Western Refining Southwest, Inc.
A subsidiary of Marathon Petroleum Corporation

92 Giant Crossing Road
Jamestown, NM 87347
Tel: 505.722.3833

December 15, 2020

Mr. Kevin Pierard, Chief
New Mexico Environmental Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505

RE: French Drain Soil Sampling Investigation Work Plan
Western Refining Southwest Inc., Gallup Refinery
EPA ID #NMD000333211
HWB-WRG-18-014

Dear Mr. Pierard,

Attached please find an Investigation Work Plan for the Sanitary Treatment Pond (STP-1) French Drain area. If you have any questions or comments regarding the information contained herein, please do not hesitate to contact Mr. John Moore at (505) 879-7643.

Certification

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

Sincerely,
Marathon Petroleum Company LP, Gallup Refinery

Robert S. Hanks
Refinery General Manager

Enclosure

cc: D. Cobrain, NMED HWB
M. Suzuki, NMED HWB
C. Chavez, NMOCD
L. King, EPA Region 6
G. McCartney, Marathon Petroleum Company
J. Moore, Marathon Gallup Refinery
H. Jones, Trihydro Corporation

MARATHON PETROLEUM CORPORATION

GALLUP REFINING DIVISION

FRENCH DRAIN SOIL SAMPLING INVESTIGATION WORK PLAN

HWB-WRG-18-014

Approval to Proceed

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

John Moore

Name: John Moore

12/15/20

Date

Title: Environmental Supervisor

Executive Summary

The Marathon Petroleum Company (MPC), Gallup Refining Division is submitting this Investigation Work Plan for the investigation of hydrocarbon impacts to soils in the Sanitary Treatment Pond (STP-1) French Drain area.

Hydrocarbon impacts were discovered in the drain line of the STP-1 French Drain on February 6, 2018. Subsequent investigation efforts were completed on February 8 and 10, 2018. This Investigation Work Plan was developed to investigate and sample the underlying soils to further delineate the potential impacts to the subsurface.

Initial investigation efforts included borehole installations and soil excavations in February 2018. As a result of the investigation, six deep soil boring locations were converted into groundwater monitoring wells and have been added to the annual groundwater sampling schedule since April 2018.

This Investigation Work Plan describes the proposed installation of soil borings and sample collection further north, east and west of the STP-1 French Drain and north of the wastewater treatment plant. This investigation is intended to reduce data gaps and will be utilized to determine if additional remediation or investigation is warranted.

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Introduction

The MPC, Gallup Refining Division (Refinery) is located approximately 17 miles east of Gallup, McKinley County, New Mexico along the north side of Interstate Highway I-40 (Figure 1). The physical address is I-40, Exit #39 Jamestown, New Mexico 87347. The Refinery property covers approximately 810 acres.

Trihydro Corporation prepared this Investigation Work Plan for the investigation of soils contained in and around the STP-1 French Drain, located on the northwestern portion of the Refinery. The French Drain is located on the east side of STP-1 (Figure 2).

The Refinery is a petroleum oil refinery that processes crude oil received by pipeline or tanker truck from the Four Corners region. The Refinery is currently transitioning to idle mode. Various process units that have operated at the Refinery, and include crude distillation, reformer, fluidized catalytic cracker, alkylation, sulfur recovery, merox treater, and hydrotreater. Past operations have produced gasoline, diesel fuels, jet fuels, kerosene, propane, butane, and residual fuel.

Background

As detailed in MPC's Response to Comment No. 39 on 2017 Annual Groundwater Monitoring Report (Marathon 2019a), a hydrocarbon release from the drain line of the STP-1 French Drain was discovered on February 6, 2018. Efforts to pinpoint the source of the hydrocarbon release included borehole installation and soil excavations conducted on February 8 and February 10, 2018, respectively. Investigation activities are detailed in the Second Response to Comments No. 39 on 2017 Annual Groundwater Monitoring Report from MPC (Marathon 2019b). Borehole and soil excavation locations of the February 2018 investigation are shown on Figure 3. Hydrocarbons were identified in the shallow subsurface in BH#1, #2, and #3 near the southeast corner of STP-1. Borehole depths were not recorded but are estimated to reach 6 to 8 feet below ground surface (ft bgs). Hydrocarbons were also visually identified in soil at excavation #9 located between the wastewater treatment plant and STP-1. Excavations #4, #5, #6, #7, #8, #10, and #11 showed no visible signs of hydrocarbon contamination.

Smaller hand excavations were also completed to the east of STP-1, where hydrocarbons were identified at approximately 3 ft bgs. Hand excavations completed on the northwest sides of Tanks 569, 570, 571, and 572 showed no visible evidence of a release. Fluid levels were monitored in Tanks 570, 571, and 345 to determine if a potential leak was responsible for the release. A static level test of Tank 570 in 2019 showed a

loss of product, which lead to the tank being taken out of service. There were no indications of leaks in Tanks 571 and 345.

On March 5, 2019, six deep soil borings were installed throughout the tank farm and north of STP-1: SB-FD-1, OW-61, OW-62, OW-63, OW-64, and OW-65. These locations are shown on Figure 2 of this report and boring/well logs can be found in Appendix A. Hydrocarbon impacts were identified at OW-61 at depths ranging from 10 to 26 ft bgs. Elevated photoionization detector (PID) readings were identified at OW-62 (18-20 ft bgs), OW-63 (18-24 ft bgs), OW-64 (10-24 ft bgs), and OW-65 (14-20 ft bgs) which could -suggest hydrocarbon contamination in the area.

The purpose of this Investigation Work Plan is to further identify and delineate horizontal and vertical soil impacts from a potential hydrocarbon release near the STP-1 French Drain. This investigation will evaluate the need for any further investigation and/or remediation.

Site Conditions

Surface Conditions

Local site topographic features include high ground in the southeast gradually decreasing to a lowland fluvial plain to the northwest. Elevations on the refinery property range from 7,040 feet (ft) to 6,860 ft. The area near STP-1 and the French Drain is approximately 6,910 ft above mean sea level.

Subsurface Conditions

The shallow subsurface soil (alluvium) is comprised of clay and silt with some inter-bedded sand layers. Beneath the alluvium is the Petrified Forest Member of the Chinle Group, which primarily consists of interbedded mudstone, siltstone, and sandstone. The Alluvium/Chinle interface ranges from 15 ft bgs to more than 32 ft bgs.

Scope of Activities

The investigative activities of the STP-1 French Drain will be initiated to further delineate horizontal and vertical hydrocarbon impacts to soil and to confirm data previously collected. The sampling activities will be conducted per the Resource Conservation and Recovery Act (RCRA) Post-Closure Permit Section IV.J.2.ii. Pending New Mexico Environmental Department (NMED) approval, MPC anticipates investigation work to be completed in 2021.

A Geoprobe drill rig will be used to advance soil borings and up to two discrete soil samples will be collected at each boring location. Based upon prior investigations completed by MPC, hydrocarbon impacts around the STP-1 French Drain area were observed at approximately 8 ft bgs. To delineate vertical distribution, soil borings will be advanced to at least 5 ft below the deepest detected contamination based on PID field screening and field observation results.

Soil samples will be analyzed for hydrocarbon impacts via Method 8270 (semi-volatile organic compounds [SVOCS]), Method 8260 (volatile organic compounds [VOCs]), and Method 8015M (total petroleum hydrocarbons [TPH] gasoline range organics [GRO] and diesel range organics [DRO]). Analytical results will be screened by comparison to NMED Industrial Soil Screening Levels (SSLs).

After the investigation has been completed, MPC will prepare an investigation report summarizing analytical results from the soil sampling. The investigation will be submitted to NMED.

Investigation Methods

The proposed sampling locations are shown on Figure 3. The proposed locations include six boreholes around the STP-1 French Drain area.

Soils obtained will be visually inspected and classified in general accordance with ASTM D2487 (Unified Soil Classification System) and D2488 (Description and Identification of Soils). Detailed soil boring logs will be completed in the field by qualified field staff. Soil samples will be field screened at regular intervals via PID for evidence of contaminants and will be recorded in the boring logs.

Sample Collection Procedures

Samples will be collected in accordance with the soil sampling Standard Operating Procedure (Appendix B). Details related to sample collection will be documented on the confirmation sampling field forms. General observations recorded on the field forms for each soil sample location will include sampling start and end times, weather, site conditions, sampling team members, and other affiliations present. Sample-specific information will include: field sample identification, sample start and end depth, collection method, sample type (i.e., composite or aliquot), soil classification and characteristics, deviations or clarification of sampling procedures, and other observations. Field techniques will be applied consistently across the STP-1 French Drain area by a team of dedicated sampling personnel who may be assisted by site supervisors. A summary of the sampling activities is shown below:

1. Install six soil borings to observe and collect soil samples from the borings in order to delineate horizontal and vertical extent of hydrocarbon impacts.

2. Analyze soil samples for:

   - pH
   - SVOCs, Method 8270
   - VOCs, Method 8260
   - TPH GRO and DRO
   - Density

3. Screen analytical data by comparing with NMED SSLs.

Soil sampling equipment will be decontaminated before collecting each sample, and equipment decontamination will be noted on the field forms. Immediately after collection, soil samples will be placed into a clean, sealable plastic bag labeled with the field sample identification. Sample jars will be filled, labeled, and placed in a cooler. Before shipment, coolers will be packed with additional ice and one temperature blank per cooler. A chain of custody (CoC) form will accompany each sample shipment. Coolers will be sealed and shipped overnight to the Eurofins TestAmerica Analytical Laboratory in Pensacola, FL.

Sample Frequency

Soil sample collection will be taken at a frequency in accordance with the RCRA Post-Closure Permit Section IV.J.2.d.ii (Soil and Rock Sampling) and will include the following applicable intervals and depths:

- At the surface of the proposed boring locations;
- At 2.5-ft intervals;
- At the maximum depth of each boring; and
- At intervals suspected of being source or contaminated zones.

Data Quality and Validation

Quality assurance/quality control (QA/QC) samples will be collected during sampling to monitor the validity of the sample collection procedures. Field duplicates will be collected at a rate of ten percent of all samples collected. Equipment blanks will be collected from re-usable equipment at a rate of ten percent; if disposable sampling equipment is used, the blanks shall be collected at a frequency of one per day. Field blank samples will also be collected once a day. The field duplicate and blank samples will be submitted to the laboratory along with the soil samples.

QA/QC samples will be recorded on the field forms and CoCs. All data will undergo Tier II data validation.

Data Evaluation

Analytical results will be compared to NMED SSLs, and the chosen disposal facility's waste acceptance criteria. Soil recovered during sampling will be placed in containers within the area of the STP-1 French Drain and characterized prior to disposal.

Monitoring and Sampling Program

Monitoring wells OW-61 through OW-65 were added to the routine quarterly groundwater sampling event beginning in April 2018 and have been sampled quarterly since that time.

Schedule

Pending NMED approval, MPC anticipates the investigation to begin in early 2021. After the investigation has been completed, MPC will prepare an investigation report summarizing the sampling results.

References

Marathon. 2019a. Response to Comment No. 39 on 2017 Annual Groundwater Monitoring Report (dated March 21, 2019), Marathon Petroleum Company LP, Gallup Refinery, (dba Western Refining Southwest, Inc.), EPA ID# NMD000333211, HWB-WRG-18-014. May 23, 2019.

Marathon. 2019b. Second Response to Comment No. 39 on 2017 Annual Groundwater Monitoring Report (dated March 21, 2019), Marathon Petroleum Company LP, Gallup Refinery, (dba Western Refining Southwest, Inc.), EPA ID# NMD000333211, HWB-WRG-18-014. August 23, 2019.

Figures

Image Cite: DigitalGlobe © CNES (2020) Distribution Airbus DS © Microsoft Corporation, BING Imagery

EXPLANATION

40 INTERSTATE HIGHWAY

N

0 2,000'

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE 1

FACILITY LOCATION

MARATHON PETROLEUM CORP.
GALLUP REFINING DIVISION
GALLUP, NEW MEXICO

Drawn By: REP	Checked By: JP	Scale: 1" = 2,000'	Date: 9/14/20	File: 697-FD-FACILITYLOC_202009

M:\TON\MARATHON\CADD\GALLUP_REPORTS\TRENCHDRAIN\WP\697-FD-FACILITYLOC_202009

Image Cite: DigitalGlobe © CNES (2020) Distribution Airbus DS © Microsoft Corporation, BING Imagery

EXPLANATION

- OW–65 MONITORING WELL AND DESIGNATION (APPROXIMATE)
- FRENCH DRAIN
- SD–2 STORM DRAIN AND DESIGNATION

N

0 200'

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE 2

FRENCH DRAIN LOCATION

MARATHON PETROLEUM CORP.
GALLUP REFINING DIVISION
GALLUP, NEW MEXICO

Drawn By: REP	Checked By: JP	Scale: 1" = 200'	Date: 9/14/20	File: 697-FD-FRENCHDRAINLOC_202009

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Image Cite: DigitalGlobe © CNES (2020) Distribution Airbus DS © Microsoft Corporation, BING Imagery

EXPLANATION

- PROPOSED SOIL BORING
- BH-1 BORING AND DESIGNATION (INSTALLED FEBRUARY 2018)
- FRENCH DRAIN
- HYDROCARBON IMPACTS (EXCAVATION INSTALLED FEBRUARY 2018)
- HYDROCARBON ABSENT (EXCAVATION INSTALLED FEBRUARY 2018)

N

0 200'

Trihydro CORPORATION
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Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE 3

PROPOSED SOIL BORING LOCATIONS

MARATHON PETROLEUM CORP.
GALLUP REFINING DIVISION
GALLUP, NEW MEXICO

Drawn By: REP	Checked By: JP	Scale: 1" = 200'	Date: 9/14/20	File: 697-FD-PROPSOILLOC_202009

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Appendix A
Well Logs

DiSorbo Environmental Consulting Firm

Andeavor
Gallup Refinery - French Drain Release
WEST18012

Geologist	: Tracy Payne
Driller	: Enviro-Drill, Inc./Cohagan
Drilling Rig	: CME75
Drilling Method	: Hollow-Stem Augers
Sampling Method	: Split Spoon 2'
Comments	:
Total Depth	: 32'
Ground Water	: 18' BGL
Start Date	: 3-13-2018
Finish Date	: 3-13-2018

WELL NO. OW-61

(Sheet 1 of 2)

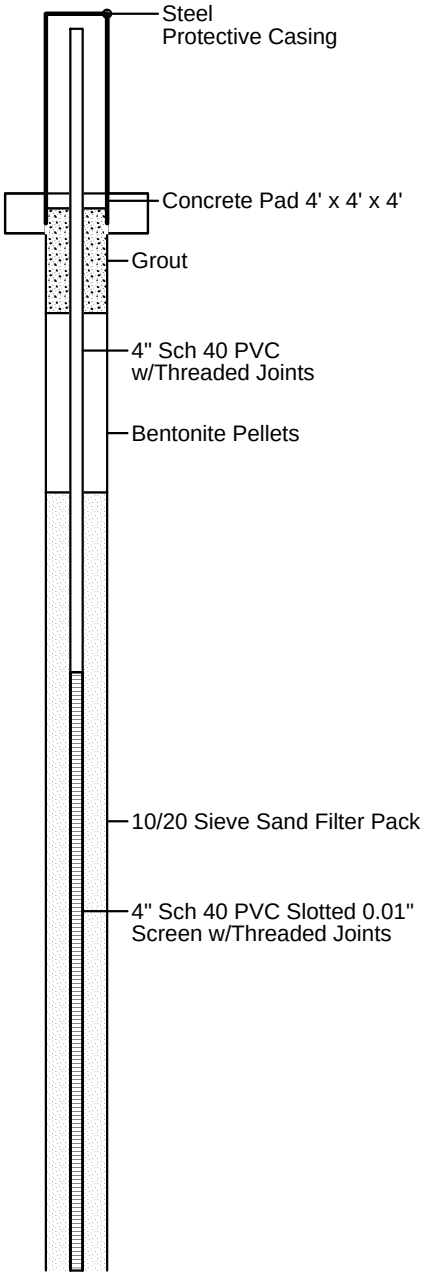
Elev., TOC (ft.msl)	: 6963.57
Elev., PAD (ft. msl)	: 6960.91
Elev., GL (ft. msl)	: NS
Site Coordinates	:
N	: 1633887.74
E	: 2546702.36

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
-2 to 0							
0 to 10					0		Hydroexcavated Location - Borehole open to 10' - no water
10 to 11	1563			ML	90		SANDY SILT, very fine, loose, moist, gravel present, brown, strong chemical odor,
12 to 13	869			SM	80		GRAVELLY SILTY SAND, fine, loose, moist, 20 mm gravel present, brown, strong odor,
14 to 15	1081			SM	70		GRAVELLY SILTY SAND, SIMILAR TO ABOVE (STA), very moist, tan and brown, strong odor,
16 to 17	1115			SM	60		GRAVELLY SILTY SAND, STA, increase in gravel, large sandstone gravel in core, moist to very moist,very light tan, strong odor,
18							

Saturation
▼ Saturation

Completion Results

OW-61



DiSorbo Consulting, LLC

1001 Louisiana Street, Suite 3250
Houston, Texas 77002
713-955-1230

8501 N. MoPac Expy, Suite 300
Austin, Texas 78759
512-693-4190

DiSorbo Environmental Consulting Firm

Andeavor
Gallup Refinery - French Drain Release
WEST18012

Geologist	: Tracy Payne
Driller	: Enviro-Drill, Inc./Cohagan
Drilling Rig	: CME75
Drilling Method	: Hollow-Stem Augers
Sampling Method	: Split Spoon 2'
Comments	:
Total Depth	: 32'
Ground Water	: 18' BGL
Start Date	: 3-13-2018
Finish Date	: 3-13-2018

WELL NO. OW-61

(Sheet 2 of 2)

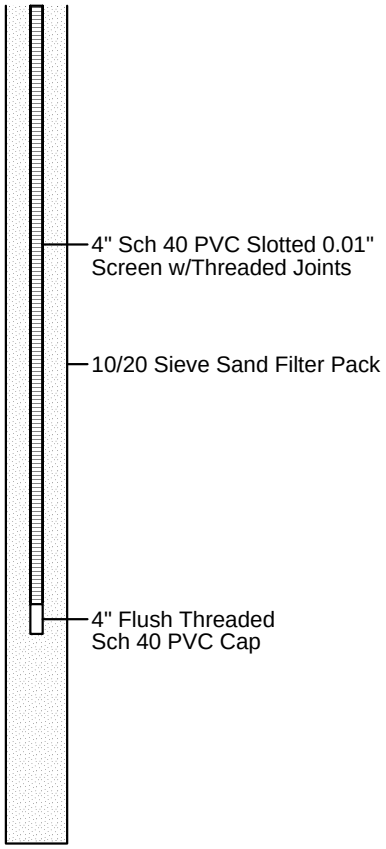
Elev., TOC (ft.msl)	: 6963.57
Elev., PAD (ft. msl)	: 6960.91
Elev., GL (ft. msl)	: NS
Site Coordinates	:
N	: 1633887.74
E	: 2546702.36

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
18							
19	1702			SC	20		GRAVELLY CLAYEY SAND, fine to coarse grain sand with brown clay, soft, very damp gravel (10-20 mm), saturated at base,
20							
21	1269			SM	60		SILTY SAND, medium, loose, trace clay and gravel, saturated, dark brown, strong odor,
22				SM	60		SILTY SAND, STA, saturated,
23	1638			CL	60		GRAVELLY SANDY CLAY, low, soft, gravel throughout, damp to saturated in seams, brown, strong odor,
24							
25	1538			CL	50		GRAVELLY CLAY, low, firm, damp, dark blueish grey, strong odor,
26							
27	377			CL	40		GRAVELLY CLAY, STA, trace very fine grain sand, damp,very stiff, odor,
28							
29	298			CL	60		SILTY CLAY, low, very stiff, trace sand and very small gravel, damp, grey to light grey, odor,
30							
31	60.9			CL	70		SILTY CLAY, STA, damp, light grey and pink.
32							
33							
34							
35							
36							
37							
38							

Saturation
▼ Saturation

Completion Results

OW-61



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Andeavor
Gallup Refinery - French Drain Release
WEST18012

Geologist	: Tracy Payne
Driller	: Enviro-Drill, Inc./Cohagan
Drilling Rig	: CME75
Drilling Method	: Hollow-Stem Augers
Sampling Method	: 2' Split Spoon
Comments	:
Total Depth	: 40'
Ground Water	: Not Encountered
Start Date	: 03/15/2018
Finish Date	: 03/15/2018

WELL NO. OW-62

(Sheet 1 of 3)

Elev., TOC (ft.msl)	: 6937.36
Elev., PAD (ft. msl)	: 6934.73
Elev., GL (ft. msl)	: NS
Site Coordinates	:
N	: 1634866.14
E	: 2545914.00

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Rec overy (%)	Sample	DESCRIPTION
0							Hydroexcavated to 10' - Collapsed to 9' - no fluid,
10	0			ML	50		CLAYEY SILT, very fine, stiff, dry, crumbly, no odor, light brown,
12	0.1			CL	50		SILTY CLAY, SIMILAR TO ABOVE (STA), , increase in clay content,
14	0.3			CL	60		SANDY SILTY CLAY, low, firm, damp, very fine grain sand seams, brown, no odor,
16	0.3			CL	80		SANDY CLAY, low, firm, damp,brown, no odor,
17				GW	80		SANDY GRAVEL, 20 to10 mm gravel with coarse grain sand, loose, damp,brown, no odor,

Saturation

▼ Saturation

Completion Results

OW-62

- Steel Protective Casing
- Concrete Pad 4' x 4' x 4'
- Grout
- 4" Sch 40 PVC w/Threaded Joints
- Bentonite Pellets
- 10/20 Sieve Sand Filter Pack
- 4" Sch 40 PVC Slotted 0.01" Screen w/Threaded Joints

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Andeavor
Gallup Refinery - French Drain Release
WEST18012

Geologist	: Tracy Payne
Driller	: Enviro-Drill, Inc./Cohagan
Drilling Rig	: CME75
Drilling Method	: Hollow-Stem Augers
Sampling Method	: 2' Split Spoon
Comments	:
Total Depth	: 40'
Ground Water	: Not Encountered
Start Date	: 03/15/2018
Finish Date	: 03/15/2018

WELL NO. OW-62

(Sheet 2 of 3)

Elev., TOC (ft.msl)	: 6937.36
Elev., PAD (ft. msl)	: 6934.73
Elev., GL (ft. msl)	: NS
Site Coordinates	:
N	: 1634866.14
E	: 2545914.00

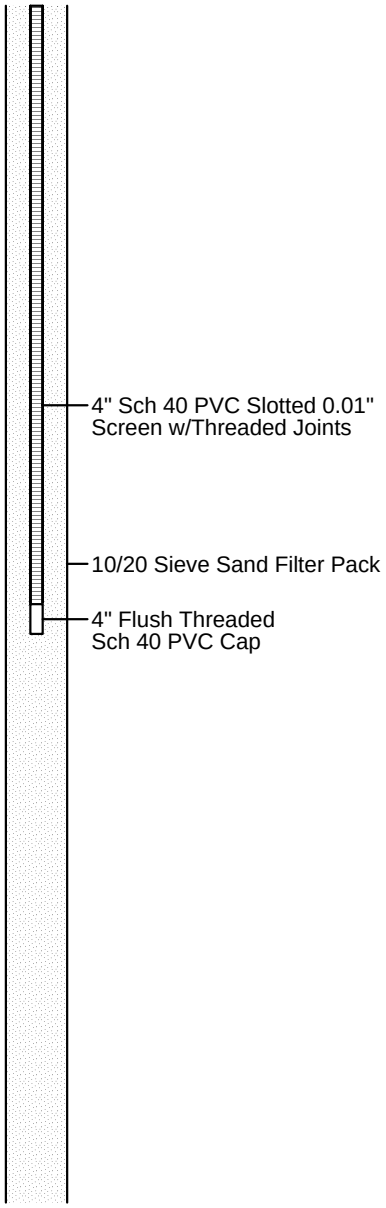
Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Rec overy (%)	Sample	DESCRIPTION
18							
19	3380			GC	80		CLAYEY SANDY GRAVEL, STA except clay present, very moist, hydrocarbon (HC) odor, ,
20							
21	82.9			GC	70		CLAYEY SANDY GRAVEL, STA, damp to moist, HC odor,
22							
23	33			CL	60		SILTY CLAY, low, soft, trace sand,calcareous, damp to moist, reddish brown, HC odor,
24							
25	800			CL	70		SILTY CLAY, low, stiff, damp,reddish brown, HC odor,
26							
27	555			CL	80		SILTY CLAY, STA, calcareous, odor,
28							
29	56			CH	90		CLAY, high, very stiff, damp,reddish brown, faint odor,
30							
31	351			CL	90		SILTY CLAY, low, firm/crumbly, damp,reddish brown, trace grey, no odor,
32							
33	125			CL	90		SILTY CLAY, STA,
34							
35	159			CL	90		SILTY CLAY, STA,
36							
37	91			CL	90		SILTY CLAY, STA,
38							

Saturation

▼ Saturation

Completion Results

OW-62



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Andeavor
Gallup Refinery - French Drain Release
WEST18012

Geologist	: Tracy Payne
Driller	: Enviro-Drill, Inc./Cohagan
Drilling Rig	: CME75
Drilling Method	: Hollow-Stem Augers
Sampling Method	: 2' Split Spoon
Comments	:
Total Depth	: 40'
Ground Water	: Not Encountered
Start Date	: 03/15/2018
Finish Date	: 03/15/2018

WELL NO. OW-62

(Sheet 3 of 3)

Elev., TOC (ft.msl)	: 6937.36
Elev., PAD (ft. msl)	: 6934.73
Elev., GL (ft. msl)	: NS
Site Coordinates	:
N	: 1634866.14
E	: 2545914.00

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Rec overy (%)	Sample	DESCRIPTION
38							
39	44			CL	90		SILTY CLAY, STA.
40							
41							
42							
43							
44							
45							
46							
47							
48							
49							
50							
51							
52							
53							
54							
55							
56							
57							
58							

Saturation
▼ Saturation

Completion Results

OW-62

10/20 Sieve Sand Filter Pack

DiSorbo Consulting, LLC

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Austin, Texas 78759
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DiSorbo Environmental Consulting Firm

Andeavor
Gallup Refinery - French Drain Release
WEST18012

Geologist	: Tracy Payne
Driller	: Enviro-Drill, Inc./Cohagan
Drilling Rig	: CME75
Drilling Method	: Hollw-Stem Auger
Sampling Method	: 2' Split Spoon
Comments	:
Total Depth	: 32
Ground Water	: 16'/25'
Start Date	: 03/14/2018
Finish Date	: 03/14/2018

WELL NO. OW-63

(Sheet 1 of 2)

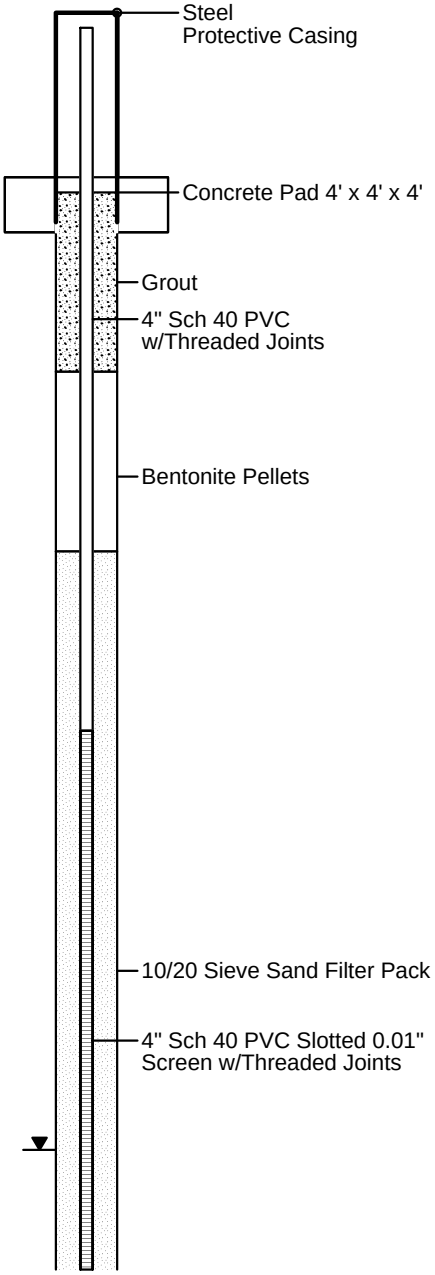
Elev., TOC (ft.msl)	: 6935.06
Elev., PAD (ft. msl)	: 6932.34
Elev., GL (ft. msl)	: NS
Site Coordinates	:
N	: 1634859.73
E	: 2546756.41

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0							Hydroexcavated to 10'-borehole open, no water
10	1.2			CL	90		SILTY CLAY, low, firm, damp,brown with light tan silt in seams,
12	0.9			CL	50		SILTY CLAY, SIMILAR TO ABOVE (STA),
14	1.3			CL	60		SILTY CLAY, STA, trace fine sand in seams,
16	2.5			SM	80		SILTY SAND, fine, compact, very moist to saturated, brown,

Saturation
▼ Saturation

Completion Results

OW-63



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Austin, Texas 78759
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DiSorbo Environmental Consulting Firm

Andeavor
Gallup Refinery - French Drain Release
WEST18012

Geologist	: Tracy Payne
Driller	: Enviro-Drill, Inc./Cohagan
Drilling Rig	: CME75
Drilling Method	: Hollw-Stem Auger
Sampling Method	: 2' Split Spoon
Comments	:
Total Depth	: 32
Ground Water	: 16'/25'
Start Date	: 03/14/2018
Finish Date	: 03/14/2018

WELL NO. OW-63

(Sheet 2 of 2)

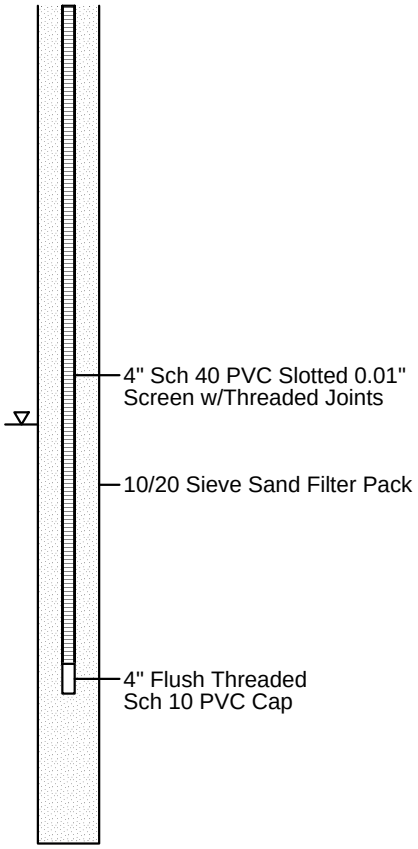
Elev., TOC (ft.msl)	: 6935.06
Elev., PAD (ft. msl)	: 6932.34
Elev., GL (ft. msl)	: NS
Site Coordinates	:
N	: 1634859.73
E	: 2546756.41

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
18–19	428			CL	80		SANDY SILTY CLAY, low, firm, damp, occasional gravel, brown, odor,
20–21	652			CL	80		SILTY SANDY CLAY, STA, moist in sand seams at base, odor,
22–23	275			CL	70		SILTY SANDY CLAY, STA, odor,
24				CH	70		CLAY, high, soft to firm,damp,brown, odor,
	39			CH	90		CLAY, STA, odor,
25	28			GC	90		CLAYEY GRAVEL, sandstone gravel in pink/brown/olive green clay and silt, coarse sand present, saturated, odor,
26–27	150			GC	90		CLAYEY GRAVEL, STA, saturated, odor,
28–29	40				90		WEATHERED SANDSTONE, very dense, dry, grey to light purple, faint odor,
30–31	10.9				50		WEATHERED SANDSTONE, STA, grey and light purple.
32–38							

Saturation
▼ Saturation

Completion Results

OW-63



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Andeavor
Gallup Refinery - French Drain Release
WEST18012

Geologist	: Tracy Payne
Driller	: Enviro-Drill, Inc./Cohagan
Drilling Rig	: CME75
Drilling Method	: Pilot Hole 7 1/4 HSA
Sampling Method	: 2' Split Spoon
Comments	:
Total Depth	: 44' BGL
Ground Water	: Not Encountered
Start Date	: 03/05/2018
Finish Date	: 03/05/2018

WELL NO. OW-64

(Sheet 1 of 3)

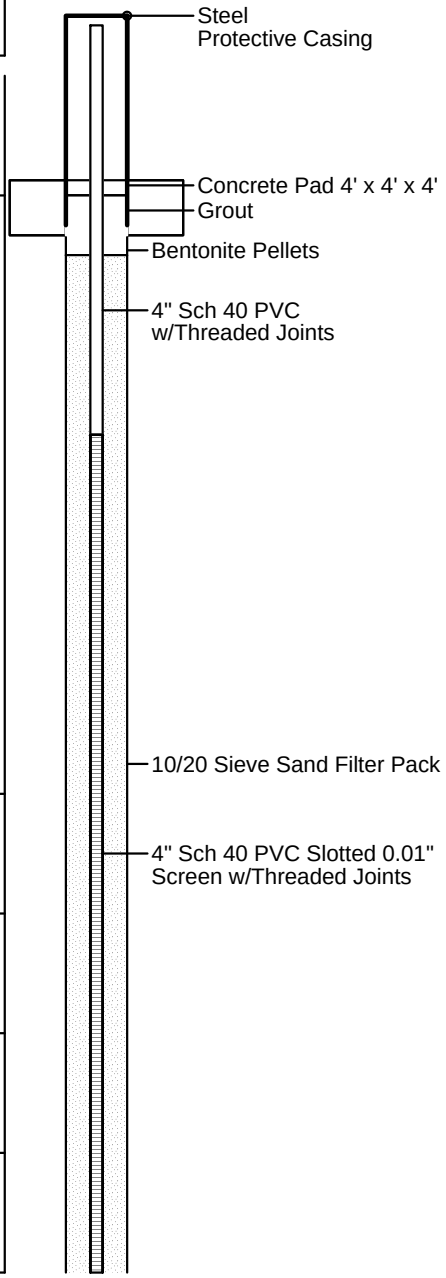
Elev., TOC (ft.msl)	: 6947.40
Elev., PAD (ft. msl)	: 6945.07
Elev., GL (ft. msl)	: NS
Site Coordinates	:
N	: 1634301.36
E	: 2546150.80

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
-2 to 10							Hydroexcavated to 10' BGL, sloughed to 8' BGL, water in hole at 5.20' BGL, no separate phase hydrocarbon (SPH) detected,
10 to 11	280			CL	50		SILTY CLAY, low, firm, damp, brown and grey, faint hydrocarbon (HC) odor,
12 to 13	267			CL	70		SILTY CLAY, SIMILAR TO ABOVE (STA), faint HC odor,
14 to 15	308			CL	80		SILTY CLAY, low to moderate, stiff, calcareous near and at base, damp,brown, grey to greyish white, faint HC odor,
16 to 17	137			CL	50		SILTY CLAY, STA, increase in plasticity, mostly grey-trace brown,faint HC ordor,
18							

Saturation
▼ Saturation

Completion Results

OW-64



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Total Depth	: 44' BGL
Ground Water	: Not Encountered
Start Date	: 03/05/2018
Finish Date	: 03/05/2018

WELL NO. OW-64

(Sheet 2 of 3)

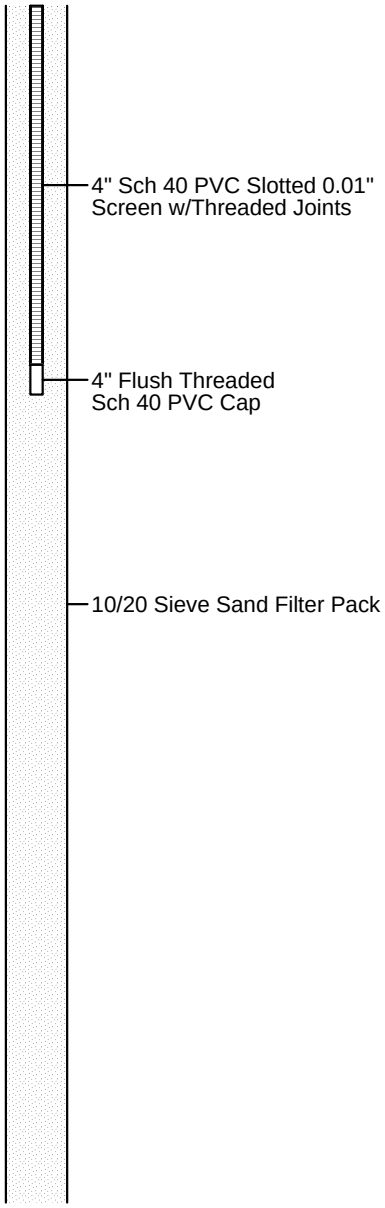
Elev., TOC (ft.msl)	: 6947.40
Elev., PAD (ft. msl)	: 6945.07
Elev., GL (ft. msl)	: NS
Site Coordinates	:
N	: 1634301.36
E	: 2546150.80

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
18							
19	47			CL	70		SILTY CLAY, moderate, firm, damp, brown-trace grey, faint odor,
20							
21	133			CL	70		SILTY CLAY, STA, reddish brown to grey at 20.5', faint odor,
22							
23	20			CL	60		SILTY CLAY, moderate, firm to stiff, damp,grey, faint odor,
24							
25	17			CL	80		SILTY CLAY, STA, stiff,
26							
27	75			CL	70		SILTY CLAY, STA, stiff, calcareous at base, reddish brown and grey, greenish grey,
28							
29	74			CL	60		SILTY CLAY, low, stiff/crumbly, damp, dark reddish brown and grey, no odor,
30							
31	35			CL	60		SILTY CLAY, STA, very stiff, no odor,
32							
33	20			CL	40		SILTY CLAY, low, very stiff, damp, dark reddish brown, balck shale at base, no odor,
34							
35	30			ML	40		CLAYEY SILT, sandstone gravel (cobble) at top of interval, low, firm/crumbly, dry/damp, brown, no odor,
36							
37	8			ML	50		SILTY CLAY,low, very stiff, dry/damp, brown, no odor,
38							

Saturation
▼ Saturation

Completion Results

OW-64



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Sampling Method	: 2' Split Spoon
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Ground Water	: Not Encountered
Start Date	: 03/05/2018
Finish Date	: 03/05/2018

WELL NO. OW-64

(Sheet 3 of 3)

Elev., TOC (ft.msl)	: 6947.40
Elev., PAD (ft. msl)	: 6945.07
Elev., GL (ft. msl)	: NS
Site Coordinates	:
N	: 1634301.36
E	: 2546150.80

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
38							
39	12			ML	70		SILTY CLAY, STA,
40							
41	8			ML	60		SILTY CLAY, STA,
42							
43	6			ML	60		SILTY CLAY, STA.
44							
45							
46							
47							
48							
49							
50							
51							
52							
53							
54							
55							
56							
57							
58							

Saturation
▼ Saturation

Completion Results

OW-64

10/20 Sieve Sand Filter Pack

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Andeavor
Gallup Refinery - French Drain Release
WEST18012

Geologist	: Tracy Payne
Driller	: Enviro-Drill, Inc./Cohagan
Drilling Rig	: CME75
Drilling Method	: Hollow-Stem Auger
Sampling Method	: 2' Split Spoon
Comments	:
Total Depth	: 40' BGL
Ground Water	: 20' BGL
Start Date	: 03/09/2018
Finish Date	: 03/09/2018

WELL NO. OW-65

(Sheet 1 of 3)

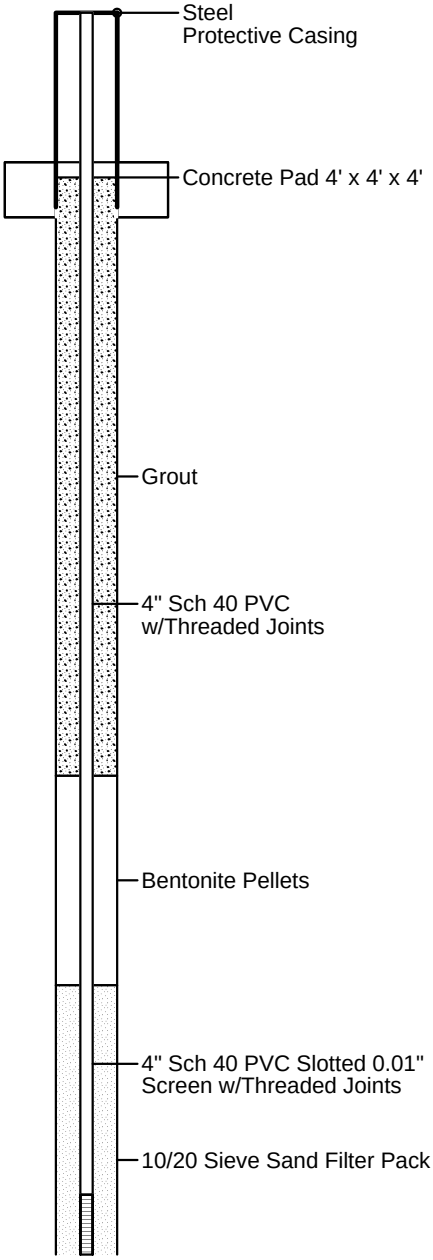
Elev., TOC (ft.msl)	: 6954.05
Elev., PAD (ft. msl)	: 6951.62
Elev., GL (ft. msl)	: NS
Site Coordinates	:
N	: 1634238.38
E	: 2546692.01

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0							Cleared borehole to 5', 1" asphalt and base, SILTY CLAY, low, stiff, damp, mixed with gravelly sand, brown, no order,
5	17.4			SW	100		GRAVELLY SAND, fine to coarse, loose, damp, gravel <10 mm, brown, no odor,
6							GRAVELLY SAND, SIMILAR TO ABOVE (STA), clayey sand at base, very damp, brown, odor,
7	23			SW	80		
8							SILTY SAND, medium to coarse, loose, very damp, brown, odor,
9	12			SM	90		
10							CLAYEY GRAVELLY SAND, fine to coarse, compact, gravelly clay lense 2" thick at 11', brown, odor,
11	16			SM	80		
12							SILTY SAND, medium, loose, very damp, brown, odor,
13	66			SM	70		
14							CLAYEY GRAVEL, <10 mm gravel in brown clay, coarse sand throughout, very damp, odor,
15	822			GC	60		
16							SILTY SAND, fine, loose, very damp to moist, hydrocarbon (HC) odor,
17	885			SM	60		
18							

Saturation
▼ Saturation

Completion Results

OW-65



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Total Depth	: 40' BGL
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WELL NO. OW-65

(Sheet 2 of 3)

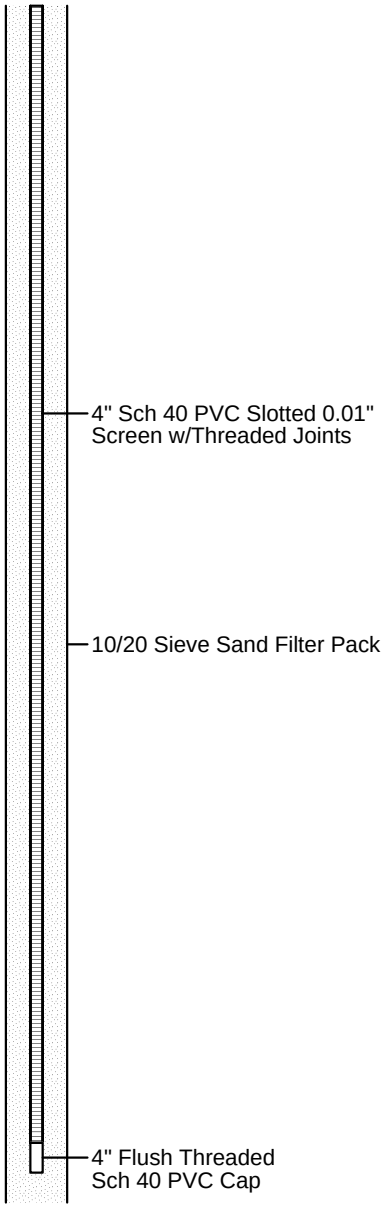
Elev., TOC (ft.msl)	: 6954.05
Elev., PAD (ft. msl)	: 6951.62
Elev., GL (ft. msl)	: NS
Site Coordinates	:
N	: 1634238.38
E	: 2546692.01

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
18							
19	1195			GC	50		CLAYEY GRAVEL, 40 mm sandstone cobbles (tan and green) in brown clay, coarse sand throughout, damp,odor,
20		▼					
21				GC	60		CLAYEY GRAVEL, STA, moist to saturated in sand, water in split spoon,
22							
23				GC	90		CLAYEY GRAVELLY SAND, coarse sand with 10 mm gravel, loose/soft, saturated, brown, HC odor,
24							
25				SC	80		CLAYEY SAND, coarse, loose, very soft, trace gravel, saturated, brown, odor,
26							
27				SC	80		CLAYEY SAND, fine to medium, compact, moist, dark brown, HC odor,
28				CL	80		SILTY CLAY, low, very soft, damp,dark brown, strong HC odor,
29				SC	80		CLAYEY SAND, fine, compact, saturated/oily, dark brown, saturated/oily,
30							
31				SC	60		CLAYEY SAND, STA, HC odor,
32							
33				SC	80		CLAYEY SAND, STA, increase in clay at base, becomes moist,
34							
35				SM	90		SILTY SAND, medium to coarse, loose, gravelly (<5 mm) at base, saturated, dark brown, HC odor,
36				SW	80		GRAVELLY SAND, coarse, loose, trace clay-gravel (10 mm), saturated, dark brown, HC odor,
37				CL	80		SANDY CLAY, low, firm, trace gravel, damp, dark brown, HC odor,
38							

Saturation
▼ Saturation

Completion Results

OW-65



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WELL NO. OW-65

(Sheet 3 of 3)

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Elev., PAD (ft. msl)	: 6951.62
Elev., GL (ft. msl)	: NS
Site Coordinates	:
N	: 1634238.38
E	: 2546692.01

Depth (ft.)	PID (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
38–40				CL	40		SANDY CLAY, STA.

Saturation
▼ Saturation

Completion Results

OW-65

10/20 Sieve Sand Filter Pack

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Appendix B
Standard Operating Procedure – Soil Sampling

memorandum

To: Sampling Team Members
From: Project Manager
Date: November 30, 2020
Re: Standard Operating Procedure – Soil Sampling

1.0 INTRODUCTION

Soil sampling related to site characterization and site clean-up is expected to involve source sampling of potentially contaminated Soils for characterization and profiling. Soil sampling is expected to occur in and around the STP-1 French drain.

All personnel involved in Soil sampling projects are required to review this Standard Operating Procedure (SOP) before sampling to ensure the continued generation of reliable data. This SOP is based on experience gained from collecting Soil samples and the latest information available in guidance manuals. This SOP may be updated as additional experience and information are acquired.

2.0 PRE-FIELD ACTIVITIES

Several activities will be conducted prior to departure for the project site. A project team will be assigned and the members will begin coordinating the sample collection event with Marathon Petroleum Company. Field equipment will be checked and organized. Access to the areas to be sampled will be checked, and provisions made to pack the necessary equipment for delivery to the project site.

3.0 PREPARATION

The Project Manager will review the current sampling and analysis plans and work plans to determine if any documents need to be brought to the site during monitoring. The Project Manager will also evaluate whether any changes have been made in the sampling and analytical procedures, and notify the appropriate personnel.

The Sampling Team Members will review available surface water level data before leaving for the sampling site. This preparation ensures that the proper equipment and personnel are available at the site. All field screening equipment will be inspected prior to departure, ensuring that it is in proper working order. For Soil sampling, the only field monitoring equipment used will be the Photoionization detection (PID) meter and it should be calibrated and operated and according to manufacturer's recommendations.

4.0 EQUIPMENT

The following equipment is recommended for Soil sampling:

- Required personal protective equipment (PPE), listed in the site-specific health and safety plan (HASP) (generally nitrile gloves, waders, life preserver, rope and safety glasses)
- Soil sampling devices (i.e., hand auger)
- Sampling beaker, bottles, labels, and preservatives
- Gloves
- Chain-of-custody/sample-analysis-request forms
- Flame Ionization detection meter (FID)
- Opaque Cooler(s) and bagged ice or frozen Blue Ice
- Detergent or solvent for cleaning monitoring equipment
- Brushes dedicated for decontamination
- Decontamination containers dedicated for wash, rinse 1, and rinse 2
- Paper towels
- Trash bags
- Field logbook
- Wrist watch (with digital display)

5.0 SAMPLE COLLECTION

A critical aspect of any sampling program is selection and implementation of an appropriate sampling technique. Selection of equipment and technique should be appropriate for the volume of material required and the type of analysis to be performed. In general, the sampling equipment and technique will be chosen to minimize, to the extent possible, the amount of handling a sample will undergo prior to analysis. In many cases, the material to be sampled will be easy to access, and simple "grab" samples collected using a shovel, trowel, or drive sampler are appropriate. In other cases, such as underwater or heavily saturated samples, the Soils may be difficult to access, and sampling will involve the use of specialized Soil sampling equipment. Specific analytical requirements and sampling frequencies are specified in the work plan.

Soil samples located in dry areas will be collected from representative locations using a decontaminated drive sampler equipped with clean brass or stainless steel sampling rings, a thin-walled tube sampler or a shovel or hand trowel. The sampling device will be driven completely into the material manually or using

a manually operated auger, drive hammer, or mallet. The sampling device will then be extracted from the material using a shovel or trowel as needed. If used, filled sampling rings or the thin walled tube will then be removed from the sampling device and immediately sealed on both ends with teflon sheeting and plastic caps. Otherwise, the material will placed directly from the trowel or other appropriate sampling device into a clean glass jar. The jar will be filled completely to minimize headspace (by tamping during filling), and immediately sealed with a teflon-lined lid.

In accordance with the work plan saturated and underwater Soil samples will be collected using a hand auger, geoprobe, Soil sampler or a similar device. Samples will be collected from the shore or boat at each preselected sampling location. Underwater samples will be capped prior to breaking the surface of the water to prevent agitation of the sample and to assist in core characterization. In addition, care will be taken to prevent mixing when collecting saturated and underwater samples. Soil will be placed in sample containers provided by the laboratory and filled to the top to minimize headspace. If necessary, several cores may be collected from each location to provide adequate sample volume for the laboratory. The sample containers will be labeled with endelible ink. Filled sample containers should be wiped dry and placed in a cooler with ice (or equivalent) for storage at the time of collection. Enough ice and protective packing material should be used to cool the samples to 4° C and ensure that the container remains intact prior to final packing and shipment.

Field screening may involve the use of a FID probe; which will be inserted into the bag and the reading taken. All samples shall be screened at as close to the same temperature as possible to obtain consistent results.

Sampling devices will be decontaminated between sampling locations using a four-stage decontamination system consisting of a two detergent/water washes and two deionized water rinses. Sample locations will be recorded with a GPS in order to accurately map the sampling locations.

Field logbooks, Soil Sampling Field Log, and photograph logs will provide a written record of field data gathered, field observations, field equipment calibrations, the samples collected for analysis, and sample custody. Color photographs will be used to substantiate and augment the field notes, if necessary.

697-078-001

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District II
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Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

COMMENTS

Action 19486

COMMENTS

Operator:	OGRID:	Action Number:	Action Type:
WESTERN REFINING SOUTHWEST, IN 6700 Jefferson NE, Suite A-1 Albuquerque, NM87109	705791	19486	DISCHARGE PERMIT

Created By	Comment	Comment Date
cchavez	Permittee French Drain WP 12-15-2020.	03/02/2021

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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
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Santa Fe, NM 87505

CONDITIONS

Action 19486

CONDITIONS OF APPROVAL

Operator:			OGRID:	Action Number:	Action Type:
WESTERN REFINING SOUTHWEST, IN NM87109	6700 Jefferson NE, Suite A-1	Albuquerque,	705791	19486	DISCHARGE PERMIT

OCD Reviewer	Condition
cchavez	None