Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Andeavor Bloomfield
Client Sample ID: MW-49
Project: River Terrace 8 13 18
Collection Date: 8/13/2018 8:10:00 AM
Lab ID: 1808812-001
Matrix: AQUEOUS
Received Date: 8/14/2018 7:00:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	0.31	0.40		mg/L	1	8/17/2018 11:03:00 PM	39845
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	8/17/2018 11:03:00 PM	39845
Surr: DNOP	81.3	0	76.6-135		%Rec	1	8/17/2018 11:03:00 PM	39845
EPA 6010B: TOTAL RECOVERABLE METALS							Analyst: **pmf**	
Lead	ND	0.0050	0.0050		mg/L	1	8/20/2018 11:33:52 AM	39852
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: **AG**	
Benzene	ND	0.17	1.0		µg/L	1	8/21/2018 3:45:05 PM	D53589
Toluene	ND	0.17	1.0		µg/L	1	8/21/2018 3:45:05 PM	D53589
Ethylbenzene	ND	0.22	1.0		µg/L	1	8/21/2018 3:45:05 PM	D53589
Methyl tert-butyl ether (MTBE)	ND	0.32	1.0		µg/L	1	8/21/2018 3:45:05 PM	D53589
Xylenes, Total	ND	0.64	1.5		µg/L	1	8/21/2018 3:45:05 PM	D53589
Surr: 4-Bromofluorobenzene	117	0	70-130		%Rec	1	8/21/2018 3:45:05 PM	D53589
Surr: Toluene-d8	96.9	0	70-130		%Rec	1	8/21/2018 3:45:05 PM	D53589
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **AG**	
Gasoline Range Organics (GRO)	0.019	0.0097	0.050	J	mg/L	1	8/21/2018 3:45:05 PM	B53589
Surr: BFB	104	0	70-130		%Rec	1	8/21/2018 3:45:05 PM	B53589

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Andeavor Bloomfield
Client Sample ID: TP-8
Project: River Terrace 8 13 18
Collection Date: 8/13/2018 9:00:00 AM
Lab ID: 1808812-002
Matrix: AQUEOUS
Received Date: 8/14/2018 7:00:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	0.31	0.40		mg/L	1	8/18/2018 12:09:00 AM	39845
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	8/18/2018 12:09:00 AM	39845
Surr: DNOP	83.1	0	76.6-135		%Rec	1	8/18/2018 12:09:00 AM	39845
EPA 6010B: TOTAL RECOVERABLE METALS							Analyst: **pmf**	
Lead	0.0068	0.0050	0.0050		mg/L	1	8/22/2018 3:59:34 PM	39852
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: **AG**	
Benzene	ND	0.87	5.0		µg/L	5	8/21/2018 4:54:56 PM	D53589
Toluene	ND	0.84	5.0		µg/L	5	8/21/2018 4:54:56 PM	D53589
Ethylbenzene	2.8	1.1	5.0	J	µg/L	5	8/21/2018 4:54:56 PM	D53589
Methyl tert-butyl ether (MTBE)	ND	1.6	5.0		µg/L	5	8/21/2018 4:54:56 PM	D53589
Xylenes, Total	ND	3.2	7.5		µg/L	5	8/21/2018 4:54:56 PM	D53589
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	5	8/21/2018 4:54:56 PM	D53589
Surr: Toluene-d8	96.4	0	70-130		%Rec	5	8/21/2018 4:54:56 PM	D53589
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **AG**	
Gasoline Range Organics (GRO)	2.1	0.048	0.25		mg/L	5	8/21/2018 4:54:56 PM	B53589
Surr: BFB	90.0	0	70-130		%Rec	5	8/21/2018 4:54:56 PM	B53589

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Andeavor Bloomfield
Client Sample ID: TP-6
Project: River Terrace 8 13 18
Collection Date: 8/13/2018 9:45:00 AM
Lab ID: 1808812-003
Matrix: AQUEOUS
Received Date: 8/14/2018 7:00:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	0.31	0.40		mg/L	1	8/21/2018 4:13:45 AM	39845
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	8/21/2018 4:13:45 AM	39845
Surr: DNOP	81.2	0	76.6-135		%Rec	1	8/21/2018 4:13:45 AM	39845
EPA 6010B: TOTAL RECOVERABLE METALS							Analyst: **pmf**	
Lead	ND	0.0050	0.0050		mg/L	1	8/22/2018 4:01:26 PM	39852
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: **AG**	
Benzene	ND	0.17	1.0		µg/L	1	8/21/2018 6:04:30 PM	D53589
Toluene	0.20	0.17	1.0	J	µg/L	1	8/21/2018 6:04:30 PM	D53589
Ethylbenzene	0.26	0.22	1.0	J	µg/L	1	8/21/2018 6:04:30 PM	D53589
Methyl tert-butyl ether (MTBE)	ND	0.32	1.0		µg/L	1	8/21/2018 6:04:30 PM	D53589
Xylenes, Total	ND	0.64	1.5		µg/L	1	8/21/2018 6:04:30 PM	D53589
Surr: 4-Bromofluorobenzene	125	0	70-130		%Rec	1	8/21/2018 6:04:30 PM	D53589
Surr: Toluene-d8	100	0	70-130		%Rec	1	8/21/2018 6:04:30 PM	D53589
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **AG**	
Gasoline Range Organics (GRO)	0.82	0.0097	0.050		mg/L	1	8/21/2018 6:04:30 PM	B53589
Surr: BFB	112	0	70-130		%Rec	1	8/21/2018 6:04:30 PM	B53589

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Andeavor Bloomfield
Client Sample ID: MW-48
Project: River Terrace 8 13 18
Collection Date: 8/13/2018 10:25:00 AM
Lab ID: 1808812-004
Matrix: AQUEOUS
Received Date: 8/14/2018 7:00:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	0.31	0.40		mg/L	1	8/21/2018 4:38:06 AM	39845
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	8/21/2018 4:38:06 AM	39845
Surr: DNOP	77.4	0	76.6-135		%Rec	1	8/21/2018 4:38:06 AM	39845
EPA 6010B: TOTAL RECOVERABLE METALS							Analyst: **pmf**	
Lead	0.012	0.0050	0.0050		mg/L	1	8/22/2018 4:03:07 PM	39852
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: **AG**	
Benzene	ND	0.17	1.0		µg/L	1	8/21/2018 6:27:35 PM	D53589
Toluene	ND	0.17	1.0		µg/L	1	8/21/2018 6:27:35 PM	D53589
Ethylbenzene	ND	0.22	1.0		µg/L	1	8/21/2018 6:27:35 PM	D53589
Methyl tert-butyl ether (MTBE)	ND	0.32	1.0		µg/L	1	8/21/2018 6:27:35 PM	D53589
Xylenes, Total	ND	0.64	1.5		µg/L	1	8/21/2018 6:27:35 PM	D53589
Surr: 4-Bromofluorobenzene	115	0	70-130		%Rec	1	8/21/2018 6:27:35 PM	D53589
Surr: Toluene-d8	96.3	0	70-130		%Rec	1	8/21/2018 6:27:35 PM	D53589
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **AG**	
Gasoline Range Organics (GRO)	0.29	0.0097	0.050		mg/L	1	8/21/2018 6:27:35 PM	B53589
Surr: BFB	102	0	70-130		%Rec	1	8/21/2018 6:27:35 PM	B53589

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Andeavor Bloomfield
Client Sample ID: Collection Gallery
Project: River Terrace 8 13 18
Collection Date: 8/13/2018 11:10:00 AM
Lab ID: 1808812-005
Matrix: AQUEOUS
Received Date: 8/14/2018 7:00:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	0.31	0.40		mg/L	1	8/21/2018 5:02:30 AM	39845
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	8/21/2018 5:02:30 AM	39845
Surr: DNOP	77.4	0	76.6-135		%Rec	1	8/21/2018 5:02:30 AM	39845
EPA 6010B: TOTAL RECOVERABLE METALS							Analyst: **pmf**	
Lead	ND	0.0050	0.0050		mg/L	1	8/20/2018 11:41:00 AM	39852
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: **AG**	
Benzene	ND	0.17	1.0		µg/L	1	8/21/2018 6:50:50 PM	D53589
Toluene	ND	0.17	1.0		µg/L	1	8/21/2018 6:50:50 PM	D53589
Ethylbenzene	ND	0.22	1.0		µg/L	1	8/21/2018 6:50:50 PM	D53589
Methyl tert-butyl ether (MTBE)	ND	0.32	1.0		µg/L	1	8/21/2018 6:50:50 PM	D53589
Xylenes, Total	ND	0.64	1.5		µg/L	1	8/21/2018 6:50:50 PM	D53589
Surr: 4-Bromofluorobenzene	117	0	70-130		%Rec	1	8/21/2018 6:50:50 PM	D53589
Surr: Toluene-d8	95.3	0	70-130		%Rec	1	8/21/2018 6:50:50 PM	D53589
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **AG**	
Gasoline Range Organics (GRO)	0.22	0.0097	0.050		mg/L	1	8/21/2018 6:50:50 PM	B53589
Surr: BFB	103	0	70-130		%Rec	1	8/21/2018 6:50:50 PM	B53589

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Andeavor Bloomfield
Client Sample ID: Trip Blank
Project: River Terrace 8 13 18
Collection Date:
Lab ID: 1808812-006
Matrix: AQUEOUS
Received Date: 8/14/2018 7:00:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: **AG**	
Benzene	ND	0.17	1.0		µg/L	1	8/21/2018 7:13:55 PM	D53589
Toluene	ND	0.17	1.0		µg/L	1	8/21/2018 7:13:55 PM	D53589
Ethylbenzene	ND	0.22	1.0		µg/L	1	8/21/2018 7:13:55 PM	D53589
Methyl tert-butyl ether (MTBE)	ND	0.32	1.0		µg/L	1	8/21/2018 7:13:55 PM	D53589
Xylenes, Total	ND	0.64	1.5		µg/L	1	8/21/2018 7:13:55 PM	D53589
Surr: 4-Bromofluorobenzene	118	0	70-130		%Rec	1	8/21/2018 7:13:55 PM	D53589
Surr: Toluene-d8	96.4	0	70-130		%Rec	1	8/21/2018 7:13:55 PM	D53589
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **AG**	
Gasoline Range Organics (GRO)	0.086	0.0097	0.050		mg/L	1	8/21/2018 7:13:55 PM	B53589
Surr: BFB	105	0	70-130		%Rec	1	8/21/2018 7:13:55 PM	B53589

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Andeavor Bloomfield
Client Sample ID: FIELD BLANK #4
Project: River Terrace 8 13 18
Collection Date: 8/13/2018 11:30:00 AM
Lab ID: 1808812-007
Matrix: AQUEOUS
Received Date: 8/14/2018 7:00:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	0.31	0.40		mg/L	1	8/21/2018 5:26:50 AM	39845
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	8/21/2018 5:26:50 AM	39845
Surr: DNOP	89.2	0	76.6-135		%Rec	1	8/21/2018 5:26:50 AM	39845
EPA 6010B: TOTAL RECOVERABLE METALS							Analyst: **pmf**	
Lead	ND	0.0050	0.0050		mg/L	1	8/22/2018 4:04:48 PM	39852
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: **AG**	
Benzene	ND	0.17	1.0		µg/L	1	8/21/2018 7:37:11 PM	D53589
Toluene	0.18	0.17	1.0	J	µg/L	1	8/21/2018 7:37:11 PM	D53589
Ethylbenzene	ND	0.22	1.0		µg/L	1	8/21/2018 7:37:11 PM	D53589
Methyl tert-butyl ether (MTBE)	ND	0.32	1.0		µg/L	1	8/21/2018 7:37:11 PM	D53589
Xylenes, Total	ND	0.64	1.5		µg/L	1	8/21/2018 7:37:11 PM	D53589
Surr: 4-Bromofluorobenzene	117	0	70-130		%Rec	1	8/21/2018 7:37:11 PM	D53589
Surr: Toluene-d8	96.9	0	70-130		%Rec	1	8/21/2018 7:37:11 PM	D53589
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **AG**	
Gasoline Range Organics (GRO)	0.038	0.0097	0.050	J	mg/L	1	8/21/2018 7:37:11 PM	B53589
Surr: BFB	104	0	70-130		%Rec	1	8/21/2018 7:37:11 PM	B53589

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Andeavor Bloomfield
Client Sample ID: DW-3
Project: River Terrace 8 13 18
Collection Date: 8/13/2018 12:40:00 PM
Lab ID: 1808812-008
Matrix: AQUEOUS
Received Date: 8/14/2018 7:00:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	0.31	0.40		mg/L	1	8/18/2018 1:59:00 AM	39845
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	8/18/2018 1:59:00 AM	39845
Surr: DNOP	81.5	0	76.6-135		%Rec	1	8/18/2018 1:59:00 AM	39845
EPA 6010B: TOTAL RECOVERABLE METALS							Analyst: **pmf**	
Lead	0.0091	0.0050	0.0050		mg/L	1	8/22/2018 4:06:37 PM	39852
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: **AG**	
Benzene	9.5	0.17	1.0		µg/L	1	8/21/2018 10:18:47 PM	D53589
Toluene	0.19	0.17	1.0	J	µg/L	1	8/21/2018 10:18:47 PM	D53589
Ethylbenzene	32	0.22	1.0		µg/L	1	8/21/2018 10:18:47 PM	D53589
Methyl tert-butyl ether (MTBE)	0.63	0.32	1.0	J	µg/L	1	8/21/2018 10:18:47 PM	D53589
Xylenes, Total	170	0.64	1.5		µg/L	1	8/21/2018 10:18:47 PM	D53589
Surr: 4-Bromofluorobenzene	107	0	70-130		%Rec	1	8/21/2018 10:18:47 PM	D53589
Surr: Toluene-d8	94.1	0	70-130		%Rec	1	8/21/2018 10:18:47 PM	D53589
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **AG**	
Gasoline Range Organics (GRO)	1.5	0.0097	0.050		mg/L	1	8/21/2018 10:18:47 PM	B53589
Surr: BFB	95.7	0	70-130		%Rec	1	8/21/2018 10:18:47 PM	B53589

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Andeavor Bloomfield
Client Sample ID: DW-2
Project: River Terrace 8 13 18
Collection Date: 8/13/2018 1:35:00 PM
Lab ID: 1808812-009
Matrix: AQUEOUS
Received Date: 8/14/2018 7:00:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	0.31	0.40		mg/L	1	8/18/2018 2:21:01 AM	39845
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	8/18/2018 2:21:01 AM	39845
Surr: DNOP	77.6	0	76.6-135		%Rec	1	8/18/2018 2:21:01 AM	39845
EPA 6010B: TOTAL RECOVERABLE METALS							Analyst: **pmf**	
Lead	0.016	0.0050	0.0050		mg/L	1	8/22/2018 4:08:18 PM	39852
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: **AG**	
Benzene	ND	0.17	1.0		µg/L	1	8/21/2018 10:41:45 PM	D53589
Toluene	ND	0.17	1.0		µg/L	1	8/21/2018 10:41:45 PM	D53589
Ethylbenzene	ND	0.22	1.0		µg/L	1	8/21/2018 10:41:45 PM	D53589
Methyl tert-butyl ether (MTBE)	ND	0.32	1.0		µg/L	1	8/21/2018 10:41:45 PM	D53589
Xylenes, Total	0.91	0.64	1.5	J	µg/L	1	8/21/2018 10:41:45 PM	D53589
Surr: 4-Bromofluorobenzene	120	0	70-130		%Rec	1	8/21/2018 10:41:45 PM	D53589
Surr: Toluene-d8	96.2	0	70-130		%Rec	1	8/21/2018 10:41:45 PM	D53589
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **AG**	
Gasoline Range Organics (GRO)	0.21	0.0097	0.050		mg/L	1	8/21/2018 10:41:45 PM	B53589
Surr: BFB	107	0	70-130		%Rec	1	8/21/2018 10:41:45 PM	B53589

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Andeavor Bloomfield
Client Sample ID: DUP #4
Project: River Terrace 8 13 18
Collection Date: 8/13/2018
Lab ID: 1808812-010
Matrix: AQUEOUS
Received Date: 8/14/2018 7:00:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	0.31	0.40		mg/L	1	8/21/2018 5:51:12 AM	39845
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	8/21/2018 5:51:12 AM	39845
Surr: DNOP	74.9	0	76.6-135	S	%Rec	1	8/21/2018 5:51:12 AM	39845
EPA 6010B: TOTAL RECOVERABLE METALS							Analyst: **pmf**	
Lead	ND	0.0050	0.0050		mg/L	1	8/22/2018 4:09:59 PM	39852
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: **AG**	
Benzene	ND	0.17	1.0		µg/L	1	8/21/2018 11:04:45 PM	D53589
Toluene	ND	0.17	1.0		µg/L	1	8/21/2018 11:04:45 PM	D53589
Ethylbenzene	ND	0.22	1.0		µg/L	1	8/21/2018 11:04:45 PM	D53589
Methyl tert-butyl ether (MTBE)	ND	0.32	1.0		µg/L	1	8/21/2018 11:04:45 PM	D53589
Xylenes, Total	ND	0.64	1.5		µg/L	1	8/21/2018 11:04:45 PM	D53589
Surr: 4-Bromofluorobenzene	117	0	70-130		%Rec	1	8/21/2018 11:04:45 PM	D53589
Surr: Toluene-d8	91.3	0	70-130		%Rec	1	8/21/2018 11:04:45 PM	D53589
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **AG**	
Gasoline Range Organics (GRO)	0.22	0.0097	0.050		mg/L	1	8/21/2018 11:04:45 PM	B53589
Surr: BFB	104	0	70-130		%Rec	1	8/21/2018 11:04:45 PM	B53589

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Andeavor Bloomfield
Client Sample ID: Trip Blank
Project: River Terrace 8 13 18
Collection Date:
Lab ID: 1808812-011
Matrix: AQUEOUS
Received Date: 8/14/2018 7:00:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: **AG**	
Benzene	ND	0.17	1.0		µg/L	1	8/21/2018 11:27:55 PM	D53589
Toluene	ND	0.17	1.0		µg/L	1	8/21/2018 11:27:55 PM	D53589
Ethylbenzene	ND	0.22	1.0		µg/L	1	8/21/2018 11:27:55 PM	D53589
Methyl tert-butyl ether (MTBE)	ND	0.32	1.0		µg/L	1	8/21/2018 11:27:55 PM	D53589
Xylenes, Total	ND	0.64	1.5		µg/L	1	8/21/2018 11:27:55 PM	D53589
Surr: 4-Bromofluorobenzene	114	0	70-130		%Rec	1	8/21/2018 11:27:55 PM	D53589
Surr: Toluene-d8	90.7	0	70-130		%Rec	1	8/21/2018 11:27:55 PM	D53589
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **AG**	
Gasoline Range Organics (GRO)	ND	0.0097	0.050		mg/L	1	8/21/2018 11:27:55 PM	B53589
Surr: BFB	102	0	70-130		%Rec	1	8/21/2018 11:27:55 PM	B53589

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1808812**

04-Feb-19

Client: Andeavor Bloomfield

Project: River Terrace 8 13 18

Sample ID	**1808812-001BMS**	SampType:	**MS**		TestCode:	**EPA Method 8015D: Diesel Range**					
Client ID:	**MW-49**	Batch ID:	**39845**		RunNo:	**53521**					
Prep Date:	**8/16/2018**	Analysis Date:	**8/17/2018**		SeqNo:	**1764715**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	2.6	0.40	2.500	0	104	89.6	145				
Surr: DNOP	0.19		0.2500		74.4	76.6	135			S	

Sample ID	**1808812-001BMSD**	SampType:	**MSD**		TestCode:	**EPA Method 8015D: Diesel Range**					
Client ID:	**MW-49**	Batch ID:	**39845**		RunNo:	**53521**					
Prep Date:	**8/16/2018**	Analysis Date:	**8/17/2018**		SeqNo:	**1764716**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	2.2	0.40	2.500	0	88.9	89.6	145	15.5	20	S	
Surr: DNOP	0.16		0.2500		62.3	76.6	135	0	0	S	

Sample ID	**LCS-39845**	SampType:	**LCS**		TestCode:	**EPA Method 8015D: Diesel Range**					
Client ID:	**LCSW**	Batch ID:	**39845**		RunNo:	**53521**					
Prep Date:	**8/16/2018**	Analysis Date:	**8/17/2018**		SeqNo:	**1764725**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	2.3	0.40	2.500	0	92.3	76.5	158				
Surr: DNOP	0.17		0.2500		66.0	76.6	135			S	

Sample ID	**MB-39845**	SampType:	**MBLK**		TestCode:	**EPA Method 8015D: Diesel Range**					
Client ID:	**PBW**	Batch ID:	**39845**		RunNo:	**53521**					
Prep Date:	**8/16/2018**	Analysis Date:	**8/17/2018**		SeqNo:	**1764726**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	ND	0.40									
Motor Oil Range Organics (MRO)	ND	2.5									
Surr: DNOP	0.44		0.5000		88.5	76.6	135				

Sample ID	**MB-39932**	SampType:	**MBLK**		TestCode:	**EPA Method 8015D: Diesel Range**					
Client ID:	**PBW**	Batch ID:	**39932**		RunNo:	**53705**					
Prep Date:	**8/22/2018**	Analysis Date:	**8/25/2018**		SeqNo:	**1771536**	Units:	**%Rec**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Surr: DNOP	0.82		0.5000		163	76.6	135			S	

Sample ID	**LCS-39932**	SampType:	**LCS**		TestCode:	**EPA Method 8015D: Diesel Range**					
Client ID:	**LCSW**	Batch ID:	**39932**		RunNo:	**53705**					
Prep Date:	**8/22/2018**	Analysis Date:	**8/25/2018**		SeqNo:	**1771538**	Units:	**%Rec**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1808812**

04-Feb-19

Client: Andeavor Bloomfield

Project: River Terrace 8 13 18

Sample ID	**LCS-39932**	SampType:	**LCS**		TestCode:	**EPA Method 8015D: Diesel Range**					
Client ID:	**LCSW**	Batch ID:	**39932**		RunNo:	**53705**					
Prep Date:	**8/22/2018**	Analysis Date:	**8/25/2018**		SeqNo:	**1771538**	Units:	**%Rec**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP		0.35		0.2500		138	76.6	135			S

Sample ID	**LCSD-39932**	SampType:	**LCSD**		TestCode:	**EPA Method 8015D: Diesel Range**					
Client ID:	**LCSS02**	Batch ID:	**39932**		RunNo:	**53705**					
Prep Date:	**8/22/2018**	Analysis Date:	**8/25/2018**		SeqNo:	**1771545**	Units:	**%Rec**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP		0.35		0.2500		141	76.6	135	0	0	S

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1808812**

04-Feb-19

Client: Andeavor Bloomfield

Project: River Terrace 8 13 18

Sample ID **100ng lcs2**	SampType: **LCS4**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **BatchQC**	Batch ID: **D53589**	RunNo: **53589**
Prep Date:	Analysis Date: **8/21/2018**	SeqNo: **1767893** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	95.6	80	120			
Toluene	21	1.0	20.00	0	103	80	120			
Ethylbenzene	20	1.0	20.00	0	102	80	120			
Methyl tert-butyl ether (MTBE)	19	1.0	20.00	0	93.0	80	120			
Xylenes, Total	60	1.5	60.00	0	100	80	120			
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130			
Surr: Toluene-d8	9.2		10.00		91.9	70	130			

Sample ID **1808812-002ams**	SampType: **MS4**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **TP-8**	Batch ID: **D53589**	RunNo: **53589**
Prep Date:	Analysis Date: **8/21/2018**	SeqNo: **1767896** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	100	5.0	100.0	0	103	80	120			
Toluene	110	5.0	100.0	0	108	80	120			
Ethylbenzene	110	5.0	100.0	2.802	108	80	120			
Methyl tert-butyl ether (MTBE)	110	5.0	100.0	0	109	43.6	145			
Xylenes, Total	320	7.5	300.0	0	108	80	120			
Surr: 4-Bromofluorobenzene	48		50.00		96.5	70	130			
Surr: Toluene-d8	50		50.00		100	70	130			

Sample ID **1808812-002amsd**	SampType: **MSD4**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **TP-8**	Batch ID: **D53589**	RunNo: **53589**
Prep Date:	Analysis Date: **8/21/2018**	SeqNo: **1767897** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	98	5.0	100.0	0	97.5	80	120	5.28	20	
Toluene	110	5.0	100.0	0	106	80	120	1.74	20	
Ethylbenzene	110	5.0	100.0	2.802	106	80	120	2.30	20	
Methyl tert-butyl ether (MTBE)	110	5.0	100.0	0	108	43.6	145	1.19	20	
Xylenes, Total	310	7.5	300.0	0	104	80	120	3.41	20	
Surr: 4-Bromofluorobenzene	50		50.00		100	70	130	0	0	
Surr: Toluene-d8	48		50.00		95.3	70	130	0	0	

Sample ID **rb2**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **D53589**	RunNo: **53589**
Prep Date:	Analysis Date: **8/21/2018**	SeqNo: **1767912** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1808812**

04-Feb-19

Client: Andeavor Bloomfield

Project: River Terrace 8 13 18

Sample ID	**rb2**	SampType:	**MBLK**	TestCode:	**EPA Method 8260: Volatiles Short List**
Client ID:	**PBW**	Batch ID:	**D53589**	RunNo:	**53589**
Prep Date:		Analysis Date:	**8/21/2018**	SeqNo:	**1767912** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 4-Bromofluorobenzene	12		10.00		117	70	130			
Surr: Toluene-d8	9.9		10.00		98.9	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1808812**

04-Feb-19

Client: Andeavor Bloomfield

Project: River Terrace 8 13 18

Sample ID	**MB-39852**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Recoverable Metals**				
Client ID:	**PBW**	Batch ID:	**39852**	RunNo:	**53642**				
Prep Date:	**8/16/2018**	Analysis Date:	**8/22/2018**	SeqNo:	**1768995**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0050								

Sample ID	**LCS-39852**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Recoverable Metals**				
Client ID:	**LCSW**	Batch ID:	**39852**	RunNo:	**53642**				
Prep Date:	**8/16/2018**	Analysis Date:	**8/22/2018**	SeqNo:	**1768997**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.49	0.0050	0.5000	0	98.5	80	120			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1808812**

04-Feb-19

Client: Andeavor Bloomfield

Project: River Terrace 8 13 18

Sample ID	**1808812-001ams**	SampType:	**MS**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**MW-49**	Batch ID:	**B53589**		RunNo:	**53589**				
Prep Date:		Analysis Date:	**8/21/2018**		SeqNo:	**1767740**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.49	0.050	0.5000	0.01900	93.8	63.4	130			
Surr: BFB	9.6		10.00		96.0	70	130			

Sample ID	**1808812-001amsd**	SampType:	**MSD**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**MW-49**	Batch ID:	**B53589**		RunNo:	**53589**				
Prep Date:		Analysis Date:	**8/21/2018**		SeqNo:	**1767741**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.48	0.050	0.5000	0.01900	91.7	63.4	130	2.20	20	
Surr: BFB	10		10.00		99.6	70	130	0	0	

Sample ID	**2.5ug gro lcs2**	SampType:	**LCS**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**LCSW**	Batch ID:	**B53589**		RunNo:	**53589**				
Prep Date:		Analysis Date:	**8/21/2018**		SeqNo:	**1767762**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.50	0.050	0.5000	0	99.8	70	130			
Surr: BFB	9.9		10.00		99.3	70	130			

Sample ID	**rb2**	SampType:	**MBLK**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**PBW**	Batch ID:	**B53589**		RunNo:	**53589**				
Prep Date:		Analysis Date:	**8/21/2018**		SeqNo:	**1767763**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.019	0.050								J
Surr: BFB	10		10.00		104	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	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: ANDEAVOR BLOOMFIEL Work Order Number: 1808812 RcptNo: 1

Received By: **Anne Thorne** 8/14/2018 7:00:00 AM Anne Thorne

Completed By: **Anne Thorne** 8/14/2018 11:33:39 AM Anne Thorne

Reviewed By: JO 8/16/18

Labled by: ~~AT 8/14/18~~ ENM 8/16/18 ENM 8/16/18

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH: 9
(<2 or >12 unless noted)
Adjusted? NO
Checked by: ENM 8/16/18

Special Handling (if applicable)

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

Person Notified: Date
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

16. Additional remarks:

CUSTODY SEALS INTACT ON ALL SAMPLE BOTTLES/at 8/14/18

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.6	Good	Yes			
2	1.6	Good	Yes			

Chain-of-Custody Record

Client: **Andeavor - Bloomfield Terminal**

Mailing Address: **50 CR 4990**
Bloomfield, NM 87413

Phone #: **915-534-1483**

email or Fax#: **Allen.S.Hains@Andeavor.com**

QA/QC Package:
☐ Standard **X** Level 4 (Full Validation)
☐ Other _____
X EDD (Type) **EXCEL**

Turn-Around Time:
X Standard ☐ Rush _____

Project Name: **River Terrace**

Date: **8-13-18**

Project #: **Annual Event**
PO# 12623266

Project Manager: **Allen Hains**

Sampler: **Tracy Payne**

On Ice: **X** Yes ☐ No

Sample Temperature: 2.6 CF -1.0 = 1.6 2 coolers

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1808812	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)	Air Bubbles (Y or N)
8/13/18	0810	H_2O	MW-49	40ml VOA-5	HCl	-001			X							X		
				250 ml amber-1	Neat	-001			X									
				250 ml plastic-1	HNO_3	-001							X					

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Date	Time
8/13/18	1552		Christy Walker	8/13/18	1552
8/13/18	1812			08/14/18	07a

Remarks: See Analytical Methods and Target Analytes. VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: **Andeavor - Bloomfield Terminal**

Mailing Address: **50 CR 4990**
Bloomfield, NM 87413

Phone #: **915-534-1483**

email or Fax#: **Allen.S.Hains@Andeavor.com**

QA/QC Package:
☐ Standard **X** Level 4 (Full Validation)
☐ Other _____
X EDD (Type) **EXCEL**

Turn-Around Time:
X Standard ☐ Rush _____

Project Name: **River Terrace**

Date: **8-13-18**

Project #: **Annual Event**

PO# 12623266

Project Manager: **Allen Hains**

Sampler: **Tracy Payne**

On Ice: **X** Yes ☐ No

Sample Temperature: 2.6-CF-1.0=1.6

2 coolers

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1808812
8/13/18	0900	H_2O	TP-8	40ml VOA-5	HCl	-002
				250 ml amber-1	Neat	-002
				250 ml plastic-1	HNO_3	-002

Analysis Request

BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)						Air Bubbles (Y or N)
		X							X							
		X														
						X										

Date:	Time:	Relinquished by:	Received by:	Date	Time
8/13/18	1556			8/13/18	1556
8/13/18	1812			8/14/18	0700

Remarks: See Analytical Methods and Target Analytes.
VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: **Andeavor - Bloomfield Terminal**

Mailing Address: **50 CR 4990**
Bloomfield, NM 87413

Phone #: **915-534-1483**

email or Fax#: **Allen.S.Hains@Andeavor.com**

QA/QC Package:
☐ Standard X Level 4 (Full Validation)
☐ Other _____
X EDD (Type) **EXCEL**

Turn-Around Time:
X Standard ☐ Rush _____

Project Name: **River Terrace**

Date: **8-13-18**

Project #: **Annual Event**

PO# 12623266

Project Manager: **Allen Hains**

Sampler: **Tracy Payne**

On Ice: X Yes ☐ No

Sample Temperature: 2.6 -CF-1.0=1.6

2 coolers

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1808812	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)	Air Bubbles (Y or N)
8/13/18	0945	H_2O	TP-6	40ml VOA-5	HCl	-003			X							X		
				250 ml amber-1	Neat	-003			X									
				250 ml plastic-1	HNO_3	-003							X					

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Date	Time
8/13/18	1556			8/13/18	1556
8/13/18	1812			8/14/18	0700

Remarks: See Analytical Methods and Target Analytes.
VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: **Andeavor - Bloomfield Terminal**

Mailing Address: **50 CR 4990**
Bloomfield, NM 87413

Phone #: **915-534-1483**

email or Fax#: **Allen.S.Hains@Andeavor.com**

QA/QC Package:
☐ Standard **X** Level 4 (Full Validation)
☐ Other _____
X EDD (Type) **EXCEL**

Turn-Around Time:
X Standard ☐ Rush _____

Project Name: **River Terrace**

Date: **8-13-18**

Project #: **Annual Event**

PO# 12623266

Project Manager: **Allen Hains**

Sampler: **Tracy Payne**

On Ice: ☒ Yes ☐ No

Sample Temperature: 2.6-CF-1.0=1.6 2 coolers

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1808812	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)	Air Bubbles (Y or N)
8/13/18	1025	H_2O	MW-48	40ml VOA-5	HCl	204			X							X		
				250 ml amber-1	Neat	204			X									
				250 ml plastic-1	HNO_3	204							X					

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Date	Time
8/13/18	1556			8/13/18	1556
8/13/18	1812			08/14/18	0700

Remarks: See Analytical Methods and Target Analytes. VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: **Andeavor - Bloomfield Terminal**

Mailing Address: **50 CR 4990**
Bloomfield, NM 87413

Phone #: **915-534-1483**

email or Fax#: **Allen.S.Hains@Andeavor.com**

QA/QC Package:
☐ Standard **X** Level 4 (Full Validation)
☐ Other _____
X EDD (Type) **EXCEL**

Turn-Around Time:
X Standard ☐ Rush _____

Project Name: **River Terrace**

Date: **8-13-18**

Project #: **Annual Event**

PO# 12623266

Project Manager: **Allen Hains**

Sampler: **Tracy Payne**

On Ice: ☒ Yes ☐ No

Sample Temperature: 2.6+0.0-1.0 = 1.6

2 Coolers

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1808812	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)					Air Bubbles (Y or N)
8/13/18	1110	H_2O	Collection Gallery	40ml VOA-5	HCl	005 Headspace 005			X							X						
↓	↓	↓	↓	250 ml amber-1	Neat	005			X													
↓	↓	↓	↓	250 ml plastic-1	HNO_3	005							X									
8/13/18	—	H_2O	TRIP BLANK	40 mL VOA-3	HCl	006										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
8/13/18	1556	[signature]	[signature]	8/13/18	1556
8/13/18	1812	[signature]	[signature]	08/14/18	0740

Remarks: See Analytical Methods and Target Analytes.
VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: **Andeavor - Bloomfield Terminal**

Mailing Address: **50 CR 4990**
Bloomfield, NM 87413

Phone #: **915-534-1483**

email or Fax#: **Allen.S.Hains@Andeavor.com**

QA/QC Package:
☐ Standard **X** Level 4 (Full Validation)
☐ Other _____
X EDD (Type) **EXCEL**

Turn-Around Time:
X Standard ☐ Rush _____

Project Name: **River Terrace**

Date: **8-13-18**

Project #: **Annual Event**

PO# 12623266

Project Manager: **Allen Hains**

Sampler: **Tracy Payne**

On Ice: **X** Yes ☐ No

Sample Temperature: 2.6 - CF - 1.0 = 1.6

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. (2 coolers) 1807812	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	Total Metals - Lead only	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)					Air Bubbles (Y or N)
			FIELD BLANK #4																			
8/13/18	1130	H_2O		40ml VOA-5	HCl	207			X							X						
↓	↓	↓	↓	250 ml amber-1	Neat	207			X													
				250 ml plastic-1	HNO_3	207							X									

Date: 8/13/18 Time: 1556 Relinquished by: _____ Received by: _____ Date: 8/13/18 Time: 1556

Date: 8/13/18 Time: 1812 Relinquished by: _____ Received by: _____ Date: 08/14/18 Time: 0700

Remarks: See Analytical Methods and Target Analytes.
VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: **Andeavor - Bloomfield Terminal**

Mailing Address: **50 CR 4990**
Bloomfield, NM 87413

Phone #: **915-534-1483**

email or Fax#: **Allen.S.Hains@Andeavor.com**

QA/QC Package:
☐ Standard **X** Level 4 (Full Validation)
☐ Other _____
X EDD (Type) **EXCEL**

Turn-Around Time:
X Standard ☐ Rush _____

Project Name: **River Terrace**

Date: 8-13-18

Project #: **Annual Event**
PO# 12623266

Project Manager: **Allen Hains**

Sampler: **Tracy Payne**

On Ice: ☒ Yes ☐ No

Sample Temperature: 2.4-CF-1.0=1.6

2 coolers

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 180812	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)					Air Bubbles (Y or N)
8/13/18	1240	H_2O	DW-3	40ml VOA-5	HCl	-008			X							X						
				250 ml amber-1	Neat	-008			X													
				250 ml plastic-1	HNO_3	-008							X									

Date: 8/13/18 Time: 1556 Relinquished by: _____ Received by: _____ Date Time 8/13/18 1556

Date: 8/13/18 Time: 1872 Relinquished by: _____ Received by: _____ Date Time 08/13/18 0700

Remarks: See Analytical Methods and Target Analytes.
VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: Andeavor - Bloomfield Terminal

Mailing Address: 50 CR 4990
Bloomfield, NM 87413

Phone #: 915-534-1483

email or Fax#: Allen.S.Hains@Andeavor.com

QA/QC Package:
☐ Standard X Level 4 (Full Validation)
☐ Other
X EDD (Type) EXCEL

Turn-Around Time:
X Standard ☐ Rush

Project Name: River Terrace

Date: 8-13-18

Project #: Annual Event
PO# 12623266

Project Manager: Allen Hains

Sampler: Tracy Payne

On Ice: ☒ Yes ☐ No

Sample Temperature: 2.6-CF-1.0=1.6 2 cooler-s

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1808812	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)					Air Bubbles (Y or N)
8/13/18	1335	H_2O	DW-2	40ml VOA-5	HCl	-009			X							X						
↓	↓	↓	↓	250 ml amber-1	Neat	-009			X													
↓	↓	↓	↓	250 ml plastic-1	HNO_3	-009							X									

Date	Time	Relinquished by	Received by	Date	Time
8/13/18	1556	[signature]	[signature]	8/13/18	1556
8/13/18	1817	[signature]	[signature]	08/14/18	1700

Remarks: See Analytical Methods and Target Analytes. VOC's Target List analyzed by EPA Method 8021B.

Chain-of-Custody Record

Client: **Andeavor - Bloomfield Terminal**

Mailing Address: **50 CR 4990**
Bloomfield, NM 87413

Phone #: **915-534-1483**

email or Fax#: **Allen.S.Hains@Andeavor.com**

QA/QC Package:
☐ Standard **X** Level 4 (Full Validation)
☐ Other _____
X EDD (Type) **EXCEL**

Turn-Around Time:
X Standard ☐ Rush _____

Project Name: **River Terrace**

Date: 8-13-18

Project #: **Annual Event**

PO# 12623266

Project Manager: **Allen Hains**

Sampler: **Tracy Payne**

On Ice: ☑ Yes ☐ No

Sample Temperature: 2.6-LF-1.0-1.6 2 coolers

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1808812	BTEX+MTBE+TMB's(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015B (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	TOTAL METALS - LEAD ONLY	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8021B BTEX,MTBE only	8270 (Semi-VOA)	Air Bubbles (Y or N)
8/13/18	—	H_2O	DUP#4	40ml VOA-5	HCl	-010			X							X		
				250 ml amber-1	Neat	-010			X									
				250 ml plastic-1	HNO_3	-010							X					
8/13/18	—	H_2O	TRIP BLANK	40 ML VOA #3	HCL	-011										X		

Date	Time	Relinquished by:	Received by:	Date	Time
8/13/18	1556			8/13/18	1556
8/12/18	1827			08/14/18	0700

Remarks: See Analytical Methods and Target Analytes.
VOC's Target List analyzed by EPA Method 8021B.

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

March 07, 2018

Allen Hains

Western Refining
212 North Clark Street
El Paso, TX 79905
TEL: (915) 534-1483
FAX

RE: GAC OrderNo.: 1802C18

Dear Allen Hains:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/22/2018 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 #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining
Client Sample ID: Inlet
Project: GAC
Collection Date: 2/21/2018 12:20:00 PM
Lab ID: 1802C18-001
Matrix: AQUEOUS
Received Date: 2/22/2018 8:00:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **TOM**	
Diesel Range Organics (DRO)	0.34	0.31	0.40	J	mg/L	1	2/26/2018 6:55:42 PM	36689
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	2/26/2018 6:55:42 PM	36689
Surr: DNOP	117	0	79.2-146		%Rec	1	2/26/2018 6:55:42 PM	36689
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: **DJF**	
Benzene	ND	0.062	1.0		µg/L	1	2/28/2018 6:57:38 PM	B49468
Toluene	ND	0.064	1.0		µg/L	1	2/28/2018 6:57:38 PM	B49468
Ethylbenzene	0.23	0.093	1.0	J	µg/L	1	2/28/2018 6:57:38 PM	B49468
Methyl tert-butyl ether (MTBE)	ND	0.24	1.0		µg/L	1	2/28/2018 6:57:38 PM	B49468
Xylenes, Total	ND	0.32	1.5		µg/L	1	2/28/2018 6:57:38 PM	B49468
Surr: 1,2-Dichloroethane-d4	92.3	0	70-130		%Rec	1	2/28/2018 6:57:38 PM	B49468
Surr: 4-Bromofluorobenzene	93.7	0	70-130		%Rec	1	2/28/2018 6:57:38 PM	B49468
Surr: Dibromofluoromethane	99.6	0	70-130		%Rec	1	2/28/2018 6:57:38 PM	B49468
Surr: Toluene-d8	99.4	0	70-130		%Rec	1	2/28/2018 6:57:38 PM	B49468
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **AG**	
Gasoline Range Organics (GRO)	0.76	0.0097	0.050		mg/L	1	2/23/2018 12:58:58 PM	W49345
Surr: BFB	111	0	70-130		%Rec	1	2/23/2018 12:58:58 PM	W49345

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining
Client Sample ID: Lead
Project: GAC
Collection Date: 2/21/2018 12:10:00 PM
Lab ID: 1802C18-002
Matrix: AQUEOUS
Received Date: 2/22/2018 8:00:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	0.31	0.40		mg/L	1	2/26/2018 8:01:36 PM	36689
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	2/26/2018 8:01:36 PM	36689
Surr: DNOP	87.4	0	79.2-146		%Rec	1	2/26/2018 8:01:36 PM	36689
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: **DJF**	
Benzene	ND	0.062	1.0		µg/L	1	2/28/2018 7:26:53 PM	B49468
Toluene	ND	0.064	1.0		µg/L	1	2/28/2018 7:26:53 PM	B49468
Ethylbenzene	ND	0.093	1.0		µg/L	1	2/28/2018 7:26:53 PM	B49468
Methyl tert-butyl ether (MTBE)	0.62	0.24	1.0	J	µg/L	1	2/28/2018 7:26:53 PM	B49468
Xylenes, Total	ND	0.32	1.5		µg/L	1	2/28/2018 7:26:53 PM	B49468
Surr: 1,2-Dichloroethane-d4	88.8	0	70-130		%Rec	1	2/28/2018 7:26:53 PM	B49468
Surr: 4-Bromofluorobenzene	117	0	70-130		%Rec	1	2/28/2018 7:26:53 PM	B49468
Surr: Dibromofluoromethane	97.3	0	70-130		%Rec	1	2/28/2018 7:26:53 PM	B49468
Surr: Toluene-d8	95.6	0	70-130		%Rec	1	2/28/2018 7:26:53 PM	B49468
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **AG**	
Gasoline Range Organics (GRO)	0.024	0.0097	0.050	J	mg/L	1	2/27/2018 3:56:30 PM	W49345
Surr: BFB	117	0	70-130		%Rec	1	2/27/2018 3:56:30 PM	W49345

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1802C18**

07-Mar-18

Client: Western Refining

Project: GAC

Sample ID **1802C18-001BMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Diesel Range**							
Client ID: **Inlet**	Batch ID: **36689**	RunNo: **49373**							
Prep Date: **2/23/2018**	Analysis Date: **2/26/2018**	SeqNo: **1594819**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.0	0.40	2.500	0.3415	105	89.6	145			
Surr: DNOP	0.26		0.2500		106	79.2	146			

Sample ID **1802C18-001BMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Diesel Range**							
Client ID: **Inlet**	Batch ID: **36689**	RunNo: **49373**							
Prep Date: **2/23/2018**	Analysis Date: **2/26/2018**	SeqNo: **1594820**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.1	0.40	2.500	0.3415	109	89.6	145	3.79	20	
Surr: DNOP	0.28		0.2500		113	79.2	146	0	0	

Sample ID **LCS-36689**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range**							
Client ID: **LCSW**	Batch ID: **36689**	RunNo: **49373**							
Prep Date: **2/23/2018**	Analysis Date: **2/26/2018**	SeqNo: **1594822**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.9	0.40	2.500	0	114	76.5	158			
Surr: DNOP	0.28		0.2500		113	79.2	146			

Sample ID **MB-36689**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**							
Client ID: **PBW**	Batch ID: **36689**	RunNo: **49373**							
Prep Date: **2/23/2018**	Analysis Date: **2/26/2018**	SeqNo: **1594823**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.40								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.57		0.5000		113	79.2	146			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1802C18**

07-Mar-18

Client: Western Refining

Project: GAC

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **B49468**	RunNo: **49468**
Prep Date:	Analysis Date: **2/28/2018**	SeqNo: **1597732** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		103	70	130			
Surr: 4-Bromofluorobenzene	12		10.00		117	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	9.8		10.00		98.2	70	130			

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **B49468**	RunNo: **49468**
Prep Date:	Analysis Date: **2/28/2018**	SeqNo: **1597733** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	105	70	130			
Toluene	20	1.0	20.00	0	99.4	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		100	70	130			
Surr: 4-Bromofluorobenzene	12		10.00		116	70	130			
Surr: Dibromofluoromethane	11		10.00		108	70	130			
Surr: Toluene-d8	9.5		10.00		95.5	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1802C18**

07-Mar-18

Client: Western Refining

Project: GAC

Sample ID	**2.5ug gro lcs**	SampType:	**LCS**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**LCSW**	Batch ID:	**W49345**		RunNo:	**49345**				
Prep Date:		Analysis Date:	**2/23/2018**		SeqNo:	**1593731**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.55	0.050	0.5000	0	111	70	130			
Surr: BFB	10		10.00		99.8	70	130			

Sample ID	**rb**	SampType:	**MBLK**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**PBW**	Batch ID:	**W49345**		RunNo:	**49345**				
Prep Date:		Analysis Date:	**2/23/2018**		SeqNo:	**1593732**	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	12		10.00		121	70	130			

Sample ID	**1802c18-001ams**	SampType:	**MS**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**Inlet**	Batch ID:	**W49345**		RunNo:	**49345**				
Prep Date:		Analysis Date:	**2/23/2018**		SeqNo:	**1594188**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	1.4	0.050	0.5000	0.7628	126	70	130			
Surr: BFB	11		10.00		106	70	130			

Sample ID	**1802c18-001amsd**	SampType:	**MSD**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**Inlet**	Batch ID:	**W49345**		RunNo:	**49345**				
Prep Date:		Analysis Date:	**2/23/2018**		SeqNo:	**1594189**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	1.4	0.050	0.5000	0.7628	120	70	130	2.24	20	
Surr: BFB	11		10.00		112	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	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 EL Work Order Number: 1802C18 RcptNo: 1

Received By: Sophia Campuzano 2/22/2018 8:00:00 AM Sophia Campuzano

Completed By: Dennis Suazo 2/22/2018 8:45:50 AM Dennis Suazo

Reviewed By: JRO 2/22/18

Labeled By MW 2/22/18

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: ____ (<2 or >12 unless noted)
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted? ____
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: ____

Special Handling (if applicable)

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

Person Notified: ____ Date: ____

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

Regarding: ____

Client Instructions: ____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.8	Good	Not Present			

Chain-of-Custody Record

Client: Western Refining
Allen S. Hains
Mailing Address: 212 N Clark Street
El Paso, TX 79905
Phone #: (915) 534-1493
email or Fax#: Allen.S.Hains@Andeavor.com
QA/QC Package:
☑ Standard ☑ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☑ EDD (Type)

Turn-Around Time:
☑ Standard ☐ Rush
Project Name: GAC - Monthly
Project #: PO# 12623266
Project Manager: Allen S. Hains
Sampler: Michael Wicker
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.0 - 0.2(CF) = 0.8

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1802C18	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_2,NO_3,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) BTEX, MTBE ONLY	8270 (Semi-VOA)	Air Bubbles (Y or N)
2-21-18	1220	H_2O	Inlet	5-VOA	HCl	001										X		
	↓		Inlet	1-250 mL Amber	Cool				X									
	1210		Lead	5-VOA	HCl	002										X		
↓	↓	↓	Lead	1-250 mL Amber	Cool				X									

2-21-2018

Date	Time	Relinquished by:	Received by:	Date	Time
2/21/18	1549			2/21/18	1549
2/21/18	1817		Courier	02/22/18	0800

Remarks:

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

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

May 25, 2018

Allen Hains

Andeavor
111 CR 4990
Bloomfield, NM 87413
TEL: (505) 801-5616
FAX

RE: GAC 5 16 2018 OrderNo.: 1805958

Dear Allen Hains:

Hall Environmental Analysis Laboratory received 2 sample(s) on 5/17/2018 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **1805958**
Date Reported: **5/25/2018**

CLIENT: Andeavor
Project: GAC 5 16 2018
Lab ID: 1805958-001 **Matrix:** AQUEOUS

Client Sample ID: GAC - Lead
Collection Date: 5/16/2018 10:10:00 AM
Received Date: 5/17/2018 6:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	5/23/2018 10:13:38 AM	38275
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	5/23/2018 10:13:38 AM	38275
Surr: DNOP	102	79.2-146		%Rec	1	5/23/2018 10:13:38 AM	38275
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **AG**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	5/17/2018 4:12:19 PM	D51333
Surr: BFB	105	70-130		%Rec	1	5/17/2018 4:12:19 PM	D51333
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	5/17/2018 4:12:19 PM	C51333
Toluene	ND	1.0		µg/L	1	5/17/2018 4:12:19 PM	C51333
Ethylbenzene	ND	1.0		µg/L	1	5/17/2018 4:12:19 PM	C51333
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	5/17/2018 4:12:19 PM	C51333
Xylenes, Total	ND	1.5		µg/L	1	5/17/2018 4:12:19 PM	C51333
Surr: 4-Bromofluorobenzene	114	70-130		%Rec	1	5/17/2018 4:12:19 PM	C51333
Surr: Toluene-d8	97.6	70-130		%Rec	1	5/17/2018 4:12:19 PM	C51333

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Andeavor
Client Sample ID: GAC - Inlet
Project: GAC 5 16 2018
Collection Date: 5/16/2018 10:20:00 AM
Lab ID: 1805958-002
Matrix: AQUEOUS
Received Date: 5/17/2018 6:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	5/23/2018 11:25:51 AM	38275
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	5/23/2018 11:25:51 AM	38275
Surr: DNOP	90.6	79.2-146		%Rec	1	5/23/2018 11:25:51 AM	38275
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **AG**	
Gasoline Range Organics (GRO)	0.95	0.050		mg/L	1	5/17/2018 4:35:26 PM	D51333
Surr: BFB	108	70-130		%Rec	1	5/17/2018 4:35:26 PM	D51333
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	5/17/2018 4:35:26 PM	C51333
Toluene	ND	1.0		µg/L	1	5/17/2018 4:35:26 PM	C51333
Ethylbenzene	1.0	1.0		µg/L	1	5/17/2018 4:35:26 PM	C51333
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	5/17/2018 4:35:26 PM	C51333
Xylenes, Total	ND	1.5		µg/L	1	5/17/2018 4:35:26 PM	C51333
Surr: 4-Bromofluorobenzene	117	70-130		%Rec	1	5/17/2018 4:35:26 PM	C51333
Surr: Toluene-d8	103	70-130		%Rec	1	5/17/2018 4:35:26 PM	C51333

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1805958**

25-May-18

Client: Andeavor

Project: GAC 5 16 2018

Sample ID **1805958-001BMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **GAC - Lead**	Batch ID: **38275**	RunNo: **51394**
Prep Date: **5/23/2018**	Analysis Date: **5/23/2018**	SeqNo: **1675918** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.4	0.40	2.500	0	97.4	89.6	145			
Surr: DNOP	0.21		0.2500		83.7	79.2	146			

Sample ID **1805958-001BMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **GAC - Lead**	Batch ID: **38275**	RunNo: **51394**
Prep Date: **5/23/2018**	Analysis Date: **5/23/2018**	SeqNo: **1675919** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.3	0.40	2.500	0	92.1	89.6	145	5.56	20	
Surr: DNOP	0.21		0.2500		84.3	79.2	146	0	0	

Sample ID **LCS-38275**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **LCSW**	Batch ID: **38275**	RunNo: **51394**
Prep Date: **5/23/2018**	Analysis Date: **5/23/2018**	SeqNo: **1675921** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.3	0.40	2.500	0	93.9	76.5	158			
Surr: DNOP	0.22		0.2500		88.0	79.2	146			

Sample ID **MB-38275**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW**	Batch ID: **38275**	RunNo: **51394**
Prep Date: **5/23/2018**	Analysis Date: **5/23/2018**	SeqNo: **1675922** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.40								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.46		0.5000		92.6	79.2	146			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1805958**

25-May-18

Client: Andeavor

Project: GAC 5 16 2018

Sample ID **100ng lcs**	SampType: **LCS4**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **BatchQC**	Batch ID: **C51333**	RunNo: **51333**
Prep Date:	Analysis Date: **5/17/2018**	SeqNo: **1670514** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	360	20	400.0	0	91.2	80	120			
Toluene	380	20	400.0	0	95.9	80	120			
Ethylbenzene	390	20	400.0	0	97.4	80	120			
Methyl tert-butyl ether (MTBE)	380	20	400.0	0	93.8	80	120			
Xylenes, Total	1100	30	1200	0	94.7	80	120			
Surr: 4-Bromofluorobenzene	200		200.0		101	70	130			
Surr: Toluene-d8	200		200.0		100	70	130			

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **C51333**	RunNo: **51333**
Prep Date:	Analysis Date: **5/17/2018**	SeqNo: **1670524** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 4-Bromofluorobenzene	12		10.00		116	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Sample ID **1805958-002ams**	SampType: **MS4**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **GAC - Inlet**	Batch ID: **C51333**	RunNo: **51333**
Prep Date:	Analysis Date: **5/17/2018**	SeqNo: **1670927** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	97.1	80	120			
Toluene	20	1.0	20.00	0.1448	101	80	120			
Ethylbenzene	21	1.0	20.00	1.006	102	80	120			
Methyl tert-butyl ether (MTBE)	22	1.0	20.00	0	112	80	120			
Xylenes, Total	61	1.5	60.00	1.051	100	80	120			
Surr: 4-Bromofluorobenzene	9.4		10.00		94.1	70	130			
Surr: Toluene-d8	10		10.00		104	70	130			

Sample ID **1805958-002amsd**	SampType: **MSD4**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **GAC - Inlet**	Batch ID: **C51333**	RunNo: **51333**
Prep Date:	Analysis Date: **5/17/2018**	SeqNo: **1670928** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	87.7	80	120	10.2	20	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1805958**

25-May-18

Client: Andeavor

Project: GAC 5 16 2018

Sample ID	**1805958-002amsd**	SampType:	**MSD4**	TestCode:	**EPA Method 8260: Volatiles Short List**
Client ID:	**GAC - Inlet**	Batch ID:	**C51333**	RunNo:	**51333**
Prep Date:		Analysis Date:	**5/17/2018**	SeqNo:	**1670928** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Toluene	20	1.0	20.00	0.1448	97.1	80	120	3.85	20	
Ethylbenzene	20	1.0	20.00	1.006	96.6	80	120	5.60	20	
Methyl tert-butyl ether (MTBE)	20	1.0	20.00	0	102	80	120	9.16	20	
Xylenes, Total	57	1.5	60.00	1.051	93.3	80	120	6.81	20	
Surr: 4-Bromofluorobenzene	9.4		10.00		94.1	70	130	0	0	
Surr: Toluene-d8	10		10.00		102	70	130	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1805958**

25-May-18

Client: Andeavor

Project: GAC 5 16 2018

Sample ID	**1805958-001ams**	SampType:	**MS**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**GAC - Lead**	Batch ID:	**D51333**		RunNo:	**51333**				
Prep Date:		Analysis Date:	**5/17/2018**		SeqNo:	**1670912**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.54	0.050	0.5000	0.04640	98.7	70	130			
Surr: BFB	9.3		10.00		93.4	70	130			

Sample ID	**1805958-001amsd**	SampType:	**MSD**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**GAC - Lead**	Batch ID:	**D51333**		RunNo:	**51333**				
Prep Date:		Analysis Date:	**5/17/2018**		SeqNo:	**1670913**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.48	0.050	0.5000	0.04640	86.3	70	130	12.1	20	
Surr: BFB	9.2		10.00		91.9	70	130	0	0	

Sample ID	**2.5ug gro lcs**	SampType:	**LCS**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**LCSW**	Batch ID:	**D51333**		RunNo:	**51333**				
Prep Date:		Analysis Date:	**5/17/2018**		SeqNo:	**1670914**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.49	0.050	0.5000	0	98.0	70	130			
Surr: BFB	9.7		10.00		96.6	70	130			

Sample ID	**rb**	SampType:	**MBLK**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**PBW**	Batch ID:	**D51333**		RunNo:	**51333**				
Prep Date:		Analysis Date:	**5/17/2018**		SeqNo:	**1670915**	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	11		10.00		107	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	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: ANDEAVOR BLOOMFIEL Work Order Number: 1805958 RcptNo: 1

Received By: **Anne Thorne** 5/17/2018 6:50:00 AM

Completed By: **Anne Thorne** 5/17/2018 9:54:08 AM

Reviewed By: 05/17/18

Labeled by: AS 05/16/18

Chain of Custody

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

Log In

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

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

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

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

Person Notified: _____ Date _____

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

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

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

Chain-of-Custody Record

Client: **Western Refining**

Mailing Address: **#50 CR 4990**

Bloomfield, NM 87413

Phone #: **505-632-4135**

email or Fax#:

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other

X EDD (Type)

Turn-Around Time:

X Standard ☐ Rush

Project Name: **GAC - ~~Lead~~ MW**

Date: 5-16-2018

Project #:

~~PO#12615849~~ PO#12623266

Project Manager:

Allen S Hains

Sampler: Michael A Wicker

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.6

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1805958	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / ~~DRO~~ / ~~MRO~~	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) BTEx, MTBE only	8270 (Semi-VOA)	8015B DRO Extended	Air Bubbles (Y or N)
5-16-18	1010	H_2O	GAC - Lead	5 VOA	HCl	001			X							X			
↓	↓	" "	GAC - Lead	1-500-ml	Amber	001												X	
↓	1020	H_2O	GAC -Inlet	5 VOA	HCl	002			X							X			
↓	↓	" "	GAC -Inlet	1-500-ml	Amber	002												X	
		~~H_2O~~	~~GAC -Lag~~	~~5 VOA~~	~~HCl~~	MW			X							X MW			
		~~" "~~	~~GAC -Lag~~	~~1-500-ml~~	~~Amber~~	MW												X MW	

Date:	Time:	Relinquished by:	Received by:	Date	Time
5-16-18	1528			5/16/18	1528
5/16/18	1840			05/17/18	0650

Remarks:

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

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

June 20, 2018

Allens S Hains

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

RE: GAC MW 6 13 2018 OrderNo.: 1806888

Dear Allens S Hains:

Hall Environmental Analysis Laboratory received 3 sample(s) on 6/14/2018 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: GAC-Lead
Project: GAC MW 6 13 2018
Collection Date: 6/13/2018 10:40:00 AM
Lab ID: 1806888-001
Matrix: AQUEOUS
Received Date: 6/14/2018 8:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	6/15/2018 2:56:24 PM	38701
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	6/15/2018 2:56:24 PM	38701
Surr: DNOP	124	79.2-146		%Rec	1	6/15/2018 2:56:24 PM	38701
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **AG**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	6/18/2018 3:24:22 PM	B52051
Surr: BFB	110	70-130		%Rec	1	6/18/2018 3:24:22 PM	B52051
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	6/18/2018 3:24:22 PM	D52051
Toluene	ND	1.0		µg/L	1	6/18/2018 3:24:22 PM	D52051
Ethylbenzene	ND	1.0		µg/L	1	6/18/2018 3:24:22 PM	D52051
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	6/18/2018 3:24:22 PM	D52051
Xylenes, Total	ND	1.5		µg/L	1	6/18/2018 3:24:22 PM	D52051
Surr: 4-Bromofluorobenzene	115	70-130		%Rec	1	6/18/2018 3:24:22 PM	D52051
Surr: Toluene-d8	105	70-130		%Rec	1	6/18/2018 3:24:22 PM	D52051

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: GAC-Inlet
Project: GAC MW 6 13 2018
Collection Date: 6/13/2018 10:45:00 AM
Lab ID: 1806888-002
Matrix: AQUEOUS
Received Date: 6/14/2018 8:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	6/15/2018 4:03:13 PM	38701
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	6/15/2018 4:03:13 PM	38701
Surr: DNOP	111	79.2-146		%Rec	1	6/15/2018 4:03:13 PM	38701
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **AG**	
Gasoline Range Organics (GRO)	0.13	0.050		mg/L	1	6/18/2018 3:47:27 PM	B52051
Surr: BFB	109	70-130		%Rec	1	6/18/2018 3:47:27 PM	B52051
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	6/18/2018 3:47:27 PM	D52051
Toluene	ND	1.0		µg/L	1	6/18/2018 3:47:27 PM	D52051
Ethylbenzene	ND	1.0		µg/L	1	6/18/2018 3:47:27 PM	D52051
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	6/18/2018 3:47:27 PM	D52051
Xylenes, Total	ND	1.5		µg/L	1	6/18/2018 3:47:27 PM	D52051
Surr: 4-Bromofluorobenzene	113	70-130		%Rec	1	6/18/2018 3:47:27 PM	D52051
Surr: Toluene-d8	105	70-130		%Rec	1	6/18/2018 3:47:27 PM	D52051

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: GAC-Lag
Project: GAC MW 6 13 2018
Collection Date: 6/13/2018 10:35:00 AM
Lab ID: 1806888-003
Matrix: AQUEOUS
Received Date: 6/14/2018 8:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	6/15/2018 4:25:27 PM	38701
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	6/15/2018 4:25:27 PM	38701
Surr: DNOP	121	79.2-146		%Rec	1	6/15/2018 4:25:27 PM	38701
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **AG**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	6/18/2018 4:10:37 PM	B52051
Surr: BFB	108	70-130		%Rec	1	6/18/2018 4:10:37 PM	B52051
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	1.0		µg/L	1	6/18/2018 4:10:37 PM	D52051
Toluene	ND	1.0		µg/L	1	6/18/2018 4:10:37 PM	D52051
Ethylbenzene	ND	1.0		µg/L	1	6/18/2018 4:10:37 PM	D52051
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	6/18/2018 4:10:37 PM	D52051
Xylenes, Total	ND	1.5		µg/L	1	6/18/2018 4:10:37 PM	D52051
Surr: 4-Bromofluorobenzene	113	70-130		%Rec	1	6/18/2018 4:10:37 PM	D52051
Surr: Toluene-d8	103	70-130		%Rec	1	6/18/2018 4:10:37 PM	D52051

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1806888**

20-Jun-18

Client: Western Refining Southwest, Inc.

Project: GAC MW 6 13 2018

Sample ID **1806888-001BMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **GAC-Lead**	Batch ID: **38701**	RunNo: **52007**
Prep Date: **6/15/2018**	Analysis Date: **6/15/2018**	SeqNo: **1701655** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.7	0.40	2.500	0	107	89.6	145			
Surr: DNOP	0.28		0.2500		113	79.2	146			

Sample ID **1806888-001BMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **GAC-Lead**	Batch ID: **38701**	RunNo: **52007**
Prep Date: **6/15/2018**	Analysis Date: **6/15/2018**	SeqNo: **1701656** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.6	0.40	2.500	0	102	89.6	145	4.68	20	
Surr: DNOP	0.27		0.2500		108	79.2	146	0	0	

Sample ID **LCS-38701**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **LCSW**	Batch ID: **38701**	RunNo: **52007**
Prep Date: **6/15/2018**	Analysis Date: **6/15/2018**	SeqNo: **1701659** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.2	0.40	2.500	0	87.0	76.5	158			
Surr: DNOP	0.24		0.2500		96.4	79.2	146			

Sample ID **MB-38701**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW**	Batch ID: **38701**	RunNo: **52007**
Prep Date: **6/15/2018**	Analysis Date: **6/15/2018**	SeqNo: **1701660** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.40								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.62		0.5000		123	79.2	146			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1806888**

20-Jun-18

Client: Western Refining Southwest, Inc.

Project: GAC MW 6 13 2018

Sample ID **100ng btex lcs2**	SampType: **LCS4**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **BatchQC**	Batch ID: **D52051**	RunNo: **52051**
Prep Date:	Analysis Date: **6/18/2018**	SeqNo: **1703338** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	110	80	120			
Toluene	21	1.0	20.00	0	103	80	120			
Ethylbenzene	21	1.0	20.00	0	104	80	120			
Methyl tert-butyl ether (MTBE)	20	1.0	20.00	0	99.7	80	120			
Xylenes, Total	60	1.5	60.00	0	101	80	120			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Sample ID **rb2**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **D52051**	RunNo: **52051**
Prep Date:	Analysis Date: **6/18/2018**	SeqNo: **1703365** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 4-Bromofluorobenzene	11		10.00		111	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1806888**

20-Jun-18

Client: Western Refining Southwest, Inc.

Project: GAC MW 6 13 2018

Sample ID	**2.5ug gro lcs2**	SampType:	**LCS**		TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSW**	Batch ID:	**B52051**		RunNo:	**52051**					
Prep Date:		Analysis Date:	**6/18/2018**		SeqNo:	**1703131**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)		0.52	0.050	0.5000	0	104	70	130			
Surr: BFB		9.3		10.00		92.9	70	130			

Sample ID	**rb2**	SampType:	**MBLK**		TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**PBW**	Batch ID:	**B52051**		RunNo:	**52051**					
Prep Date:		Analysis Date:	**6/18/2018**		SeqNo:	**1703132**	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		11		10.00		106	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	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 Southw Work Order Number: 1806888 RcptNo: 1

Received By: Isaiah Ortiz 6/14/2018 8:20:00 AM IO

Completed By: Ashley Gallegos 6/14/2018 2:15:43 PM AG

Reviewed By: IO 6/14/18 Labeled by: ENM 6/14/18

Chain of Custody

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

Log In

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

ENM 6/14/18

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: _____
ENM 6/14/18

Special Handling (if applicable)

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

Person Notified: _____ Date _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks: -001 3,4 & 5 of 5 have headspace -003 1,2,3,4 of 5 have headspace. -ENM 6/14/18
17. Cooler Information

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

Chain-of-Custody Record

Client: **Western Refining**

Mailing Address: **#50 CR 4990**

Bloomfield, NM 87413

Phone #: **505-632-4135**

email or Fax#: Allen.S.Hains@Andeavor.com

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other _____

X EDD (Type) _____

Turn-Around Time:

X Standard ☐ Rush _____

Project Name: **GAC - ~~Lead~~ MW**

Date: 6-13-2018

Project #:

PO# 12615519 12623266

Project Manager:

Allen S. Hains

Sampler: Michael A. Wicker

On Ice: ~~X~~ Yes ☐ No

Sample Temperature: 2.0-1.0(cf) 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1806888	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / ~~DRO / MRO~~	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) BTEx, MTBE only	8270 (Semi-VOA)	8015B DRO Extended
6-13-18	1040	H_2O	GAC - Lead	5 VOA	HCl	-001			X							X		
	↓	" "	GAC - Lead	1-500-ml	Amber													X
	1045	H_2O	GAC -Inlet	5 VOA	HCl	-002			X							X		
	↓	" "	GAC -Inlet	1-500-ml	Amber													X
	1035	H_2O	GAC -Lag	5 VOA	HCl	-003			X							X		
↓	↓	" "	GAC -Lag	1-500-ml	Amber													X

6-13-2018

Date:	Time:	Relinquished by:	Received by:	Date	Time
6-13-18	1330			6/13/18	1930
Date:	Time:	Relinquished by:	Received by:	Date	Time
6/13/18	1830		Courier	6/14/18	820

Remarks:

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

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

August 17, 2018

Allens S Haines

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

RE: GAC Lead OrderNo.: 1808686

Dear Allens S Haines:

Hall Environmental Analysis Laboratory received 3 sample(s) on 8/9/2018 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lead
Project: GAC Lead
Collection Date: 8/8/2018 9:30:00 AM
Lab ID: 1808686-001
Matrix: AQUEOUS
Received Date: 8/9/2018 8:10:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	8/16/2018 11:13:17 AM	39797
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/16/2018 11:13:17 AM	39797
Surr: DNOP	99.8	76.6-135		%Rec	1	8/16/2018 11:13:17 AM	39797
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	0.098	0.050		mg/L	1	8/15/2018 11:49:41 AM	Z53468
Surr: BFB	91.7	70-130		%Rec	1	8/15/2018 11:49:41 AM	Z53468
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Toluene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Ethylbenzene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Naphthalene	ND	2.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
1-Methylnaphthalene	ND	4.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
2-Methylnaphthalene	ND	4.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Acetone	ND	10		µg/L	1	8/15/2018 11:49:41 AM	W53468
Bromobenzene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Bromodichloromethane	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Bromoform	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Bromomethane	ND	3.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
2-Butanone	ND	10		µg/L	1	8/15/2018 11:49:41 AM	W53468
Carbon disulfide	ND	10		µg/L	1	8/15/2018 11:49:41 AM	W53468
Carbon Tetrachloride	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Chlorobenzene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Chloroethane	ND	2.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Chloroform	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Chloromethane	ND	3.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
2-Chlorotoluene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
4-Chlorotoluene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
cis-1,2-DCE	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Dibromochloromethane	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Dibromomethane	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
1,2-Dichlorobenzene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lead
Project: GAC Lead
Collection Date: 8/8/2018 9:30:00 AM
Lab ID: 1808686-001 **Matrix:** AQUEOUS **Received Date:** 8/9/2018 8:10:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
1,4-Dichlorobenzene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Dichlorodifluoromethane	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
1,1-Dichloroethane	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
1,1-Dichloroethene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
1,2-Dichloropropane	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
1,3-Dichloropropane	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
2,2-Dichloropropane	ND	2.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
1,1-Dichloropropene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Hexachlorobutadiene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
2-Hexanone	ND	10		µg/L	1	8/15/2018 11:49:41 AM	W53468
Isopropylbenzene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
4-Isopropyltoluene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
4-Methyl-2-pentanone	ND	10		µg/L	1	8/15/2018 11:49:41 AM	W53468
Methylene Chloride	ND	3.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
n-Butylbenzene	ND	3.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
n-Propylbenzene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
sec-Butylbenzene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Styrene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
tert-Butylbenzene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
trans-1,2-DCE	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
1,1,1-Trichloroethane	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
1,1,2-Trichloroethane	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Trichloroethene (TCE)	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Trichlorofluoromethane	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
1,2,3-Trichloropropane	ND	2.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Vinyl chloride	ND	1.0		µg/L	1	8/15/2018 11:49:41 AM	W53468
Xylenes, Total	ND	1.5		µg/L	1	8/15/2018 11:49:41 AM	W53468
Surr: 1,2-Dichloroethane-d4	108	70-130		%Rec	1	8/15/2018 11:49:41 AM	W53468
Surr: 4-Bromofluorobenzene	98.6	70-130		%Rec	1	8/15/2018 11:49:41 AM	W53468
Surr: Dibromofluoromethane	112	70-130		%Rec	1	8/15/2018 11:49:41 AM	W53468
Surr: Toluene-d8	101	70-130		%Rec	1	8/15/2018 11:49:41 AM	W53468

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Inlet
Project: GAC Lead
Collection Date: 8/8/2018 9:35:00 AM
Lab ID: 1808686-002 **Matrix:** AQUEOUS **Received Date:** 8/9/2018 8:10:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	8/16/2018 11:35:20 AM	39797
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/16/2018 11:35:20 AM	39797
Surr: DNOP	100	76.6-135		%Rec	1	8/16/2018 11:35:20 AM	39797
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	0.39	0.050		mg/L	1	8/15/2018 12:19:02 PM	Z53468
Surr: BFB	102	70-130		%Rec	1	8/15/2018 12:19:02 PM	Z53468
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Toluene	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Ethylbenzene	3.8	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
1,2,4-Trimethylbenzene	2.4	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Naphthalene	2.5	2.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
1-Methylnaphthalene	ND	4.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
2-Methylnaphthalene	ND	4.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Acetone	ND	10		µg/L	1	8/15/2018 12:19:02 PM	W53468
Bromobenzene	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Bromodichloromethane	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Bromoform	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Bromomethane	ND	3.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
2-Butanone	ND	10		µg/L	1	8/15/2018 12:19:02 PM	W53468
Carbon disulfide	ND	10		µg/L	1	8/15/2018 12:19:02 PM	W53468
Carbon Tetrachloride	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Chlorobenzene	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Chloroethane	ND	2.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Chloroform	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Chloromethane	ND	3.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
2-Chlorotoluene	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
4-Chlorotoluene	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
cis-1,2-DCE	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Dibromochloromethane	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Dibromomethane	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
1,2-Dichlorobenzene	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Inlet
Project: GAC Lead
Collection Date: 8/8/2018 9:35:00 AM
Lab ID: 1808686-002 **Matrix:** AQUEOUS **Received Date:** 8/9/2018 8:10:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
1,4-Dichlorobenzene	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Dichlorodifluoromethane	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
1,1-Dichloroethane	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
1,1-Dichloroethene	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
1,2-Dichloropropane	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
1,3-Dichloropropane	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
2,2-Dichloropropane	ND	2.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
1,1-Dichloropropene	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Hexachlorobutadiene	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
2-Hexanone	ND	10		µg/L	1	8/15/2018 12:19:02 PM	W53468
Isopropylbenzene	4.8	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
4-Isopropyltoluene	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
4-Methyl-2-pentanone	ND	10		µg/L	1	8/15/2018 12:19:02 PM	W53468
Methylene Chloride	ND	3.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
n-Butylbenzene	ND	3.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
n-Propylbenzene	6.3	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
sec-Butylbenzene	8.5	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Styrene	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
tert-Butylbenzene	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
trans-1,2-DCE	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
1,1,1-Trichloroethane	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
1,1,2-Trichloroethane	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Trichloroethene (TCE)	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Trichlorofluoromethane	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
1,2,3-Trichloropropane	ND	2.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Vinyl chloride	ND	1.0		µg/L	1	8/15/2018 12:19:02 PM	W53468
Xylenes, Total	ND	1.5		µg/L	1	8/15/2018 12:19:02 PM	W53468
Surr: 1,2-Dichloroethane-d4	106	70-130		%Rec	1	8/15/2018 12:19:02 PM	W53468
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	1	8/15/2018 12:19:02 PM	W53468
Surr: Dibromofluoromethane	108	70-130		%Rec	1	8/15/2018 12:19:02 PM	W53468
Surr: Toluene-d8	99.1	70-130		%Rec	1	8/15/2018 12:19:02 PM	W53468

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lag
Project: GAC Lead
Collection Date: 8/8/2018 9:40:00 AM
Lab ID: 1808686-003
Matrix: AQUEOUS
Received Date: 8/9/2018 8:10:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	8/16/2018 11:57:15 AM	39797
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	8/16/2018 11:57:15 AM	39797
Surr: DNOP	105	76.6-135		%Rec	1	8/16/2018 11:57:15 AM	39797
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **DJF**	
Gasoline Range Organics (GRO)	0.087	0.050		mg/L	1	8/15/2018 12:48:22 PM	Z53468
Surr: BFB	98.2	70-130		%Rec	1	8/15/2018 12:48:22 PM	Z53468
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Toluene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Ethylbenzene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Naphthalene	ND	2.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
1-Methylnaphthalene	ND	4.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
2-Methylnaphthalene	ND	4.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Acetone	ND	10		µg/L	1	8/15/2018 12:48:22 PM	W53468
Bromobenzene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Bromodichloromethane	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Bromoform	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Bromomethane	ND	3.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
2-Butanone	ND	10		µg/L	1	8/15/2018 12:48:22 PM	W53468
Carbon disulfide	ND	10		µg/L	1	8/15/2018 12:48:22 PM	W53468
Carbon Tetrachloride	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Chlorobenzene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Chloroethane	ND	2.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Chloroform	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Chloromethane	ND	3.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
2-Chlorotoluene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
4-Chlorotoluene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
cis-1,2-DCE	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Dibromochloromethane	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Dibromomethane	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
1,2-Dichlorobenzene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lag
Project: GAC Lead
Collection Date: 8/8/2018 9:40:00 AM
Lab ID: 1808686-003 **Matrix:** AQUEOUS **Received Date:** 8/9/2018 8:10:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
1,4-Dichlorobenzene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Dichlorodifluoromethane	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
1,1-Dichloroethane	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
1,1-Dichloroethene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
1,2-Dichloropropane	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
1,3-Dichloropropane	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
2,2-Dichloropropane	ND	2.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
1,1-Dichloropropene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Hexachlorobutadiene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
2-Hexanone	ND	10		µg/L	1	8/15/2018 12:48:22 PM	W53468
Isopropylbenzene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
4-Isopropyltoluene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
4-Methyl-2-pentanone	ND	10		µg/L	1	8/15/2018 12:48:22 PM	W53468
Methylene Chloride	ND	3.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
n-Butylbenzene	ND	3.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
n-Propylbenzene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
sec-Butylbenzene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Styrene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
tert-Butylbenzene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
trans-1,2-DCE	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
1,1,1-Trichloroethane	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
1,1,2-Trichloroethane	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Trichloroethene (TCE)	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Trichlorofluoromethane	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
1,2,3-Trichloropropane	ND	2.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Vinyl chloride	ND	1.0		µg/L	1	8/15/2018 12:48:22 PM	W53468
Xylenes, Total	ND	1.5		µg/L	1	8/15/2018 12:48:22 PM	W53468
Surr: 1,2-Dichloroethane-d4	107	70-130		%Rec	1	8/15/2018 12:48:22 PM	W53468
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	8/15/2018 12:48:22 PM	W53468
Surr: Dibromofluoromethane	110	70-130		%Rec	1	8/15/2018 12:48:22 PM	W53468
Surr: Toluene-d8	99.2	70-130		%Rec	1	8/15/2018 12:48:22 PM	W53468

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1808686**

17-Aug-18

Client: Western Refining Southwest, Inc.

Project: GAC Lead

Sample ID **LCS-39797**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **LCSW**	Batch ID: **39797**	RunNo: **53482**
Prep Date: **8/15/2018**	Analysis Date: **8/16/2018**	SeqNo: **1762631** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.3	0.40	2.500	0	90.1	76.5	158			
Surr: DNOP	0.22		0.2500		86.8	76.6	135			

Sample ID **MB-39797**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW**	Batch ID: **39797**	RunNo: **53482**
Prep Date: **8/15/2018**	Analysis Date: **8/16/2018**	SeqNo: **1762632** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.40								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.47		0.5000		94.0	76.6	135			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1808686**

17-Aug-18

Client: Western Refining Southwest, Inc.

Project: GAC Lead

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **W53468**	RunNo: **53468**
Prep Date:	Analysis Date: **8/15/2018**	SeqNo: **1761672** Units: **µg/L**

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1808686**

17-Aug-18

Client: Western Refining Southwest, Inc.

Project: GAC Lead

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **W53468**	RunNo: **53468**
Prep Date:	Analysis Date: **8/15/2018**	SeqNo: **1761672** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.9		10.00		99.1	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		99.8	70	130			
Surr: Dibromofluoromethane	11		10.00		108	70	130			
Surr: Toluene-d8	9.8		10.00		98.1	70	130			

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **W53468**	RunNo: **53468**
Prep Date:	Analysis Date: **8/15/2018**	SeqNo: **1761673** 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	94.7	70	130			
Chlorobenzene	20	1.0	20.00	0	99.9	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1808686**

17-Aug-18

Client: Western Refining Southwest, Inc.

Project: GAC Lead

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **W53468**	RunNo: **53468**
Prep Date:	Analysis Date: **8/15/2018**	SeqNo: **1761673** 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	104	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	101	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		107	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	11		10.00		108	70	130			
Surr: Toluene-d8	9.6		10.00		96.4	70	130			

Sample ID **1808686-001a ms**	SampType: **MS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **Lead**	Batch ID: **W53468**	RunNo: **53468**
Prep Date:	Analysis Date: **8/15/2018**	SeqNo: **1761675** 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	60.5	137			
Toluene	19	1.0	20.00	0	94.5	70	130			
Chlorobenzene	21	1.0	20.00	0	104	70	130			
1,1-Dichloroethene	21	1.0	20.00	0	103	70	130			
Trichloroethene (TCE)	21	1.0	20.00	0	103	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		103	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		99.9	70	130			
Surr: Dibromofluoromethane	11		10.00		110	70	130			
Surr: Toluene-d8	9.5		10.00		95.2	70	130			

Sample ID **1808686-001a msd**	SampType: **MSD**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **Lead**	Batch ID: **W53468**	RunNo: **53468**
Prep Date:	Analysis Date: **8/15/2018**	SeqNo: **1761676** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	99.8	60.5	137	3.63	20	
Toluene	18	1.0	20.00	0	90.7	70	130	4.07	20	
Chlorobenzene	20	1.0	20.00	0	99.2	70	130	4.36	20	
1,1-Dichloroethene	20	1.0	20.00	0	100	70	130	2.73	20	
Trichloroethene (TCE)	20	1.0	20.00	0	97.7	70	130	5.14	20	
Surr: 1,2-Dichloroethane-d4	10		10.00		103	70	130	0	0	
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130	0	0	
Surr: Dibromofluoromethane	11		10.00		111	70	130	0	0	
Surr: Toluene-d8	9.4		10.00		94.1	70	130	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1808686**

17-Aug-18

Client: Western Refining Southwest, Inc.

Project: GAC Lead

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **Z53468**	RunNo: **53468**
Prep Date:	Analysis Date: **8/15/2018**	SeqNo: **1761928** 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	9.8		10.00		98.1	70	130			

Sample ID **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **Z53468**	RunNo: **53468**
Prep Date:	Analysis Date: **8/15/2018**	SeqNo: **1761929** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.52	0.050	0.5000	0	104	70	130			
Surr: BFB	9.4		10.00		94.0	70	130			

Sample ID **1808686-002a ms**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **Inlet**	Batch ID: **Z53468**	RunNo: **53468**
Prep Date:	Analysis Date: **8/15/2018**	SeqNo: **1761932** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.94	0.050	0.5000	0.3922	110	63.4	130			
Surr: BFB	9.9		10.00		99.4	70	130			

Sample ID **1808686-002a msd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **Inlet**	Batch ID: **Z53468**	RunNo: **53468**
Prep Date:	Analysis Date: **8/15/2018**	SeqNo: **1761933** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.90	0.050	0.5000	0.3922	102	63.4	130	4.11	20	
Surr: BFB	10		10.00		101	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	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 Southw** Work Order Number: **1808686** RcptNo: **1**

Received By: **Anne Thorne** **8/9/2018 8:10:00 AM**

Completed By: **Erin Melendrez** **8/10/2018 2:38:39 PM**

Reviewed By: ENM 8/10/18

LB: JAB 08/10/18

Chain of Custody

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

Log In

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

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

Adjusted? _____

Checked by: JAB 08/10/18

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

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

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

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

Chain-of-Custody Record

Client: Western Refining

Mailing Address: 50 CR 4990
Bloomfield, NM 87413

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☑ EDD (Type) PDF

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: GAC - Lead

Project #: PO# 126233266

Project Manager: Allen S. Haines

Sampler: Eric Carroll
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.0

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / ~~DRO~~ / ~~MRO~~)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) VOC's	8270 (Semi-VOA)	8015B DRO Extended				Air Bubbles (Y or N)
8/8/18	930	AQ	Lead	5 VOA	HCl	1800810860 -001			X							X						
	930	AQ	Lead	1 Amber	Cool													X				
	935		Inlet	5 VOA	HCl	-002			X							X						
	935		Inlet	1 Amber	Cool													X				
	940		Lag	5 VOA	HCl	-003			X							X						
	940		Lag	1 Amber	Cool													X				

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Date	Time
8/8/18	1530		Christy Walls	8/8/18	1530
8/8/18	1840	Christy Walls		08/09/18	0810

Remarks:

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

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

October 11, 2018

Allens S Hains

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL:
FAX

RE: GAC 9 26 2018 OrderNo.: 1809G16

Dear Allens S Hains:

Hall Environmental Analysis Laboratory received 3 sample(s) on 9/27/2018 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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#: **1809G16**
Date: **10/11/2018**

CLIENT: Western Refining Southwest, Inc.
Project: GAC 9 26 2018

Analytical Notes Regrading EPA Method 8015 DRO/MRO:
Samples with and "S" flagged surrogate we reanalzyed to confirm the data.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lag
Project: GAC 9 26 2018
Collection Date: 9/26/2018 11:00:00 AM
Lab ID: 1809G16-001A
Matrix: Aqueous

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: **AG**	
Benzene	ND	0.17	1.0		µg/L	1	9/28/2018 3:18:27 PM	D54515
Toluene	ND	0.17	1.0		µg/L	1	9/28/2018 3:18:27 PM	D54515
Ethylbenzene	ND	0.22	1.0		µg/L	1	9/28/2018 3:18:27 PM	D54515
Methyl tert-butyl ether (MTBE)	ND	0.32	1.0		µg/L	1	9/28/2018 3:18:27 PM	D54515
Xylenes, Total	ND	0.64	1.5		µg/L	1	9/28/2018 3:18:27 PM	D54515
Surr: 4-Bromofluorobenzene	93.7	0	70-130		%Rec	1	9/28/2018 3:18:27 PM	D54515
Surr: Toluene-d8	95.6	0	70-130		%Rec	1	9/28/2018 3:18:27 PM	D54515
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **AG**	
Gasoline Range Organics (GRO)	0.20	0.0097	0.050		mg/L	1	9/28/2018 3:18:27 PM	C54515
Surr: BFB	84.1	0	70-130		%Rec	1	9/28/2018 3:18:27 PM	C54515

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lag
Project: GAC 9 26 2018
Collection Date: 9/26/2018 11:00:00 AM
Lab ID: 1809G16-001B
Matrix: Aqueous

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	0.31	0.40		mg/L	1	10/3/2018 12:09:47 PM	40750
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	10/3/2018 12:09:47 PM	40750
Surr: DNOP	130	0	76.6-135		%Rec	1	10/3/2018 12:09:47 PM	40750

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lead
Project: GAC 9 26 2018
Collection Date: 9/26/2018 10:50:00 AM
Lab ID: 1809G16-002A
Matrix: Aqueous

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: **AG**	
Benzene	ND	0.17	1.0		µg/L	1	9/28/2018 3:41:37 PM	D54515
Toluene	ND	0.17	1.0		µg/L	1	9/28/2018 3:41:37 PM	D54515
Ethylbenzene	ND	0.22	1.0		µg/L	1	9/28/2018 3:41:37 PM	D54515
Methyl tert-butyl ether (MTBE)	ND	0.32	1.0		µg/L	1	9/28/2018 3:41:37 PM	D54515
Xylenes, Total	ND	0.64	1.5		µg/L	1	9/28/2018 3:41:37 PM	D54515
Surr: 4-Bromofluorobenzene	93.1	0	70-130		%Rec	1	9/28/2018 3:41:37 PM	D54515
Surr: Toluene-d8	99.6	0	70-130		%Rec	1	9/28/2018 3:41:37 PM	D54515
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **AG**	
Gasoline Range Organics (GRO)	0.22	0.0097	0.050		mg/L	1	9/28/2018 3:41:37 PM	C54515
Surr: BFB	83.4	0	70-130		%Rec	1	9/28/2018 3:41:37 PM	C54515

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lead
Project: GAC 9 26 2018
Collection Date: 9/26/2018 10:50:00 AM
Lab ID: 1809G16-002B
Matrix: Aqueous

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **lrm**	
Diesel Range Organics (DRO)	2.5	0.31	0.40		mg/L	1	10/3/2018 12:31:52 PM	40750
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	10/3/2018 12:31:52 PM	40750
Surr: DNOP	143	0	76.6-135	S	%Rec	1	10/3/2018 12:31:52 PM	40750

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Inlet
Project: GAC 9 26 2018
Collection Date: 9/26/2018 10:45:00 AM
Lab ID: 1809G16-003A
Matrix: Aqueous

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: **AG**	
Benzene	ND	0.17	1.0		µg/L	1	9/28/2018 4:04:41 PM	D54515
Toluene	0.17	0.17	1.0	J	µg/L	1	9/28/2018 4:04:41 PM	D54515
Ethylbenzene	0.52	0.22	1.0	J	µg/L	1	9/28/2018 4:04:41 PM	D54515
Methyl tert-butyl ether (MTBE)	ND	0.32	1.0		µg/L	1	9/28/2018 4:04:41 PM	D54515
Xylenes, Total	1.5	0.64	1.5		µg/L	1	9/28/2018 4:04:41 PM	D54515
Surr: 4-Bromofluorobenzene	93.0	0	70-130		%Rec	1	9/28/2018 4:04:41 PM	D54515
Surr: Toluene-d8	98.0	0	70-130		%Rec	1	9/28/2018 4:04:41 PM	D54515
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **AG**	
Gasoline Range Organics (GRO)	0.28	0.0097	0.050		mg/L	1	9/28/2018 4:04:41 PM	C54515
Surr: BFB	82.8	0	70-130		%Rec	1	9/28/2018 4:04:41 PM	C54515

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Inlet
Project: GAC 9 26 2018
Collection Date: 9/26/2018 10:45:00 AM
Lab ID: 1809G16-003B
Matrix: Aqueous

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **lrm**	
Diesel Range Organics (DRO)	0.36	0.31	0.40	J	mg/L	1	10/3/2018 1:16:04 PM	40750
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	10/3/2018 1:16:04 PM	40750
Surr: DNOP	129	0	76.6-135		%Rec	1	10/3/2018 1:16:04 PM	40750

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1809G16**

12-Oct-18

Client: Western Refining Southwest, Inc.

Project: GAC 9 26 2018

Sample ID **LCS-40750**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range**							
Client ID: **LCSW**	Batch ID: **40750**	RunNo: **54604**							
Prep Date: **10/2/2018**	Analysis Date: **10/3/2018**	SeqNo: **1811185**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.8	0.40	2.500	0	112	76.5	158			
Surr: DNOP	0.32		0.2500		127	76.6	135			

Sample ID **MB-40750**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**							
Client ID: **PBW**	Batch ID: **40750**	RunNo: **54604**							
Prep Date: **10/2/2018**	Analysis Date: **10/3/2018**	SeqNo: **1811186**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.40								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.71		0.5000		141	76.6	135			S

Sample ID **1809G16-001BMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Diesel Range**							
Client ID: **Lag**	Batch ID: **40750**	RunNo: **54604**							
Prep Date: **10/2/2018**	Analysis Date: **10/3/2018**	SeqNo: **1812022**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.9	0.40	2.500	0	117	89.6	145			
Surr: DNOP	0.32		0.2500		129	76.6	135			

Sample ID **1809G16-001BMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Diesel Range**							
Client ID: **Lag**	Batch ID: **40750**	RunNo: **54604**							
Prep Date: **10/2/2018**	Analysis Date: **10/3/2018**	SeqNo: **1812023**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	3.2	0.40	2.500	0	128	89.6	145	8.59	20	
Surr: DNOP	0.26		0.2500		104	76.6	135	0	0	

Sample ID **LCS-40798**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range**							
Client ID: **LCSW**	Batch ID: **40798**	RunNo: **54673**							
Prep Date: **10/4/2018**	Analysis Date: **10/5/2018**	SeqNo: **1814389**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	0.29		0.2500		117	76.6	135			

Sample ID **LCSD-40798**	SampType: **LCSD**	TestCode: **EPA Method 8015D: Diesel Range**							
Client ID: **LCSS02**	Batch ID: **40798**	RunNo: **54673**							
Prep Date: **10/4/2018**	Analysis Date: **10/5/2018**	SeqNo: **1814390**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1809G16**

12-Oct-18

Client: Western Refining Southwest, Inc.

Project: GAC 9 26 2018

Sample ID	**LCSD-40798**	SampType: **LCSD**			TestCode: **EPA Method 8015D: Diesel Range**					
Client ID:	**LCSS02**	Batch ID: **40798**			RunNo: **54673**					
Prep Date:	**10/4/2018**	Analysis Date: **10/5/2018**			SeqNo: **1814390**	Units: **%Rec**				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP		0.22		0.2500		89.4	76.6	135	0	0	

Sample ID	**MB-40798**	SampType: **MBLK**			TestCode: **EPA Method 8015D: Diesel Range**					
Client ID:	**PBW**	Batch ID: **40798**			RunNo: **54673**					
Prep Date:	**10/4/2018**	Analysis Date: **10/5/2018**			SeqNo: **1814391**	Units: **%Rec**				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP		0.56		0.5000		112	76.6	135			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1809G16**

12-Oct-18

Client: Western Refining Southwest, Inc.

Project: GAC 9 26 2018

Sample ID **100ng btex lcs**	SampType: **LCS4**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **BatchQC**	Batch ID: **D54515**	RunNo: **54515**
Prep Date:	Analysis Date: **9/28/2018**	SeqNo: **1807518** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	105	80	120			
Toluene	21	1.0	20.00	0	107	80	120			
Ethylbenzene	21	1.0	20.00	0	105	80	120			
Methyl tert-butyl ether (MTBE)	20	1.0	20.00	0	100	80	120			
Xylenes, Total	63	1.5	60.00	0	106	80	120			
Surr: 4-Bromofluorobenzene	8.8		10.00		88.2	70	130			
Surr: Toluene-d8	9.9		10.00		98.8	70	130			

Sample ID **1809g16-002ams**	SampType: **MS4**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **Lead**	Batch ID: **D54515**	RunNo: **54515**
Prep Date:	Analysis Date: **9/28/2018**	SeqNo: **1807527** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	99.6	80	120			
Toluene	21	1.0	20.00	0	104	80	120			
Ethylbenzene	21	1.0	20.00	0	104	80	120			
Methyl tert-butyl ether (MTBE)	19	1.0	20.00	0	95.7	43.6	145			
Xylenes, Total	64	1.5	60.00	0	106	80	120			
Surr: 4-Bromofluorobenzene	9.3		10.00		92.6	70	130			
Surr: Toluene-d8	9.9		10.00		99.2	70	130			

Sample ID **1809g16-002amsd**	SampType: **MSD4**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **Lead**	Batch ID: **D54515**	RunNo: **54515**
Prep Date:	Analysis Date: **9/28/2018**	SeqNo: **1807528** 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	80	120	3.89	20	
Toluene	21	1.0	20.00	0	106	80	120	2.77	20	
Ethylbenzene	21	1.0	20.00	0	105	80	120	1.27	20	
Methyl tert-butyl ether (MTBE)	20	1.0	20.00	0	99.3	43.6	145	3.69	20	
Xylenes, Total	63	1.5	60.00	0	105	80	120	0.698	20	
Surr: 4-Bromofluorobenzene	9.6		10.00		96.5	70	130	0	0	
Surr: Toluene-d8	10		10.00		100	70	130	0	0	

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **D54515**	RunNo: **54515**
Prep Date:	Analysis Date: **9/28/2018**	SeqNo: **1807530** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1809G16**

12-Oct-18

Client: Western Refining Southwest, Inc.

Project: GAC 9 26 2018

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **D54515**	RunNo: **54515**
Prep Date:	Analysis Date: **9/28/2018**	SeqNo: **1807530** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 4-Bromofluorobenzene	9.5		10.00		95.0	70	130			
Surr: Toluene-d8	9.6		10.00		96.4	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1809G16**

12-Oct-18

Client: Western Refining Southwest, Inc.

Project: GAC 9 26 2018

Sample ID **1809g16-001ams**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **Lag**	Batch ID: **C54515**	RunNo: **54515**
Prep Date:	Analysis Date: **9/28/2018**	SeqNo: **1807510** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.65	0.050	0.5000	0.1962	90.0	63.4	130			
Surr: BFB	8.1		10.00		81.4	70	130			

Sample ID **1809g16-001amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **Lag**	Batch ID: **C54515**	RunNo: **54515**
Prep Date:	Analysis Date: **9/28/2018**	SeqNo: **1807511** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.62	0.050	0.5000	0.1962	84.4	63.4	130	4.37	20	
Surr: BFB	8.2		10.00		81.5	70	130	0	0	

Sample ID **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **C54515**	RunNo: **54515**
Prep Date:	Analysis Date: **9/28/2018**	SeqNo: **1807514** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.44	0.050	0.5000	0	88.2	70	130			
Surr: BFB	7.4		10.00		74.0	70	130			

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **C54515**	RunNo: **54515**
Prep Date:	Analysis Date: **9/28/2018**	SeqNo: **1807515** 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	8.5		10.00		84.8	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	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 Southw** Work Order Number: **1809G16** RcptNo: **1**

Received By: **Ashley Gallegos** **9/27/2018 7:00:00 AM**

Completed By: **Ashley Gallegos** **9/27/2018 9:17:07 AM**

Reviewed By: ENM 9/27/18 labeled by: JAB 09/27/18

Chain of Custody

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

Log In

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

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

Adjusted? _____

Checked by: JAB 09/27/18

Special Handling (if applicable)

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

Person Notified: _____ Date _____

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

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good	Yes			

Chain-of-Custody Record

Client: **Western Refining**

Mailing Address: **50 CR 4990**

Bloomfield, NM 87413

Phone #: **505-632-4135**

email or Fax#:

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other

X EDD (Type) PDF

Turn-Around Time:

X Standard ☐ Rush

Project Name: **GAC**

9/26/2018

Project #:

PO#12623266

Project Manager:

Allen S. Hains

Sampler:

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1809G16	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / ~~DRO / MRO~~)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) BTEX, MTBE Only	8270 (Semi-VOA)	8015 B DRO Extented				Air Bubbles (Y or N)
9/26/18	1100	H_2O	Lag	3 - VOA	HCl	-001			X							X						
↓	1100			1 - Amber	Cool													X				
	1050	H_2O	Lead	3 - VOA	HCl	-002			X							X						
	1050			1 - Amber	Cool													X				
	1045	H_2O	Inlet	3 - VOA	HCl	-003			X							X						
↓	1045			1 - Amber	Cool													X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/26	14:15	[signature]	[signature]	9/26/18	1415
9/26/18	1820	[signature]	[signature]	09/27/18	0700

Remarks:

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

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

November 16, 2018

Allen Haines

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL:
FAX

RE: GAC 10 24 2018 OrderNo.: 1810D80

Dear Allen Haines:

Hall Environmental Analysis Laboratory received 3 sample(s) on 10/25/2018 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued November 7, 2018.

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. 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 Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

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

Case Narrative

WO#: **1810D80**
Date: **11/16/2018**

CLIENT: Western Refining Southwest, Inc.
Project: GAC 10 24 2018

Analytical Notes Regarding EPA Method 8015 GRO:
The result for the "Inlet" sample has been updated in this report from the original report. An integration error occurred affecting only the "Inlet" GRO sample. The original result of 0.069mg/L has been updated to 0.37mg/L.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lag
Project: GAC 10 24 2018
Collection Date: 10/24/2018 1:35:00 PM
Lab ID: 1810D80-001
Matrix: AQUEOUS
Received Date: 10/25/2018 8:30:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	0.31	0.40		mg/L	1	10/30/2018 4:33:39 PM	41275
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	10/30/2018 4:33:39 PM	41275
Surr: DNOP	114	0	76.6-135		%Rec	1	10/30/2018 4:33:39 PM	41275
EPA METHOD 8260B: VOLATILES							Analyst: **AG**	
Benzene	ND	0.17	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Toluene	ND	0.17	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Ethylbenzene	ND	0.22	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Methyl tert-butyl ether (MTBE)	ND	0.32	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
1,2,4-Trimethylbenzene	ND	0.25	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
1,3,5-Trimethylbenzene	ND	0.23	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
1,2-Dichloroethane (EDC)	ND	0.40	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
1,2-Dibromoethane (EDB)	ND	0.23	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Naphthalene	ND	0.29	2.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
1-Methylnaphthalene	ND	0.34	4.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
2-Methylnaphthalene	ND	0.24	4.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Acetone	4.3	0.79	10	J	µg/L	1	10/27/2018 2:36:39 AM	C55195
Bromobenzene	ND	0.32	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Bromodichloromethane	ND	0.28	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Bromoform	ND	0.32	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Bromomethane	ND	0.26	3.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
2-Butanone	ND	1.3	10		µg/L	1	10/27/2018 2:36:39 AM	C55195
Carbon disulfide	ND	0.39	10		µg/L	1	10/27/2018 2:36:39 AM	C55195
Carbon Tetrachloride	ND	0.13	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Chlorobenzene	ND	0.29	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Chloroethane	ND	0.16	2.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Chloroform	ND	0.40	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Chloromethane	ND	0.29	3.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
2-Chlorotoluene	ND	0.40	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
4-Chlorotoluene	ND	0.40	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
cis-1,2-DCE	ND	0.38	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
cis-1,3-Dichloropropene	ND	0.30	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
1,2-Dibromo-3-chloropropane	ND	0.47	2.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Dibromochloromethane	ND	0.24	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Dibromomethane	ND	0.32	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
1,2-Dichlorobenzene	ND	0.31	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
1,3-Dichlorobenzene	ND	0.31	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
1,4-Dichlorobenzene	ND	0.40	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Dichlorodifluoromethane	ND	1.0	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
1,1-Dichloroethane	ND	0.40	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lag
Project: GAC 10 24 2018
Collection Date: 10/24/2018 1:35:00 PM
Lab ID: 1810D80-001
Matrix: AQUEOUS
Received Date: 10/25/2018 8:30:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **AG**	
1,1-Dichloroethene	ND	0.12	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
1,2-Dichloropropane	ND	0.15	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
1,3-Dichloropropane	ND	0.27	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
2,2-Dichloropropane	ND	0.18	2.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Hexachlorobutadiene	ND	0.80	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
2-Hexanone	ND	0.91	10		µg/L	1	10/27/2018 2:36:39 AM	C55195
Isopropylbenzene	ND	0.22	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
4-Isopropyltoluene	ND	0.24	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
4-Methyl-2-pentanone	0.59	0.45	10	J	µg/L	1	10/27/2018 2:36:39 AM	C55195
Methylene Chloride	ND	0.21	3.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
n-Butylbenzene	ND	0.25	3.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
n-Propylbenzene	ND	0.24	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
sec-Butylbenzene	ND	0.20	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Styrene	ND	0.25	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
tert-Butylbenzene	ND	0.22	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
1,1,1,2-Tetrachloroethane	ND	0.25	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
1,1,2,2-Tetrachloroethane	ND	0.33	2.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
trans-1,3-Dichloropropene	ND	0.28	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
1,2,3-Trichlorobenzene	ND	0.28	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
1,2,4-Trichlorobenzene	ND	0.27	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
1,1,1-Trichloroethane	ND	0.15	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
1,1,2-Trichloroethane	ND	0.23	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Trichloroethene (TCE)	ND	0.26	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Trichlorofluoromethane	ND	0.17	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
1,2,3-Trichloropropane	ND	0.57	2.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Vinyl chloride	ND	0.11	1.0		µg/L	1	10/27/2018 2:36:39 AM	C55195
Xylenes, Total	ND	0.64	1.5		µg/L	1	10/27/2018 2:36:39 AM	C55195
Surr: 1,2-Dichloroethane-d4	86.0	0	70-130		%Rec	1	10/27/2018 2:36:39 AM	C55195
Surr: 4-Bromofluorobenzene	103	0	70-130		%Rec	1	10/27/2018 2:36:39 AM	C55195
Surr: Dibromofluoromethane	89.6	0	70-130		%Rec	1	10/27/2018 2:36:39 AM	C55195
Surr: Toluene-d8	100	0	70-130		%Rec	1	10/27/2018 2:36:39 AM	C55195
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	0.031	0.050		mg/L	1	11/2/2018 1:38:28 PM	R55517
Surr: BFB	97.3	0	70-130		%Rec	1	11/2/2018 1:38:28 PM	R55517

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Lead
Project: GAC 10 24 2018 **Collection Date:** 10/24/2018 1:15:00 PM
Lab ID: 1810D80-002 **Matrix:** AQUEOUS **Received Date:** 10/25/2018 8:30:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **lrm**	
Diesel Range Organics (DRO)	0.82	0.31	0.40		mg/L	1	10/30/2018 5:39:54 PM	41275
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	10/30/2018 5:39:54 PM	41275
Surr: DNOP	114	0	76.6-135		%Rec	1	10/30/2018 5:39:54 PM	41275
EPA METHOD 8260B: VOLATILES							Analyst: **AG**	
Benzene	ND	0.17	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
Toluene	ND	0.17	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
Ethylbenzene	0.62	0.22	1.0	J	µg/L	1	10/27/2018 4:02:25 AM	C55195
Methyl tert-butyl ether (MTBE)	0.75	0.32	1.0	J	µg/L	1	10/27/2018 4:02:25 AM	C55195
1,2,4-Trimethylbenzene	1.3	0.25	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
1,3,5-Trimethylbenzene	0.44	0.23	1.0	J	µg/L	1	10/27/2018 4:02:25 AM	C55195
1,2-Dichloroethane (EDC)	ND	0.40	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
1,2-Dibromoethane (EDB)	ND	0.23	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
Naphthalene	1.1	0.29	2.0	J	µg/L	1	10/27/2018 4:02:25 AM	C55195
1-Methylnaphthalene	0.63	0.34	4.0	J	µg/L	1	10/27/2018 4:02:25 AM	C55195
2-Methylnaphthalene	ND	0.24	4.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
Acetone	8.1	0.79	10	J	µg/L	1	10/27/2018 4:02:25 AM	C55195
Bromobenzene	ND	0.32	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
Bromodichloromethane	ND	0.28	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
Bromoform	ND	0.32	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
Bromomethane	ND	0.26	3.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
2-Butanone	ND	1.3	10		µg/L	1	10/27/2018 4:02:25 AM	C55195
Carbon disulfide	ND	0.39	10		µg/L	1	10/27/2018 4:02:25 AM	C55195
Carbon Tetrachloride	ND	0.13	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
Chlorobenzene	ND	0.29	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
Chloroethane	ND	0.16	2.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
Chloroform	ND	0.40	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
Chloromethane	ND	0.29	3.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
2-Chlorotoluene	ND	0.40	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
4-Chlorotoluene	ND	0.40	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
cis-1,2-DCE	ND	0.38	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
cis-1,3-Dichloropropene	ND	0.30	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
1,2-Dibromo-3-chloropropane	ND	0.47	2.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
Dibromochloromethane	ND	0.24	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
Dibromomethane	ND	0.32	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
1,2-Dichlorobenzene	ND	0.31	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
1,3-Dichlorobenzene	ND	0.31	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
1,4-Dichlorobenzene	ND	0.40	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
Dichlorodifluoromethane	ND	1.0	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
1,1-Dichloroethane	ND	0.40	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Lead
Project: GAC 10 24 2018 **Collection Date:** 10/24/2018 1:15:00 PM
Lab ID: 1810D80-002 **Matrix:** AQUEOUS **Received Date:** 10/25/2018 8:30:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **AG**	
1,1-Dichloroethene	ND	0.12	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
1,2-Dichloropropane	ND	0.15	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
1,3-Dichloropropane	ND	0.27	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
2,2-Dichloropropane	ND	0.18	2.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
Hexachlorobutadiene	ND	0.80	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
2-Hexanone	ND	0.91	10		µg/L	1	10/27/2018 4:02:25 AM	C55195
Isopropylbenzene	0.30	0.22	1.0	J	µg/L	1	10/27/2018 4:02:25 AM	C55195
4-Isopropyltoluene	ND	0.24	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
4-Methyl-2-pentanone	11	0.45	10		µg/L	1	10/27/2018 4:02:25 AM	C55195
Methylene Chloride	ND	0.21	3.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
n-Butylbenzene	ND	0.25	3.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
n-Propylbenzene	0.58	0.24	1.0	J	µg/L	1	10/27/2018 4:02:25 AM	C55195
sec-Butylbenzene	0.32	0.20	1.0	J	µg/L	1	10/27/2018 4:02:25 AM	C55195
Styrene	ND	0.25	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
tert-Butylbenzene	ND	0.22	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
1,1,1,2-Tetrachloroethane	ND	0.25	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
1,1,2,2-Tetrachloroethane	ND	0.33	2.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
trans-1,3-Dichloropropene	ND	0.28	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
1,2,3-Trichlorobenzene	ND	0.28	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
1,2,4-Trichlorobenzene	ND	0.27	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
1,1,1-Trichloroethane	ND	0.15	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
1,1,2-Trichloroethane	ND	0.23	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
Trichloroethene (TCE)	ND	0.26	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
Trichlorofluoromethane	ND	0.17	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
1,2,3-Trichloropropane	ND	0.57	2.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
Vinyl chloride	ND	0.11	1.0		µg/L	1	10/27/2018 4:02:25 AM	C55195
Xylenes, Total	1.9	0.64	1.5		µg/L	1	10/27/2018 4:02:25 AM	C55195
Surr: 1,2-Dichloroethane-d4	87.1	0	70-130		%Rec	1	10/27/2018 4:02:25 AM	C55195
Surr: 4-Bromofluorobenzene	103	0	70-130		%Rec	1	10/27/2018 4:02:25 AM	C55195
Surr: Dibromofluoromethane	93.4	0	70-130		%Rec	1	10/27/2018 4:02:25 AM	C55195
Surr: Toluene-d8	98.7	0	70-130		%Rec	1	10/27/2018 4:02:25 AM	C55195
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	0.031	0.050		mg/L	1	11/2/2018 2:07:07 PM	R55517
Surr: BFB	101	0	70-130		%Rec	1	11/2/2018 2:07:07 PM	R55517

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Inlet
Project: GAC 10 24 2018 **Collection Date:** 10/24/2018 1:30:00 PM
Lab ID: 1810D80-003 **Matrix:** AQUEOUS **Received Date:** 10/25/2018 8:30:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015D: DIESEL RANGE							Analyst: **lrm**	
Diesel Range Organics (DRO)	0.48	0.31	0.40		mg/L	1	10/30/2018 6:01:53 PM	41275
Motor Oil Range Organics (MRO)	ND	2.5	2.5		mg/L	1	10/30/2018 6:01:53 PM	41275
Surr: DNOP	113	0	76.6-135		%Rec	1	10/30/2018 6:01:53 PM	41275
EPA METHOD 8260B: VOLATILES							Analyst: **AG**	
Benzene	0.27	0.17	1.0	J	µg/L	1	10/27/2018 4:59:36 AM	C55195
Toluene	0.29	0.17	1.0	J	µg/L	1	10/27/2018 4:59:36 AM	C55195
Ethylbenzene	11	0.22	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
Methyl tert-butyl ether (MTBE)	ND	0.32	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
1,2,4-Trimethylbenzene	22	0.25	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
1,3,5-Trimethylbenzene	4.6	0.23	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
1,2-Dichloroethane (EDC)	ND	0.40	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
1,2-Dibromoethane (EDB)	ND	0.23	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
Naphthalene	6.9	0.29	2.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
1-Methylnaphthalene	10	0.34	4.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
2-Methylnaphthalene	1.5	0.24	4.0	J	µg/L	1	10/27/2018 4:59:36 AM	C55195
Acetone	67	0.79	10		µg/L	1	10/27/2018 4:59:36 AM	C55195
Bromobenzene	ND	0.32	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
Bromodichloromethane	ND	0.28	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
Bromoform	ND	0.32	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
Bromomethane	ND	0.26	3.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
2-Butanone	69	1.3	10		µg/L	1	10/27/2018 4:59:36 AM	C55195
Carbon disulfide	2.4	0.39	10	J	µg/L	1	10/27/2018 4:59:36 AM	C55195
Carbon Tetrachloride	ND	0.13	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
Chlorobenzene	ND	0.29	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
Chloroethane	ND	0.16	2.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
Chloroform	ND	0.40	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
Chloromethane	ND	0.29	3.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
2-Chlorotoluene	ND	0.40	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
4-Chlorotoluene	ND	0.40	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
cis-1,2-DCE	ND	0.38	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
cis-1,3-Dichloropropene	ND	0.30	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
1,2-Dibromo-3-chloropropane	ND	0.47	2.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
Dibromochloromethane	ND	0.24	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
Dibromomethane	ND	0.32	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
1,2-Dichlorobenzene	ND	0.31	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
1,3-Dichlorobenzene	ND	0.31	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
1,4-Dichlorobenzene	ND	0.40	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
Dichlorodifluoromethane	ND	1.0	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
1,1-Dichloroethane	ND	0.40	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Inlet
Project: GAC 10 24 2018
Collection Date: 10/24/2018 1:30:00 PM
Lab ID: 1810D80-003
Matrix: AQUEOUS
Received Date: 10/25/2018 8:30:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: **AG**	
1,1-Dichloroethene	ND	0.12	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
1,2-Dichloropropane	ND	0.15	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
1,3-Dichloropropane	ND	0.27	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
2,2-Dichloropropane	ND	0.18	2.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
Hexachlorobutadiene	ND	0.80	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
2-Hexanone	ND	0.91	10		µg/L	1	10/27/2018 4:59:36 AM	C55195
Isopropylbenzene	4.1	0.22	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
4-Isopropyltoluene	0.68	0.24	1.0	J	µg/L	1	10/27/2018 4:59:36 AM	C55195
4-Methyl-2-pentanone	25	0.45	10		µg/L	1	10/27/2018 4:59:36 AM	C55195
Methylene Chloride	ND	0.21	3.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
n-Butylbenzene	ND	0.25	3.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
n-Propylbenzene	8.6	0.24	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
sec-Butylbenzene	4.4	0.20	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
Styrene	ND	0.25	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
tert-Butylbenzene	0.28	0.22	1.0	J	µg/L	1	10/27/2018 4:59:36 AM	C55195
1,1,1,2-Tetrachloroethane	ND	0.25	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
1,1,2,2-Tetrachloroethane	ND	0.33	2.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
trans-1,3-Dichloropropene	ND	0.28	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
1,2,3-Trichlorobenzene	ND	0.28	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
1,2,4-Trichlorobenzene	ND	0.27	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
1,1,1-Trichloroethane	ND	0.15	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
1,1,2-Trichloroethane	ND	0.23	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
Trichloroethene (TCE)	ND	0.26	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
Trichlorofluoromethane	ND	0.17	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
1,2,3-Trichloropropane	ND	0.57	2.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
Vinyl chloride	ND	0.11	1.0		µg/L	1	10/27/2018 4:59:36 AM	C55195
Xylenes, Total	35	0.64	1.5		µg/L	1	10/27/2018 4:59:36 AM	C55195
Surr: 1,2-Dichloroethane-d4	84.5	0	70-130		%Rec	1	10/27/2018 4:59:36 AM	C55195
Surr: 4-Bromofluorobenzene	83.1	0	70-130		%Rec	1	10/27/2018 4:59:36 AM	C55195
Surr: Dibromofluoromethane	87.5	0	70-130		%Rec	1	10/27/2018 4:59:36 AM	C55195
Surr: Toluene-d8	96.1	0	70-130		%Rec	1	10/27/2018 4:59:36 AM	C55195
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **RAA**	
Gasoline Range Organics (GRO)	0.37	0.031	0.050		mg/L	1	11/2/2018 2:35:52 PM	R55517
Surr: BFB	98.6	0	70-130		%Rec	1	11/2/2018 2:35:52 PM	R55517

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Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810D80**

16-Nov-18

Client: Western Refining Southwest, Inc.

Project: GAC 10 24 2018

Sample ID **LCS-41275**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **LCSW**	Batch ID: **41275**	RunNo: **55258**
Prep Date: **10/30/2018**	Analysis Date: **10/30/2018**	SeqNo: **1839471** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.4	0.40	2.500	0	94.7	76.5	158			
Surr: DNOP	0.25		0.2500		101	76.6	135			

Sample ID **MB-41275**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW**	Batch ID: **41275**	RunNo: **55258**
Prep Date: **10/30/2018**	Analysis Date: **10/30/2018**	SeqNo: **1839472** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.40								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.53		0.5000		105	76.6	135			

Sample ID **1810D80-001BMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **Lag**	Batch ID: **41275**	RunNo: **55258**
Prep Date: **10/30/2018**	Analysis Date: **10/30/2018**	SeqNo: **1839474** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.7	0.40	2.500	0	109	89.6	145			
Surr: DNOP	0.28		0.2500		113	76.6	135			

Sample ID **1810D80-001BMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **Lag**	Batch ID: **41275**	RunNo: **55258**
Prep Date: **10/30/2018**	Analysis Date: **10/30/2018**	SeqNo: **1839475** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.8	0.40	2.500	0	110	89.6	145	0.867	20	
Surr: DNOP	0.27		0.2500		107	76.6	135	0	0	

Qualifiers:

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ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1810D80**
16-Nov-18

Client: Western Refining Southwest, Inc.
Project: GAC 10 24 2018

Sample ID **rb2**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **C55195**	RunNo: **55195**
Prep Date:	Analysis Date: **10/26/2018**	SeqNo: **1837224** Units: **µg/L**

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

Qualifiers:

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810D80**

16-Nov-18

Client: Western Refining Southwest, Inc.

Project: GAC 10 24 2018

Sample ID **rb2**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **C55195**	RunNo: **55195**
Prep Date:	Analysis Date: **10/26/2018**	SeqNo: **1837224** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	8.7		10.00		86.7	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Dibromofluoromethane	9.2		10.00		91.9	70	130			
Surr: Toluene-d8	9.7		10.00		96.8	70	130			

Sample ID **100ng lcs2**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **C55195**	RunNo: **55195**
Prep Date:	Analysis Date: **10/26/2018**	SeqNo: **1837225** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	98.3	70	130			
Toluene	19	1.0	20.00	0	96.9	70	130			
Chlorobenzene	20	1.0	20.00	0	98.9	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810D80**

16-Nov-18

Client: Western Refining Southwest, Inc.

Project: GAC 10 24 2018

Sample ID **100ng lcs2**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **C55195**	RunNo: **55195**
Prep Date:	Analysis Date: **10/26/2018**	SeqNo: **1837225** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	22	1.0	20.00	0	108	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	88.9	70	130			
Surr: 1,2-Dichloroethane-d4	8.9		10.00		88.5	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Dibromofluoromethane	9.2		10.00		91.6	70	130			
Surr: Toluene-d8	9.4		10.00		94.3	70	130			

Sample ID **1810d80-001ams**	SampType: **MS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **Lag**	Batch ID: **C55195**	RunNo: **55195**
Prep Date:	Analysis Date: **10/27/2018**	SeqNo: **1837227** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	93.5	60.5	137			
Toluene	19	1.0	20.00	0	93.6	70	130			
Chlorobenzene	20	1.0	20.00	0	99.0	70	130			
1,1-Dichloroethene	20	1.0	20.00	0	102	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	85.4	70	130			
Surr: 1,2-Dichloroethane-d4	8.5		10.00		85.5	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	9.2		10.00		91.7	70	130			
Surr: Toluene-d8	9.3		10.00		93.1	70	130			

Sample ID **1810d80-001amsd**	SampType: **MSD**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **Lag**	Batch ID: **C55195**	RunNo: **55195**
Prep Date:	Analysis Date: **10/27/2018**	SeqNo: **1837228** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	91.2	60.5	137	2.53	20	
Toluene	18	1.0	20.00	0	90.0	70	130	3.91	20	
Chlorobenzene	19	1.0	20.00	0	95.4	70	130	3.70	20	
1,1-Dichloroethene	20	1.0	20.00	0	97.7	70	130	4.09	20	
Trichloroethene (TCE)	16	1.0	20.00	0	79.9	70	130	6.63	20	
Surr: 1,2-Dichloroethane-d4	8.7		10.00		87.2	70	130	0	0	
Surr: 4-Bromofluorobenzene	11		10.00		108	70	130	0	0	
Surr: Dibromofluoromethane	9.0		10.00		89.9	70	130	0	0	
Surr: Toluene-d8	9.4		10.00		93.5	70	130	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1810D80**

16-Nov-18

Client: Western Refining Southwest, Inc.

Project: GAC 10 24 2018

Sample ID	**2.5ug gro lcs**	SampType:	**LCS**		TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSW**	Batch ID:	**R55517**		RunNo:	**55517**					
Prep Date:		Analysis Date:	**11/2/2018**		SeqNo:	**1848237**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)		0.47	0.050	0.5000	0	93.8	70	130			
Surr: BFB		9.9		10.00		98.9	70	130			

Sample ID	**rb**	SampType:	**MBLK**		TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**PBW**	Batch ID:	**R55517**		RunNo:	**55517**					
Prep Date:		Analysis Date:	**11/2/2018**		SeqNo:	**1848238**	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		9.5		10.00		94.6	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	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 Southw** Work Order Number: **1810D80** RcptNo: 1

Received By: **Victoria Zellar** 10/26/2018 10:00:00 AM Victoria Zellar

Completed By: **Erin Melendrez** 10/26/2018 1:02:57 PM

Reviewed By: ENM 10/26/18
LB: 10 10/26/18

Chain of Custody

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

Log In

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

10 10/26/18
# of preserved bottles checked for pH: (<2 or >12 unless noted)
Adjusted?
Checked by:

Special Handling (if applicable)

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

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.6	Good	Not Present			

Chain-of-Custody Record

Client: **Western Refining**

Mailing Address: **50 CR 4990**

Bloomfield, NM 87413

Phone #: **505-632-4135**

email or Fax#:

QA/QC Package:

☐ Standard X Level 4 (Full Validation)

☐ Other

X EDD (Type)

Turn-Around Time:

X Standard ☐ Rush

Project Name: **GAC**

10 12/1 2018

Project #:

PO#12623266

Project Manager:

Allen S. Hains

Sampler: CJ

On Ice: ☑ Yes ☐ No

Sample Temperature: 2.6

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1810D80	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	8015 B DRO Extented	Air Bubbles (Y or N)
10/24/18	1335	H_2O	Lag	5 - VOA	HCl	-001			X							X			
10/24/18	1335			1 - Amber	Cool													X	
10/24/18	1315	H_2O	Lead	5 - VOA	HCl	-002			X							X			
10/24/18	1315			1 - Amber	Cool													X	
10/24/18	1330	H_2O	Inlet	5 - VOA	HCl	-003			X							X			
10/24/18	1330			1 - Amber	Cool													X	

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/24/18	1455			10/24/18	1455
10/24/18	1825			10/25/18	8:30

Remarks:

Courier VIZ 10/25/18 8:30

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

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

December 06, 2018

Allen Haines

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

RE: GAC 11 21 2018 OrderNo.: 1811B77

Dear Allen Haines:

Hall Environmental Analysis Laboratory received 3 sample(s) on 11/22/2018 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Lag
Project: GAC 11 21 2018 **Collection Date:** 11/21/2018 10:10:00 AM
Lab ID: 1811B77-001 **Matrix:** AQUEOUS **Received Date:** 11/22/2018 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	11/28/2018 8:04:05 PM	41699
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	11/28/2018 8:04:05 PM	41699
Surr: DNOP	119	76.7-135		%Rec	1	11/28/2018 8:04:05 PM	41699
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	11/28/2018 12:58:34 PM	W55921
Surr: BFB	90.3	72.8-125		%Rec	1	11/28/2018 12:58:34 PM	W55921
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Toluene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Ethylbenzene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Naphthalene	ND	2.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
1-Methylnaphthalene	ND	4.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
2-Methylnaphthalene	ND	4.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Acetone	ND	10		µg/L	1	11/28/2018 7:00:00 PM	R55932
Bromobenzene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Bromodichloromethane	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Bromoform	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Bromomethane	ND	3.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
2-Butanone	ND	10		µg/L	1	11/28/2018 7:00:00 PM	R55932
Carbon disulfide	ND	10		µg/L	1	11/28/2018 7:00:00 PM	R55932
Carbon Tetrachloride	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Chlorobenzene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Chloroethane	ND	2.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Chloroform	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Chloromethane	ND	3.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
2-Chlorotoluene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
4-Chlorotoluene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
cis-1,2-DCE	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Dibromochloromethane	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Dibromomethane	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
1,2-Dichlorobenzene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: Lag
Project: GAC 11 21 2018
Collection Date: 11/21/2018 10:10:00 AM
Lab ID: 1811B77-001 **Matrix:** AQUEOUS **Received Date:** 11/22/2018 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
1,4-Dichlorobenzene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Dichlorodifluoromethane	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
1,1-Dichloroethane	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
1,1-Dichloroethene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
1,2-Dichloropropane	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
1,3-Dichloropropane	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
2,2-Dichloropropane	ND	2.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
1,1-Dichloropropene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Hexachlorobutadiene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
2-Hexanone	ND	10		µg/L	1	11/28/2018 7:00:00 PM	R55932
Isopropylbenzene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
4-Isopropyltoluene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
4-Methyl-2-pentanone	ND	10		µg/L	1	11/28/2018 7:00:00 PM	R55932
Methylene Chloride	ND	3.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
n-Butylbenzene	ND	3.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
n-Propylbenzene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
sec-Butylbenzene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Styrene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
tert-Butylbenzene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
trans-1,2-DCE	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
1,1,1-Trichloroethane	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
1,1,2-Trichloroethane	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Trichloroethene (TCE)	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Trichlorofluoromethane	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
1,2,3-Trichloropropane	ND	2.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Vinyl chloride	ND	1.0		µg/L	1	11/28/2018 7:00:00 PM	R55932
Xylenes, Total	ND	1.5		µg/L	1	11/28/2018 7:00:00 PM	R55932
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	1	11/28/2018 7:00:00 PM	R55932
Surr: 4-Bromofluorobenzene	105	70-130		%Rec	1	11/28/2018 7:00:00 PM	R55932
Surr: Dibromofluoromethane	97.8	70-130		%Rec	1	11/28/2018 7:00:00 PM	R55932
Surr: Toluene-d8	96.2	70-130		%Rec	1	11/28/2018 7:00:00 PM	R55932

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Lead
Project: GAC 11 21 2018 **Collection Date:** 11/21/2018 10:00:00 AM
Lab ID: 1811B77-002 **Matrix:** AQUEOUS **Received Date:** 11/22/2018 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	11/28/2018 8:25:58 PM	41699
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	11/28/2018 8:25:58 PM	41699
Surr: DNOP	109	76.7-135		%Rec	1	11/28/2018 8:25:58 PM	41699
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	11/28/2018 1:21:21 PM	W55921
Surr: BFB	91.3	72.8-125		%Rec	1	11/28/2018 1:21:21 PM	W55921
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Toluene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Ethylbenzene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Naphthalene	ND	2.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
1-Methylnaphthalene	ND	4.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
2-Methylnaphthalene	ND	4.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Acetone	ND	10		µg/L	1	11/28/2018 8:12:00 PM	R55932
Bromobenzene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Bromodichloromethane	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Bromoform	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Bromomethane	ND	3.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
2-Butanone	ND	10		µg/L	1	11/28/2018 8:12:00 PM	R55932
Carbon disulfide	ND	10		µg/L	1	11/28/2018 8:12:00 PM	R55932
Carbon Tetrachloride	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Chlorobenzene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Chloroethane	ND	2.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Chloroform	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Chloromethane	ND	3.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
2-Chlorotoluene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
4-Chlorotoluene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
cis-1,2-DCE	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Dibromochloromethane	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Dibromomethane	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
1,2-Dichlorobenzene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Lead
Project: GAC 11 21 2018 **Collection Date:** 11/21/2018 10:00:00 AM
Lab ID: 1811B77-002 **Matrix:** AQUEOUS **Received Date:** 11/22/2018 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
1,4-Dichlorobenzene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Dichlorodifluoromethane	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
1,1-Dichloroethane	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
1,1-Dichloroethene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
1,2-Dichloropropane	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
1,3-Dichloropropane	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
2,2-Dichloropropane	ND	2.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
1,1-Dichloropropene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Hexachlorobutadiene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
2-Hexanone	ND	10		µg/L	1	11/28/2018 8:12:00 PM	R55932
Isopropylbenzene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
4-Isopropyltoluene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
4-Methyl-2-pentanone	ND	10		µg/L	1	11/28/2018 8:12:00 PM	R55932
Methylene Chloride	ND	3.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
n-Butylbenzene	ND	3.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
n-Propylbenzene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
sec-Butylbenzene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Styrene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
tert-Butylbenzene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
trans-1,2-DCE	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
1,1,1-Trichloroethane	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
1,1,2-Trichloroethane	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Trichloroethene (TCE)	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Trichlorofluoromethane	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
1,2,3-Trichloropropane	ND	2.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Vinyl chloride	ND	1.0		µg/L	1	11/28/2018 8:12:00 PM	R55932
Xylenes, Total	ND	1.5		µg/L	1	11/28/2018 8:12:00 PM	R55932
Surr: 1,2-Dichloroethane-d4	99.9	70-130		%Rec	1	11/28/2018 8:12:00 PM	R55932
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	11/28/2018 8:12:00 PM	R55932
Surr: Dibromofluoromethane	94.0	70-130		%Rec	1	11/28/2018 8:12:00 PM	R55932
Surr: Toluene-d8	97.3	70-130		%Rec	1	11/28/2018 8:12:00 PM	R55932

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Inlet
Project: GAC 11 21 2018 **Collection Date:** 11/21/2018 9:50:00 AM
Lab ID: 1811B77-003 **Matrix:** AQUEOUS **Received Date:** 11/22/2018 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	11/28/2018 8:48:01 PM	41699
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	11/28/2018 8:48:01 PM	41699
Surr: DNOP	120	76.7-135		%Rec	1	11/28/2018 8:48:01 PM	41699
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	1.6	0.050		mg/L	1	11/28/2018 1:44:14 PM	W55921
Surr: BFB	294	72.8-125	S	%Rec	1	11/28/2018 1:44:14 PM	W55921
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Toluene	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Ethylbenzene	96	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
1,2,4-Trimethylbenzene	160	10		µg/L	10	11/29/2018 1:19:00 PM	R55969
1,3,5-Trimethylbenzene	26	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Naphthalene	30	2.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
1-Methylnaphthalene	28	4.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
2-Methylnaphthalene	6.4	4.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Acetone	18	10		µg/L	1	11/28/2018 8:36:00 PM	R55932
Bromobenzene	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Bromodichloromethane	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Bromoform	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Bromomethane	ND	3.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
2-Butanone	ND	10		µg/L	1	11/28/2018 8:36:00 PM	R55932
Carbon disulfide	ND	10		µg/L	1	11/28/2018 8:36:00 PM	R55932
Carbon Tetrachloride	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Chlorobenzene	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Chloroethane	ND	2.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Chloroform	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Chloromethane	ND	3.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
2-Chlorotoluene	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
4-Chlorotoluene	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
cis-1,2-DCE	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Dibromochloromethane	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Dibromomethane	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
1,2-Dichlorobenzene	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** Inlet
Project: GAC 11 21 2018 **Collection Date:** 11/21/2018 9:50:00 AM
Lab ID: 1811B77-003 **Matrix:** AQUEOUS **Received Date:** 11/22/2018 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
1,4-Dichlorobenzene	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Dichlorodifluoromethane	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
1,1-Dichloroethane	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
1,1-Dichloroethene	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
1,2-Dichloropropane	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
1,3-Dichloropropane	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
2,2-Dichloropropane	ND	2.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
1,1-Dichloropropene	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Hexachlorobutadiene	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
2-Hexanone	ND	10		µg/L	1	11/28/2018 8:36:00 PM	R55932
Isopropylbenzene	18	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
4-Isopropyltoluene	2.5	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
4-Methyl-2-pentanone	ND	10		µg/L	1	11/28/2018 8:36:00 PM	R55932
Methylene Chloride	ND	3.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
n-Butylbenzene	4.8	3.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
n-Propylbenzene	58	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
sec-Butylbenzene	13	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Styrene	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
tert-Butylbenzene	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
trans-1,2-DCE	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
1,1,1-Trichloroethane	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
1,1,2-Trichloroethane	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Trichloroethene (TCE)	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Trichlorofluoromethane	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
1,2,3-Trichloropropane	ND	2.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Vinyl chloride	ND	1.0		µg/L	1	11/28/2018 8:36:00 PM	R55932
Xylenes, Total	290	15		µg/L	10	11/29/2018 1:19:00 PM	R55969
Surr: 1,2-Dichloroethane-d4	99.2	70-130		%Rec	1	11/28/2018 8:36:00 PM	R55932
Surr: 4-Bromofluorobenzene	107	70-130		%Rec	1	11/28/2018 8:36:00 PM	R55932
Surr: Dibromofluoromethane	93.5	70-130		%Rec	1	11/28/2018 8:36:00 PM	R55932
Surr: Toluene-d8	96.7	70-130		%Rec	1	11/28/2018 8:36:00 PM	R55932

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
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QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1811B77**
06-Dec-18

Client: Western Refining Southwest, Inc.
Project: GAC 11 21 2018

Sample ID **MB-41699**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **PBW**	Batch ID: **41699**	RunNo: **55920**
Prep Date: **11/26/2018**	Analysis Date: **11/28/2018**	SeqNo: **1866032** 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	1.1		1.000		112	76.7	135			

Sample ID **LCS-41699**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **LCSW**	Batch ID: **41699**	RunNo: **55920**
Prep Date: **11/26/2018**	Analysis Date: **11/28/2018**	SeqNo: **1866057** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.0	1.0	5.000	0	99.7	70	130			
Surr: DNOP	0.56		0.5000		112	76.7	135			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1811B77**

06-Dec-18

Client: Western Refining Southwest, Inc.

Project: GAC 11 21 2018

Sample ID	**RB**	SampType:	**MBLK**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**PBW**	Batch ID:	**W55921**	RunNo:	**55921**					
Prep Date:		Analysis Date:	**11/28/2018**	SeqNo:	**1866189**	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	19		20.00		94.3	72.8	125			

Sample ID	**2.5UG GRO LCS**	SampType:	**LCS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSW**	Batch ID:	**W55921**	RunNo:	**55921**					
Prep Date:		Analysis Date:	**11/28/2018**	SeqNo:	**1866190**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.49	0.050	0.5000	0	97.4	77.7	130			
Surr: BFB	21		20.00		106	72.8	125			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1811B77**

06-Dec-18

Client: Western Refining Southwest, Inc.

Project: GAC 11 21 2018

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R55932**	RunNo: **55932**
Prep Date:	Analysis Date: **11/28/2018**	SeqNo: **1866368** 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			
Chlorobenzene	19	1.0	20.00	0	95.4	70	130			
1,1-Dichloroethene	22	1.0	20.00	0	110	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	97.9	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		103	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		105	70	130			
Surr: Dibromofluoromethane	9.6		10.00		95.7	70	130			
Surr: Toluene-d8	9.3		10.00		92.5	70	130			

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R55932**	RunNo: **55932**
Prep Date:	Analysis Date: **11/28/2018**	SeqNo: **1866369** Units: **µg/L**

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1811B77**

06-Dec-18

Client: Western Refining Southwest, Inc.

Project: GAC 11 21 2018

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R55932**	RunNo: **55932**
Prep Date:	Analysis Date: **11/28/2018**	SeqNo: **1866369** Units: **µg/L**

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1811B77**

06-Dec-18

Client: Western Refining Southwest, Inc.

Project: GAC 11 21 2018

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R55932**	RunNo: **55932**
Prep Date:	Analysis Date: **11/28/2018**	SeqNo: **1866369** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	9.6		10.00		95.9	70	130			
Surr: Toluene-d8	9.3		10.00		93.5	70	130			

Sample ID **1811b77-001ams**	SampType: **MS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **Lag**	Batch ID: **R55932**	RunNo: **55932**
Prep Date:	Analysis Date: **11/28/2018**	SeqNo: **1866400** 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	60.5	137			
Toluene	20	1.0	20.00	0	100	70	130			
Chlorobenzene	20	1.0	20.00	0	97.5	70	130			
1,1-Dichloroethene	21	1.0	20.00	0	104	67.6	130			
Trichloroethene (TCE)	20	1.0	20.00	0	99.8	70	130			
Surr: 1,2-Dichloroethane-d4	9.7		10.00		97.2	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130			
Surr: Dibromofluoromethane	9.5		10.00		94.7	70	130			
Surr: Toluene-d8	9.6		10.00		96.3	70	130			

Sample ID **1811b77-001amsd**	SampType: **MSD**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **Lag**	Batch ID: **R55932**	RunNo: **55932**
Prep Date:	Analysis Date: **11/28/2018**	SeqNo: **1866401** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	106	60.5	137	3.41	20	
Toluene	19	1.0	20.00	0	97.1	70	130	2.95	20	
Chlorobenzene	19	1.0	20.00	0	96.6	70	130	0.906	20	
1,1-Dichloroethene	21	1.0	20.00	0	106	67.6	130	2.16	20	
Trichloroethene (TCE)	20	1.0	20.00	0	97.9	70	130	1.83	20	
Surr: 1,2-Dichloroethane-d4	11		10.00		105	70	130	0	0	
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130	0	0	
Surr: Dibromofluoromethane	10		10.00		99.6	70	130	0	0	
Surr: Toluene-d8	9.6		10.00		95.6	70	130	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1811B77**

06-Dec-18

Client: Western Refining Southwest, Inc.

Project: GAC 11 21 2018

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R55969**	RunNo: **55969**
Prep Date:	Analysis Date: **11/29/2018**	SeqNo: **1868405** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130			
Surr: Dibromofluoromethane	9.7		10.00		97.4	70	130			
Surr: Toluene-d8	9.1		10.00		90.8	70	130			

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R55969**	RunNo: **55969**
Prep Date:	Analysis Date: **11/29/2018**	SeqNo: **1868406** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2,4-Trimethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		103	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		104	70	130			
Surr: Dibromofluoromethane	9.6		10.00		96.3	70	130			
Surr: Toluene-d8	9.6		10.00		95.6	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	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 Southw Work Order Number: 1811B77 RcptNo: 1

Received By: Andy Freeman 11/22/2018 10:00:00 AM

Completed By: Anne Thorne 11/26/2018 7:42:20 AM

Reviewed By: VVZ 11/26/18

Labeled by: JAB 11/26/18

Chain of Custody

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

Log In

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

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

Adjusted? JAB 11/26/18

Checked by: _____

Special Handling (if applicable)

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

Person Notified: _____ Date _____

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

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.2	Good	Yes			

Chain-of-Custody Record

Client: **Western Refining**

Mailing Address: **50 CR 4990**

Bloomfield, NM 87413

Phone #: **505-632-4135**

email or Fax#:

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other _____

X EDD (Type) _____

Turn-Around Time:

X Standard ☐ **Rush**_____

Project Name: **GAC**

11/21/2018

Project #:

PO#12623266

Project Manager:

Allen S. Hains

Sampler: Eric Carroll

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.2C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1811877	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / ~~DRO~~ / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	8015 B DRO Extented				Air Bubbles (Y or N)
11/21	1010	H_2O	Lag	5 - VOA	HCl	001			X							X						
	1010			1 - Amber	Cool	001												X				
	1006	H_2O	Lead	5 - VOA	HCl	002			X							X						
	1000			1 - Amber	Cool	002												X				
	950	H_2O	Inlet	5 - VOA	HCl	003			X							X						
	950			1 - Amber	Cool	003												X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
11/21	1340			11/21/18	
11/21/18	1749			11/22/18	1000

Remarks:

11/26/18

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

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

December 28, 2018

Eric Carroll

Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL:
FAX

RE: GAC Lead 12 19 2018 OrderNo.: 1812C53

Dear Eric Carroll:

Hall Environmental Analysis Laboratory received 3 sample(s) on 12/20/2018 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: GAC-Lead
Project: GAC Lead 12 19 2018
Collection Date: 12/19/2018 9:49:00 AM
Lab ID: 1812C53-001
Matrix: AQUEOUS
Received Date: 12/20/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RANGE						Analyst: **lrm**
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	12/27/2018 8:44:37 PM
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	12/27/2018 8:44:37 PM
Surr: DNOP	102	76.6-135		%Rec	1	12/27/2018 8:44:37 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	12/21/2018 2:27:34 PM
Surr: BFB	89.5	72.8-125		%Rec	1	12/21/2018 2:27:34 PM
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **RAA**
Benzene	ND	1.0		µg/L	1	12/22/2018 2:57:00 AM
Toluene	ND	1.0		µg/L	1	12/22/2018 2:57:00 AM
Ethylbenzene	ND	1.0		µg/L	1	12/22/2018 2:57:00 AM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	12/22/2018 2:57:00 AM
Xylenes, Total	ND	1.5		µg/L	1	12/22/2018 2:57:00 AM
Surr: 1,2-Dichloroethane-d4	106	70-130		%Rec	1	12/22/2018 2:57:00 AM
Surr: 4-Bromofluorobenzene	104	70-130		%Rec	1	12/22/2018 2:57:00 AM
Surr: Dibromofluoromethane	99.5	70-130		%Rec	1	12/22/2018 2:57:00 AM
Surr: Toluene-d8	96.9	70-130		%Rec	1	12/22/2018 2:57:00 AM

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: GAC-Inlet
Project: GAC Lead 12 19 2018
Collection Date: 12/19/2018 9:42:00 AM
Lab ID: 1812C53-002 **Matrix:** AQUEOUS **Received Date:** 12/20/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RANGE						Analyst: **lrm**
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	12/27/2018 9:08:34 PM
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	12/27/2018 9:08:34 PM
Surr: DNOP	107	76.6-135		%Rec	1	12/27/2018 9:08:34 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	0.62	0.050		mg/L	1	12/21/2018 2:50:12 PM
Surr: BFB	205	72.8-125	S	%Rec	1	12/21/2018 2:50:12 PM
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **RAA**
Benzene	ND	1.0		µg/L	1	12/22/2018 3:21:00 AM
Toluene	ND	1.0		µg/L	1	12/22/2018 3:21:00 AM
Ethylbenzene	1.9	1.0		µg/L	1	12/22/2018 3:21:00 AM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	12/22/2018 3:21:00 AM
Xylenes, Total	5.4	1.5		µg/L	1	12/22/2018 3:21:00 AM
Surr: 1,2-Dichloroethane-d4	105	70-130		%Rec	1	12/22/2018 3:21:00 AM
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	1	12/22/2018 3:21:00 AM
Surr: Dibromofluoromethane	102	70-130		%Rec	1	12/22/2018 3:21:00 AM
Surr: Toluene-d8	97.5	70-130		%Rec	1	12/22/2018 3:21:00 AM

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.
Client Sample ID: GAC-Lag
Project: GAC Lead 12 19 2018
Collection Date: 12/19/2018 9:55:00 AM
Lab ID: 1812C53-003
Matrix: AQUEOUS
Received Date: 12/20/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RANGE						Analyst: **lrm**
Diesel Range Organics (DRO)	ND	0.40		mg/L	1	12/27/2018 9:32:47 PM
Motor Oil Range Organics (MRO)	ND	2.5		mg/L	1	12/27/2018 9:32:47 PM
Surr: DNOP	109	76.6-135		%Rec	1	12/27/2018 9:32:47 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	12/21/2018 3:12:50 PM
Surr: BFB	85.4	72.8-125		%Rec	1	12/21/2018 3:12:50 PM
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **RAA**
Benzene	ND	1.0		µg/L	1	12/22/2018 3:45:00 AM
Toluene	ND	1.0		µg/L	1	12/22/2018 3:45:00 AM
Ethylbenzene	ND	1.0		µg/L	1	12/22/2018 3:45:00 AM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	12/22/2018 3:45:00 AM
Xylenes, Total	ND	1.5		µg/L	1	12/22/2018 3:45:00 AM
Surr: 1,2-Dichloroethane-d4	106	70-130		%Rec	1	12/22/2018 3:45:00 AM
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	1	12/22/2018 3:45:00 AM
Surr: Dibromofluoromethane	101	70-130		%Rec	1	12/22/2018 3:45:00 AM
Surr: Toluene-d8	97.9	70-130		%Rec	1	12/22/2018 3:45:00 AM

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1812C53**

28-Dec-18

Client: Western Refining Southwest, Inc.

Project: GAC Lead 12 19 2018

Sample ID **1812C53-003BMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **GAC-Lag**	Batch ID: **42309**	RunNo: **56610**
Prep Date: **12/26/2018**	Analysis Date: **12/27/2018**	SeqNo: **1895427** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.6	0.40	2.500	0	106	89.6	145			
Surr: DNOP	0.28		0.2500		112	76.6	135			

Sample ID **1812C53-003BMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **GAC-Lag**	Batch ID: **42309**	RunNo: **56610**
Prep Date: **12/26/2018**	Analysis Date: **12/27/2018**	SeqNo: **1895428** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	1.8	0.40	2.500	0	71.2	89.6	145	38.9	20	RS
Surr: DNOP	0.21		0.2500		83.1	76.6	135	0	0	

Sample ID **LCS-42309**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **LCSW**	Batch ID: **42309**	RunNo: **56610**
Prep Date: **12/26/2018**	Analysis Date: **12/27/2018**	SeqNo: **1895429** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.1	0.40	2.500	0	84.0	76.5	158			
Surr: DNOP	0.22		0.2500		88.0	76.6	135			

Sample ID **MB-42309**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW**	Batch ID: **42309**	RunNo: **56610**
Prep Date: **12/26/2018**	Analysis Date: **12/27/2018**	SeqNo: **1895430** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	0.40								
Motor Oil Range Organics (MRO)	ND	2.5								
Surr: DNOP	0.48		0.5000		96.2	76.6	135			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1812C53**

28-Dec-18

Client: Western Refining Southwest, Inc.

Project: GAC Lead 12 19 2018

Sample ID	**RB**	SampType:	**MBLK**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**PBW**	Batch ID:	**B56527**	RunNo:	**56527**					
Prep Date:		Analysis Date:	**12/21/2018**	SeqNo:	**1892675**	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	19		20.00		94.3	72.8	125			

Sample ID	**2.5UG GRO LCS**	SampType:	**LCS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSW**	Batch ID:	**B56527**	RunNo:	**56527**					
Prep Date:		Analysis Date:	**12/21/2018**	SeqNo:	**1892676**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.41	0.050	0.5000	0	82.8	77.7	130			
Surr: BFB	22		20.00		112	72.8	125			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1812C53**

28-Dec-18

Client: Western Refining Southwest, Inc.

Project: GAC Lead 12 19 2018

Sample ID **100ng lcs2**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **SL56574**	RunNo: **56574**
Prep Date:	Analysis Date: **12/21/2018**	SeqNo: **1892926** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	112	70	130			
Toluene	22	1.0	20.00	0	108	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		105	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Dibromofluoromethane	9.7		10.00		97.0	70	130			
Surr: Toluene-d8	9.9		10.00		98.7	70	130			

Sample ID **rb2**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **SL56574**	RunNo: **56574**
Prep Date:	Analysis Date: **12/21/2018**	SeqNo: **1892927** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	11		10.00		106	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		105	70	130			
Surr: Dibromofluoromethane	10		10.00		99.8	70	130			
Surr: Toluene-d8	9.8		10.00		98.0	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	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 Southw** Work Order Number: **1812C53** RcptNo: 1

Received By: **Anne Thorne** **12/20/2018 8:00:00 AM** Anne Thorne

Completed By: **Erin Melendrez** **12/21/2018 8:28:27 AM**

Reviewed By: AT 12/21/18

LB: JAB 12/21/18

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☑ No ☐ No VOA Vials ☐
10. Were any sample containers received broken? Yes ☐ No ☑

11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: JAB 12/21/18

Special Handling (if applicable)

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

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			
2	1.0	Good	Yes			
3	1.0	Good	Yes			
4	1.0	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **Western Refining Southw** Work Order Number: **1812C53** RcptNo: **1**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
5	1.0	Good	Yes			
6	1.4	Good	Yes			

Chain-of-Custody Record

Client: **Western Refining**

Mailing Address: **#50 CR 4990**

Bloomfield, NM 87413

Phone #: **505-632-4135**

email or Fax#: allen.s.hains@andeavor.com

QA/QC Package:

☐ Standard **X** Level 4 (Full Validation)

☐ Other ____

X EDD (Type) ____

Turn-Around Time:

X Standard ☐ Rush ____

Project Name: **GAC - Lead**

Date: 12-19-2018

Project #:

PO#12615519

Project Manager:

Eric Carroll

Sampler: C. Jones

On Ice: ☒ Yes ☐ No

Sample Temperature: Scudes @ 1.0° @ 1.4°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1812C53	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) BTEx, MTBE only	8270 (Semi-VOA)	8015B DRO Extended				
12/19/18	0949	H_2O	GAC - Lead	5 VOA	HCl	-001			x							x						
12/19/18	0949	" "	GAC - Lead	1-500-ml	Amber													x				
12/19/18	0942	H_2O	GAC -Inlet	5 VOA	HCl	-002			x							x						
12/19/18	0942	" "	GAC -Inlet	1-500-ml	Amber													x				
12/19/18	0955	H_2O	GAC -Lag	5 VOA	HCl	-003			x							x						
12/19/18	0955	" "	GAC -Lag	1-500-ml	Amber													x				

Date	Time	Relinquished by	Received by	Date	Time
12/19/18	1200	[signature]	[signature] Christina Walters	12/19/18	1200
12/19/18		Christina Walters	[signature]	12/20/18	0800

Remarks:
cc: ecarroll@ltenv.com
dhencmann@ltenv.com
cjones@ltenv.com

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