

GW - 001

C-141s

2018

August 17, 2018

Jim Griswold
Bureau Chief
NM Energy, Mineral & Natural Resources
Oil Conservation Division, Env. Bureau
1220 South St. Francis Drive
Santa Fe, NM 87505

John Keiling
Bureau Chief
New Mexico Environmental Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Bldg. 1
Santa Fe, NM 87505

Certified Mail#: 7004 1350 0003 7983 3586 (Delivery to OCD)
Certified Mail#: 7004 1350 0003 7983 3562 (Delivery to NMED)

Re: Underground Slop Pipeline Release – May 18, 2018
 Western Refining Southwest, Inc. – Bloomfield Terminal
 Oil Conservation Division GW – 001
 EPA ID# NMD089416416
 HWB – WRB-MISC

Dear Mr. Griswold, and Mr. Keiling:

Release Scenario

The release occurred on May 17, 2018 from a below-ground pipeline just north of a culvert under CR 4990. The pipeline was in slop oil service. Details of the release were reported to the Oil Conservation Division (OCD) and the New Mexico Environment Department (NMED) on a C-141 form dated June 1, 2018.

Spill Clean-up

Western Refining has the performed emergency response activities by excavating, identifying the leaking line, repairing the line and removing free liquids /stained soils. Due to safety concerns, excavation was performed using hydro-vacuum truck. All excavated soils (impacted and clean) were disposed properly at an off-site facility. All free liquids were disposed through the facilities' waste water treatment system.

There are 15 pipelines, a high-voltage power line and a fiber-optic communication line in the culvert under the roadway. Damage to any of these lines would cause "major facility destruction". The potential impact would have caused a fuel and crude oil supply disruption for the region. To further complicate matters, the Release occurred in immediate proximity to a San Juan County roadway.

Delineation by excavation to cleanup-levels was not possible due to the following collapse concerns:

- Laterally, the excavation safety constraints are the presence of equipment, roadway, and/or collapse concerns.
- Vertically, the safety constraint is the presence of equipment - several large lines below the bottom of the excavation.

Pipeline Evaluation/Repair

To prevent further occurrences, the pipelines and other utilities have been evaluated and repaired, if necessary. Due to safety concerns and a request from San Juan County, the excavation was backfilled as soon as the pipeline mechanical integrity testing and repairs were completed.

Facility Remediation

Remediation under both OCD and NMED requirements is in progress at the Bloomfield Terminal. This work has been performed under OCD Discharge Permit GW-1 and the NMED Corrective Action Order (Order) dated July 27, 2007. The slop pipeline was previously investigated as part of Group 8 (SMWU 3 Underground Piping Currently in Use). Figure 2 from the Investigation Report is attached for reference. Ground water is monitored regularly and reported to both NMED and OCD on an annual basis. Figures 5 and 7 from the 2018 Annual Report are attached for reference.

Path Forward Proposal

Upon review of the OCD Spill Rules dated August 14, 2018, the aggressive time line is only achievable when soil removal is straightforward and technically practical. Due to excavation limitations, it is not possible to close the slop release in the allotted time (November 12, 2018).

Western Refining proposes to prepare an Investigation Work Plan by October 15, 2018. This plan will be prepared for review of OCD and NMED. The plan will be presented in a similar format to the Group 8 Work Plan.

If you have any questions or need additional information, please feel free to contact me at (915) 534-1483 at your convenience.

Sincerely,

WESTERN REFINING SOUTHWEST, INC.



By: ALLEN S. HAINS

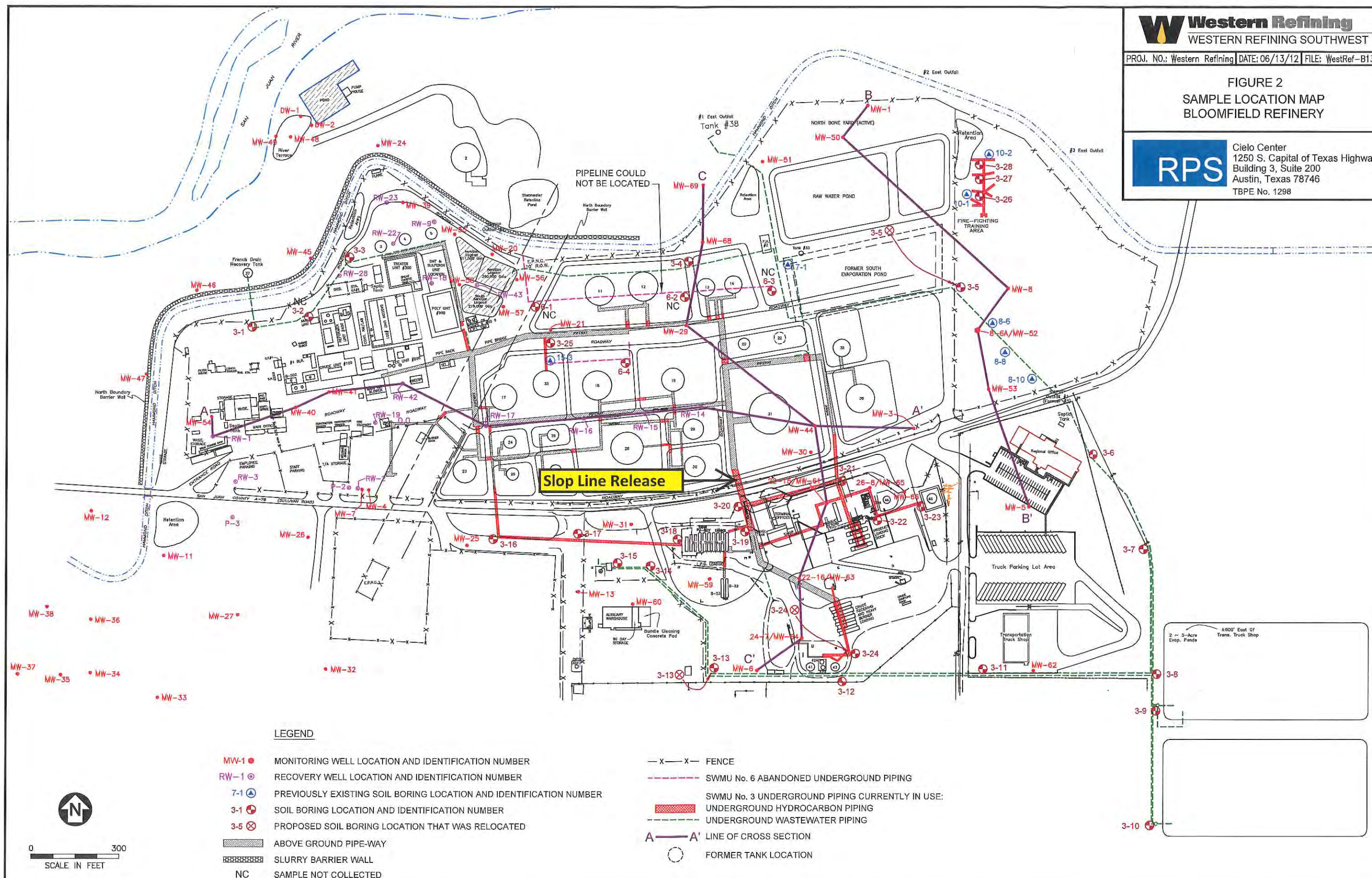
Project Manager – Refinery Remediation

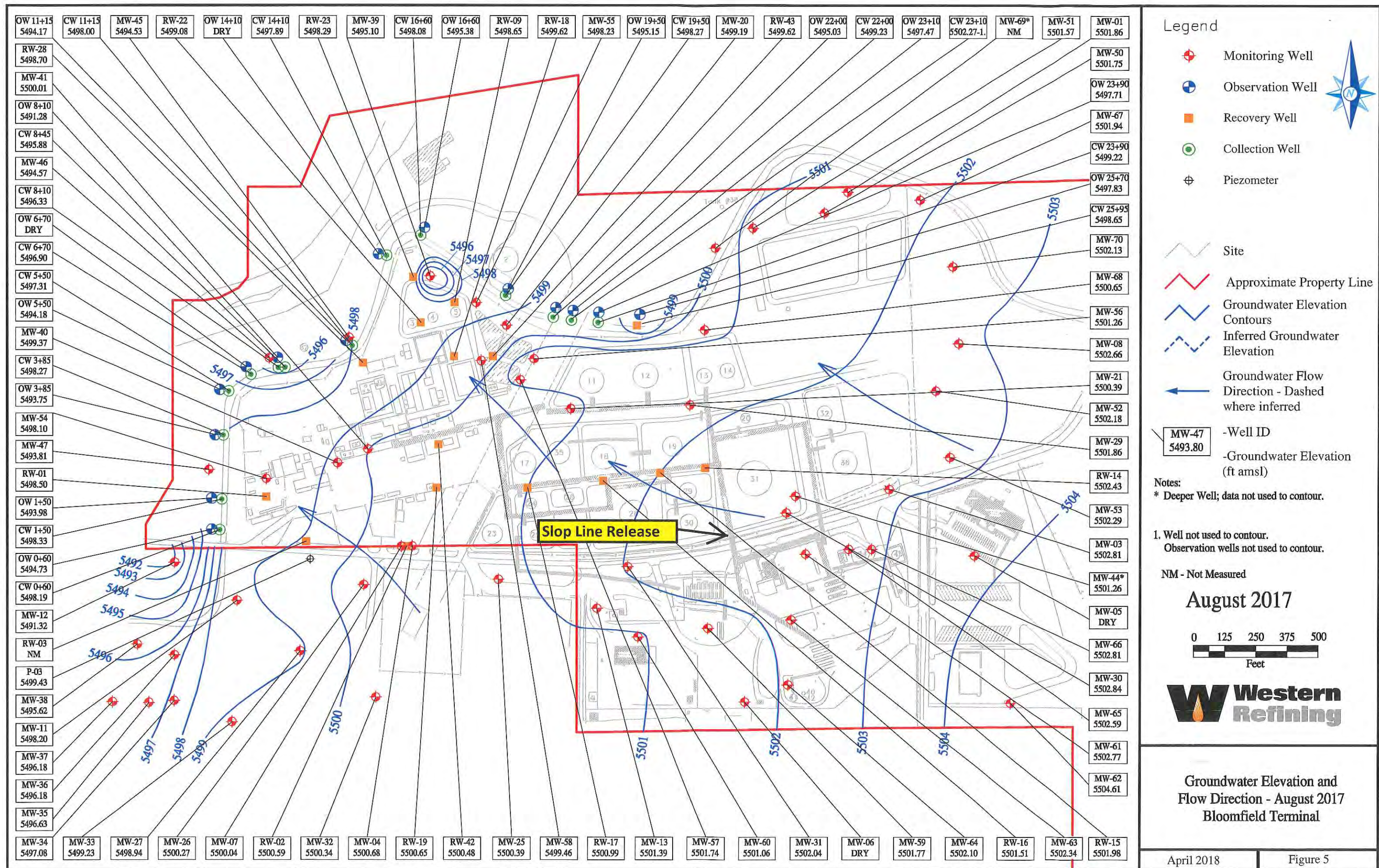
cc: Vanessa Fields (via e-mail: Vanessa.Fields@state.nm.us)
Leona Tsinnajinnie (via e-mail: Leona.Tsinnajinnie@state.nm.us)

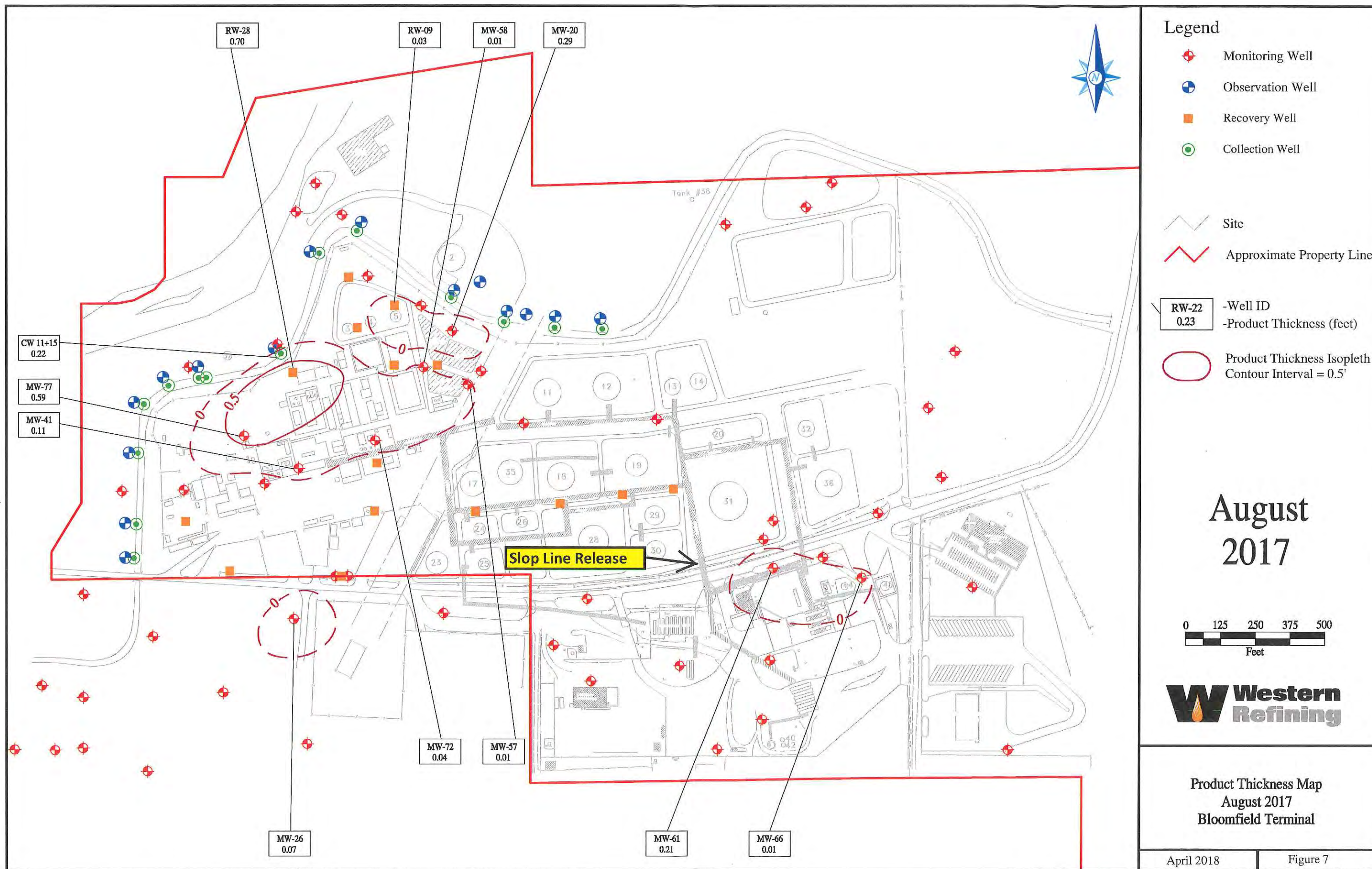
FIGURE 2
SAMPLE LOCATION MAP
BLOOMFIELD REFINERY

RPS

Cielo Center
1250 S. Capital of Texas Highway
Building 3, Suite 200
Austin, Texas 78746
TBPE No. 1298

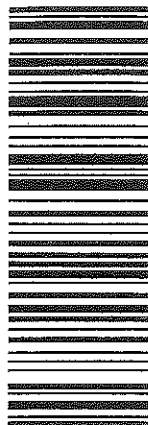






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City, State, Z

Jim Griswold, Bureau Chief
NM Energy, Mineral & Natural
Resources
OCD - Environmental Bureau
1220 South St. Francis Drive

PS Form 3806

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Jim Griswold, Bureau Chief
NM Energy, Mineral & Natural
Resources
OCD - Environmental Bureau
1220 South St. Francis Drive



9590 9402 3546 7305 B746 46

2. Article Number (Transfer from service label)

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☐ Addressee

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C. Date of Delivery

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If YES, enter delivery address below: ☐ No

3. Service Type

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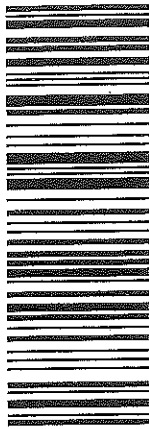
PS Form 3811, July 2015 PSN 7530-02-000-9053

Domestic Return Receipt



212 N. Clark Street, El Paso, TX 79905

Jim Griswold
Bureau Chief
NM Energy, Mineral & Natural Resources
Oil Conservation Division, Env. Bureau
1220 South St. Francis Drive
Santa Fe, NM 87505



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Sent To **John E. Kieling, Chief**
NMED - HWB
Street, Apt. or PO Box **2905 Rodeo Park Drive E., Bldg 1**
City, State **Santa Fe, NM 87505-6303**

PS Form 3811, July 2015 PSN 7530-02-000-9053

SENDER: COMPLETE THIS SECTION

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- Print your name and address on the reverse so that we can return the card to you.
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John E. Kieling, Chief
NMED - HWB
2905 Rodeo Park Drive E., Bldg 1
Santa Fe, NM 87505-6303



9590 9402 3546 7305 8746 77

2. Article Number (Transfer from service label)

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☐ Agent

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☐ Signature ConfirmationTM

☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053

Domestic Return Receipt



212 N. Clark Street, El Paso, TX 79905

John E. Kieling, Chief
New Mexico Environmental Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

Chavez, Carl J, EMNRD

From: Hains, Allen S <Allen.S.Hains@andeavor.com>
Sent: Friday, July 20, 2018 10:01 AM
To: Fields, Vanessa, EMNRD; Robinson, Kelly
Cc: Tsinnajinnie, Leona, NMENV; Chavez, Carl J, EMNRD; Smith, Cory, EMNRD
Subject: RE: Western Refining - Bloomfield Terminal: Pipeline Leak Notification

Vanessa,

Please grant Western Refining an extension to the August 15, 2018 which is 90 days after the spill occurrence.

As you are aware, the release occurred from a below-ground pipeline just north of a culvert under CR 4990. There are 15 pipelines, a high-voltage power line and a fiber-optic communication line in the culvert. To complicate matters, the roadway is in close proximity of the excavation. Damage to any of these lines would cause "major facility destruction".

Spill Clean-up

Western Refining performed emergency response activities by excavating, identifying the leaking line, repairing the line and removing free liquids/stained soils. Delineation by excavation to cleanup-levels was not possible due to collapse concerns. Laterally, the excavation safety constraints are the presence of equipment and/or collapse concerns. Vertically, the safety constraint is the presence of equipment, several large lines below the bottom of the excavation that you witnessed.

Pipeline Evaluation/Repair

To prevent further occurrences, the pipelines and other utilities are being evaluated and repaired, if necessary. This work continues today and should be completed soon. Due to safety concerns, the excavation will be backfilled as soon as practicable.

Moving Forward

The area of the release is regulated by the following:

- NMOCD (Aztec) - Spill Rules (changing soon)
- NMOCD (Santa Fe) - GW-1 Discharge Permit (Release reporting and abatement requirements)
- NMED HWB – Corrective Action Order (SWMU 3 - Underground Piping Currently In Use)

Western Refining will propose a path forward for all of the Stakeholders to review.

Thank you,

Allen S. Hains
Project Manager
Refinery Remediation

Andeavor
212 N. Clark Street
El Paso, Texas 79905
915 534-1483



From: Fields, Vanessa, EMNRD [<mailto:Vanessa.Fields@state.nm.us>]
Sent: Friday, June 22, 2018 8:40 AM
To: Robinson, Kelly <Kelly.Robinson@andeavor.com>
Cc: Tsinnajinnie, Leona, NMENV <Leona.Tsinnajinnie@state.nm.us>; Hains, Allen S <Allen.S.Hains@andeavor.com>; Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Subject: RE: Western Refining - Bloomfield Terminal: Pipeline Leak Notification

Good morning Kelly ,

Conditions of Approval for Western Bloomfield Terminal Release:

- Following the NMOCD Guidelines for Remediation's of Leaks, Spills and Releases the remediation's levels for the soils at Western Bloomfield Terminal are as follows: Site ranking **20** 10 mg/kg Benzene, 50 mg/kg BTEX and 100 mg/kg TPH
 - Western will fully delineate the release both horizontally and vertically. Boreholes that exceeded 100ppm OVM or exhibit heavy staining and/or apparent hydrocarbon impacts will be considered impacted until sampled.
 - Delineation must be completed by July 20, 2018.
 - Provide OCD District III office 24 hour notification prior to sampling.
 - Horizontal delineation of soil impacts must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C6 thru C36). Soil sampling must be both within the impacted area and beyond.
 - Vertical delineation of soil impacts must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C6 thru C36), Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below the sites closure standards must be demonstrated as existing above the water table.
 - Composite sampling will not be allowed for delineation
 - Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be

clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated).

- Within 30 days of completion of delineation Western will submit to the OCD a delineation report and proposed alternative remediation plan.

Please let me know if you have any questions.

Thank you,
Vanessa Fields
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 119
Cell: (505) 419-0463
vanessa.fields@state.nm.us

From: Robinson, Kelly <Kelly.Robinson@andeavor.com>
Sent: Tuesday, June 19, 2018 8:19 AM
To: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>
Cc: Tsinnajinnie, Leona, NMENV <Leona.Tsinnajinnie@state.nm.us>; Hains, Allen S <Allen.S.Hains@andeavor.com>; Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
Subject: FW: Western Refining - Bloomfield Terminal: Pipeline Leak Notification

Good Morning Ma'am,

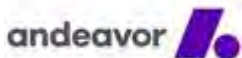
Western Refining would like to provide an up-date regarding the emergency response efforts pertaining to the slop line leak. As of current, the excavation around the leak source areas has not reached to the full extent of the release. The lab report for the latest soil sampling is attached. Western Refining has stopped excavation of the soils due to integrity issues relating to the roadway and exposed pipelines. The attached photo shows the pipelines and the roadway.

Moving forward, Western is in-need of making the excavation safe by backfilling the area later this week, if possible. Western management, including engineering, will develop a strategy to excavate the remaining impacted soil under emergency response, if possible. Please let us know if you have any questions or need any additional information.

Thank you for your time!

Kelly R. Robinson - Environmental Supervisor

111 County Road 4990 I Bloomfield, NM 87413
O: (505) 632-4166| C: (505) 801-5616
E: Kelly.Robinson@andeavor.com

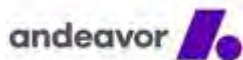


Please note: My email address changed to Kelly.Robinson@andeavor.com on July 31, 2017. Please update your records.

From: Robinson, Kelly
Sent: Monday, June 11, 2018 3:06 PM
To: Hains, Allen S <Allen.S.Hains@andeavor.com>
Subject: FW: Western Refining - Bloomfield Terminal: Pipeline Leak Notification

Kelly R. Robinson - Environmental Supervisor

111 County Road 4990 I Bloomfield, NM 87413
O: (505) 632-4166| C: (505) 801-5616
E: Kelly.Robinson@andeavor.com



Please note: My email address changed to Kelly.Robinson@andeavor.com on July 31, 2017. Please update your records.

From: Robinson, Kelly
Sent: Friday, June 01, 2018 3:59 PM
To: 'Chavez, Carl J, EMNRD' <CarlJ.Chavez@state.nm.us>; 'Fields, Vanessa, EMNRD' <Vanessa.Fields@state.nm.us>
Cc: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Tsinnajinnie, Leona, NMENV <Leona.Tsinnajinnie@state.nm.us>; Tommy D Roberts (Tommy.D.Roberts@andeavor.com) <Tommy.D.Roberts@andeavor.com>
Subject: RE: Western Refining - Bloomfield Terminal: Pipeline Leak Notification

Good Afternoon,

Attached is the follow-up initial C-141 documenting the slop line leak at the Bloomfield Terminal. As stated in the report, the source of the leak was identified to be on the north side of County Road 4990. Western Refining is schedule to collect closure samples on Monday, June 3rd, 2018. A representative from NMOCD-Aztec will be on-site to witness the sampling activities. A follow-up C-141 will be submitted following receipt of the sample results for agency review.

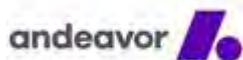
If anyone has any questions, please let me know at your convenience.

Thank you for your time!

Sincerely,

Kelly R. Robinson - Environmental Supervisor

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O: (505) 632-4166| C: (505) 801-5616
E: Kelly.Robinson@andeavor.com



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From: Chavez, Carl J, EMNRD [<mailto:CarlJ.Chavez@state.nm.us>]
Sent: Friday, May 18, 2018 3:40 PM
To: Robinson, Kelly <Kelly.Robinson@andeavor.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Smith,

Cory, EMNRD <Cory.Smith@state.nm.us>

Cc: Tsinnajinnie, Leona, NMENV <Leona.Tsinnajinnie@state.nm.us>; Roberts, Tommy D <Tommy.D.Roberts@andeavor.com>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>

Subject: RE: Western Refining - Bloomfield Terminal: Pipeline Leak Notification

Kelly:

The New Mexico Oil Conservation Division (OCD) is in receipt of your initial notification of a release.

The agencies await receipt of the C-141 and standard process for responding to the release.

Thank you.

Mr. Carl J. Chavez, CHMM (#13099)
New Mexico Oil Conservation Division
Energy Minerals and Natural Resources Department
1220 South St Francis Drive
Santa Fe, New Mexico 87505
Ph. (505) 476-3490
E-mail: CarlJ.Chavez@state.nm.us

“Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?” (To see how, go to: <http://www.emnrd.state.nm.us/OCD> and see “Publications”)

From: Robinson, Kelly <Kelly.Robinson@andeavor.com>

Sent: Friday, May 18, 2018 3:09 PM

To: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>

Cc: Tsinnajinnie, Leona, NMENV <Leona.Tsinnajinnie@state.nm.us>; Roberts, Tommy D <Tommy.D.Roberts@andeavor.com>

Subject: Western Refining - Bloomfield Terminal: Pipeline Leak Notification

Good Afternoon Everyone,

Yesterday afternoon Western Refining – Bloomfield Terminal identified a leak in a pipeline used to transfer water/crude/finished product mixtures from the Terminal Loading/Unloading areas on the south side of County Road 4990 to the on-site Wastewater Treatment System located north of County Road 4990. The line has since been isolated from service and additional investigation efforts are on-going to determine the cause of the leak and extent of impact to the surrounding soils. At this time it is unknown as to the quantity of liquids released from the pipeline. Western Refining has contracted Envirotech to support the on-going field investigation efforts. We will be providing up-dates on progress made in the field as more information becomes available.

If you have any questions in the meantime, please feel free to contact me at your convenience.

Thank you for your time!

Kelly R. Robinson - Environmental Supervisor

111 County Road 4990 | Bloomfield, NM 87413
O: (505) 632-4166 | C: (505) 801-5616
E: Kelly.Robinson@andeavor.com



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submitted for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated).

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Please let me know if you have any questions.

Thank you,
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Environmental Specialist
Oil Conservation Division
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Cell: (505) 419-0463
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Cc: Tsinnajinnie, Leona, NMENV <Leona.Tsinnajinnie@state.nm.us>; Hains, Allen S <Allen.S.Hains@andeavor.com>; Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
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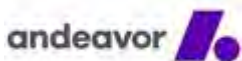
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Moving forward, Western is in-need of making the excavation safe by backfilling the area later this week, if possible. Western management, including engineering, will develop a strategy to excavate the remaining impacted soil under emergency response, if possible. Please let us know if you have any questions or need any additional information.

Thank you for your time!

Kelly R. Robinson - Environmental Supervisor

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O: (505) 632-4166 | C: (505) 801-5616
E: Kelly.Robinson@andeavor.com



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Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, June 21, 2018 8:13 AM
To: Griswold, Jim, EMNRD
Subject: FW: Western Refining - Bloomfield Terminal: Pipeline Leak Notification
Attachments: C-141_Slop Line Leak.pdf

FYI.

From: Robinson, Kelly <Kelly.Robinson@andeavor.com>
Sent: Friday, June 1, 2018 3:59 PM
To: Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>
Cc: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Tsinnajinnie, Leona, NMENV <Leona.Tsinnajinnie@state.nm.us>; Roberts, Tommy D <Tommy.D.Roberts@andeavor.com>
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If anyone has any questions, please let me know at your convenience.

Thank you for your time!

Sincerely,

Kelly R. Robinson - Environmental Supervisor

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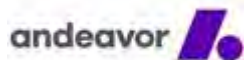
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Cc: Tsinnajinnie, Leona, NMENV <Leona.Tsinnajinnie@state.nm.us>; Roberts, Tommy D <Tommy.D.Roberts@andeavor.com>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>
Subject: RE: Western Refining - Bloomfield Terminal: Pipeline Leak Notification

Kelly:

From: Robinson, Kelly
Sent: Monday, June 11, 2018 3:06 PM
To: Hains, Allen S <Allen.S.Hains@andeavor.com>
Subject: FW: Western Refining - Bloomfield Terminal: Pipeline Leak Notification

Kelly R. Robinson - Environmental Supervisor

111 County Road 4990 I Bloomfield, NM 87413
O: (505) 632-4166| C: (505) 801-5616
E: Kelly.Robinson@andeavor.com



Please note: My email address changed to Kelly.Robinson@andeavor.com on July 31, 2017. Please update your records.

From: Robinson, Kelly
Sent: Friday, June 01, 2018 3:59 PM
To: 'Chavez, Carl J, EMNRD' <CarlJ.Chavez@state.nm.us>; 'Fields, Vanessa, EMNRD' <Vanessa.Fields@state.nm.us>
Cc: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Tsinnajinnie, Leona, NMENV <Leona.Tsinnajinnie@state.nm.us>; Tommy D Roberts (Tommy.D.Roberts@andeavor.com) <Tommy.D.Roberts@andeavor.com>
Subject: RE: Western Refining - Bloomfield Terminal: Pipeline Leak Notification

Good Afternoon,

Attached is the follow-up initial C-141 documenting the slop line leak at the Bloomfield Terminal. As stated in the report, the source of the leak was identified to be on the north side of County Road 4990. Western Refining is schedule to collect closure samples on Monday, June 3rd, 2018. A representative from NMOCD-Aztec will be on-site to witness the sampling activities. A follow-up C-141 will be submitted following receipt of the sample results for agency review.

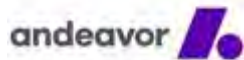
If anyone has any questions, please let me know at your convenience.

Thank you for your time!

Sincerely,

Kelly R. Robinson - Environmental Supervisor

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O: (505) 632-4166| C: (505) 801-5616
E: Kelly.Robinson@andeavor.com



Please note: My email address changed to Kelly.Robinson@andeavor.com on July 31, 2017. Please update your records.

From: Chavez, Carl J, EMNRD [<mailto:CarlJ.Chavez@state.nm.us>]
Sent: Friday, May 18, 2018 3:40 PM
To: Robinson, Kelly <Kelly.Robinson@andeavor.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Tsinnajinnie, Leona, NMENV <Leona.Tsinnajinnie@state.nm.us>; Roberts, Tommy D

<Tommy.D.Roberts@andeavor.com>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>

Subject: RE: Western Refining - Bloomfield Terminal: Pipeline Leak Notification

Kelly:

The New Mexico Oil Conservation Division (OCD) is in receipt of your initial notification of a release.

The agencies await receipt of the C-141 and standard process for responding to the release.

Thank you.

Mr. Carl J. Chavez, CHMM (#13099)
New Mexico Oil Conservation Division
Energy Minerals and Natural Resources Department
1220 South St Francis Drive
Santa Fe, New Mexico 87505
Ph. (505) 476-3490
E-mail: CarlJ.Chavez@state.nm.us

“Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?” (To see how, go to: <http://www.emnrd.state.nm.us/OCD> and see “Publications”)

From: Robinson, Kelly <Kelly.Robinson@andeavor.com>

Sent: Friday, May 18, 2018 3:09 PM

To: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>

Cc: Tsinnajinnie, Leona, NMENV <Leona.Tsinnajinnie@state.nm.us>; Roberts, Tommy D <Tommy.D.Roberts@andeavor.com>

Subject: Western Refining - Bloomfield Terminal: Pipeline Leak Notification

Good Afternoon Everyone,

Yesterday afternoon Western Refining – Bloomfield Terminal identified a leak in a pipeline used to transfer water/crude/finished product mixtures from the Terminal Loading/Unloading areas on the south side of County Road 4990 to the on-site Wastewater Treatment System located north of County Road 4990. The line has since been isolated from service and additional investigation efforts are on-going to determine the cause of the leak and extent of impact to the surrounding soils. At this time it is unknown as to the quantity of liquids released from the pipeline. Western Refining has contracted Envirotech to support the on-going field investigation efforts. We will be providing up-dates on progress made in the field as more information becomes available.

If you have any questions in the meantime, please feel free to contact me at your convenience.

Thank you for your time!

Kelly R. Robinson - Environmental Supervisor

111 County Road 4990 I Bloomfield, NM 87413
O: (505) 632-4166| C: (505) 801-5616
E: Kelly.Robinson@andeavor.com



Please note: My email address changed to Kelly.Robinson@andeavor.com on July 31, 2017. Please update your records.

Chavez, Carl J, EMNRD

From: Robinson, Kelly <Kelly.Robinson@andeavor.com>
Sent: Monday, May 21, 2018 10:21 AM
To: Fields, Vanessa, EMNRD; Smith, Cory, EMNRD; Chavez, Carl J, EMNRD; Tsinnajinnie, Leona, NMENV
Subject: Western Refining Bloomfield Terminal - Liquid Release from Below Ground Pipeline Follow-up Reporting

Good Morning Everyone,

Western Refining is providing a brief up-date of the efforts completed thus far as it pertains to a liquid release from a below ground pipeline located at the Western Refining Bloomfield Terminal originally reported on Friday, May 18th. Excavation crews continued to work through Saturday (May 19th) and will resume field efforts today. We have been able to locate the north end of the culvert which is in-place to protect several Western Refining pipelines that run across County Road 4990. We have not been able to locate the exact location of the line leak, but we suspect the release originated along the section of the slop line that is located inside or within close vicinity to the culvert. Excavation efforts will continue today to develop a clearance area where we can more safely access the entrance of the culvert and further assess the area within the culvert.

Prior to the start of the excavation effort, Operations flushed the section of the slop line that runs from the Terminal to the Tank Farm with clean water to clean-out the line as much as possible. The slop line will remain out-of-service until such time that repairs can be completed. Western Refining will continue to provide up-dates as new information is made available from the field team.

In the meantime, please let me know if you have any questions.

Kelly R. Robinson - Environmental Supervisor

111 County Road 4990 | Bloomfield, NM 87413
O: (505) 632-4166 | C: (505) 801-5616
E: Kelly.Robinson@andeavor.com



Please note: My email address changed to Kelly.Robinson@andeavor.com on July 31, 2017. Please update your records.

The New Mexico Oil Conservation Division (OCD) is in receipt of your initial notification of a release.

The agencies await receipt of the C-141 and standard process for responding to the release.

Thank you.

Mr. Carl J. Chavez, CHMM (#13099)
New Mexico Oil Conservation Division
Energy Minerals and Natural Resources Department
1220 South St Francis Drive
Santa Fe, New Mexico 87505
Ph. (505) 476-3490
E-mail: CarlJ.Chavez@state.nm.us

“Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?” (To see how, go to: <http://www.emnrd.state.nm.us/OCD> and see “Publications”)

From: Robinson, Kelly <Kelly.Robinson@andeavor.com>
Sent: Friday, May 18, 2018 3:09 PM
To: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
Cc: Tsinnajinnie, Leona, NMENV <Leona.Tsinnajinnie@state.nm.us>; Roberts, Tommy D <Tommy.D.Roberts@andeavor.com>
Subject: Western Refining - Bloomfield Terminal: Pipeline Leak Notification

Good Afternoon Everyone,

Yesterday afternoon Western Refining – Bloomfield Terminal identified a leak in a pipeline used to transfer water/crude/finished product mixtures from the Terminal Loading/Unloading areas on the south side of County Road 4990 to the on-site Wastewater Treatment System located north of County Road 4990. The line has since been isolated from service and additional investigation efforts are on-going to determine the cause of the leak and extent of impact to the surrounding soils. At this time it is unknown as to the quantity of liquids released from the pipeline. Western Refining has contracted Envirotech to support the on-going field investigation efforts. We will be providing up-dates on progress made in the field as more information becomes available.

If you have any questions in the meantime, please feel free to contact me at your convenience.

Thank you for your time!

Kelly R. Robinson - Environmental Supervisor

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O: (505) 632-4166 | C: (505) 801-5616
E: Kelly.Robinson@andeavor.com



Please note: My email address changed to Kelly.Robinson@andeavor.com on July 31, 2017. Please update your records.

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised April 3, 2017

Submit 1 Copy to appropriate District Office in
accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Western Refining Terminals, LLC	Contact: Kelly Robinson	
Address: 50 CR 4990	Telephone No.: 505-632-4166	
Facility Name: Bloomfield Terminal	Facility Type: Crude and Products Terminal	
Surface Owner: Western Refining	Mineral Owner	API No.

LOCATION OF RELEASE

Unit Letter	Section 27	Township 29N	Range : 11W	Feet from the	North/South Line	Feet from the	East/West Line	County San Juan
-------------	---------------	-----------------	-------------------	---------------	------------------	---------------	----------------	--------------------

Latitude 36.697049 Longitude -107.972494 NAD83

NATURE OF RELEASE

Type of Release: Crude Oil/Water/Product Mixture	Volume of Release 7 bbls hydrocarbons	Volume Recovered: All standing liquids were recovered.
Source of Release: Crack in the slop line located adjacent/north of county road 4990	Date and Hour of Occurrence: 5/17/2018	Date and Hour of Discovery 5/17/2018 at approximately 6:15am
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? 5/18/2018 to Carl Chavez – NMOCD Santa FE, Vanessa Field- NMOCD, Cory Smith – NMOCD, Leona Tsinnajinnie – NMED-HWB	
By Whom? Kelly Robinson	Date and Hour 5/18/2018 at 3:09pm	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

On Thursday, May 17th, the Bloomfield Terminal identified a leak in an underground pipeline used to transfer water/crude/finished product mixtures from the Terminal Loading/Unloading areas on the south side of County Road 4990 to the on-site Wastewater Treatment System located north of County Road 4990. The leak originated from a crack in the elbow pipe joint. Since the pipe is wrapped in insulation, the wrapping deterred the release of liquids to the surrounding soils. The pipeline was evacuated of hydrocarbons using fire water, and all liquids were evacuated from the pipeline using the on-site vacuum truck. All liquids removed from the pipeline were transferred to the on-site wastewater treatment plant. The line remains out-of-service until the repairs to the line are completed and the section of the pipeline is hydro-tested to ensure the integrity of the pipeline is sound.

Describe Area Affected and Cleanup Action Taken.*

Western contracted a hydro-excavator to hydro-excavate all soils around the leak area. A hydro excavator was the only safe method of excavation due to the fact that there exists additional power and product lines within the vicinity of where the leak occurred. A sufficient amount of soils were removed to be able to thoroughly assess an extended section of the pipeline. All hydro-excavated materials were transferred to secondary containment areas on-site for temporary storage. A sample was collected of the excavated materials for waste characterization and waste profile development. Initial preliminary lab results indicate that the excavated soils are non-hazardous. Western is scheduled to collect samples of the excavated area on Monday, June 4th, 2018. A representative from NMOCD-Aztec Office will be on-site to witness the sampling activities for closure.

A follow-up C-141 report will be submitted following the collection of the field samples and receipt of the waste characterization results.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: <u>Kelly Robinson</u>		<u>OIL CONSERVATION DIVISION</u>	
Printed Name: <u>Kelly Robinson</u>		Approved by Environmental Specialist:	
Title: <u>Environmental Supervisor</u>		Approval Date:	Expiration Date:
E-mail Address: <u>Kelly. Robinson Caudavor</u>		Conditions of Approval:	
Date: <u>6/1/18</u> Phone: <u>505-632-4166</u>		Attached ☐	

* Attach Additional Sheets If Necessary

October 10, 2018

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

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

Certified Mail#: 70060810000253366726 (Delivery to NMED)

Certified Mail#: 70060810000253366719 (Delivery to OCD)

RE: Investigation Work Plan
Underground Slop Pipeline Release – May 18, 2018
Western Refining Southwest, Inc. - Bloomfield Terminal
EPA ID# NMD089416416 (HWB-WRB-MISC)
Oil Conservation Division GW – 001

Dear Mr. Kieling and Griswold,

Western Refining Southwest, Inc. – Bloomfield Terminal submits the referenced Investigation Work Plan pursuant to New Mexico Environmental Department (NMED) Hazardous Waste Bureau (HWB) Corrective Action Order (Order) dated July 27, 2007 and the Oil Conservation Department (OCD) Discharge Permit (Permit) GW-1.

Remediation at the Bloomfield Terminal is conducted under both the NM Hazardous Waste Act (Order) and NM Water Quality Act (Permit) requirements. The slop pipeline was previously investigated as part of Group 8 (SMWU 3 Underground Piping Currently in Use). This Investigation Work Plan is presented in a similar format to the Group 8 Work Plan.

If you have any questions or need additional information, please feel free to contact me at (915) 534-1483 at your convenience.

Sincerely,

WESTERN REFINING SOUTHWEST, INC.



By: ALLEN S. HAINS
Project Manager – Refinery Remediation

cc: Leona Tsinnajinnie (via e-mail: Leona.Tsinnajinnie@state.nm.us)
Carl Chavez (via e-mail: carlj.chavez@state.nm.us)

INVESTIGATION WORK PLAN
May 17, 2018 Slop Oil Line Release
SWMU No. 3 Underground Piping Currently in Use

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

October 2018



Scott T. Crouch, P.G.
Senior Geologist

DiSorbo Consulting, LLC
Austin, Texas



DiSorbo
Environmental Consulting Firm

8501 North Mopac Expy
512.693.4190 (P)

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Austin, TX 78759
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-

Executive Summary

The Bloomfield Terminal (former refinery), which is located in the Four Corners Area of New Mexico, has been in operation since the late 1950s. Past inspections by State and federal environmental inspectors have identified locations where releases to the environment may have occurred. These locations are generally referred to as Solid Waste Management Units (SWMUs) or Areas of Concern (AOCs).

Pursuant to the terms and conditions of an Order issued on July 27, 2007 by the New Mexico Environment Department (NMED) to San Juan Refining Company, as owner, and Giant Industries Arizona, Inc., as operator, for the Bloomfield Refinery, this Investigation Work Plan has been prepared to investigate a release from an underground pipeline discovered on May 17, 2018. The pipeline passes beneath County Road 4990, where the release was observed. The pipeline is used to transfer slop oil.

The planned investigation activities include collection of soil samples, which will be analyzed for potential spill-related constituents (e.g., total petroleum hydrocarbons, volatile organic compounds, and semi-volatile organic compounds). The Investigation Work Plan includes specific sampling locations, sample collection procedures, and analytical methods. The scope of the proposed investigation is based on direct field observations of the spill area during the initial emergency response that included removal of all free liquids and heavy impacted soils.

Section 1

Introduction

The Bloomfield Terminal (former refinery) is located immediately south of Bloomfield, New Mexico in San Juan County (Figure 1). The physical address is #50 Road 4990, Bloomfield, New Mexico 87413. The Bloomfield Terminal is located on approximately 263 acres. Bordering the facility is a combination of federal and private properties. Public property managed by the Bureau of Land Management lies to the south. The majority of undeveloped land in the vicinity of the facility is used extensively for oil and gas production and, in some instances, grazing. U.S. Highway 44 is located approximately one-half mile west of the facility. The topography of the main portion of the site is generally flat with steep bluffs to the north where the San Juan River intersects Tertiary terrace deposits.

On July 27, 2007, the New Mexico Environment Department (NMED) issued an Order to San Juan Refining Company and Giant Industries Arizona, Inc. (“Western”) requiring investigation and corrective action at the Bloomfield Refinery. This Investigation Work Plan has been prepared for a release from an underground pipeline discovered on May 17, 2018 and that occurred in the area covered by Solid Waste Management Unit (SWMU) No. 3 Underground Piping Currently in Use. The release notification was documented to the New Mexico Oil Conservation Division (OCD) and the NMED through a C-141 Form, which is included in Appendix A. The location of SWMU No. 3 and the release point are shown on Figure 2. Photographs of the initial excavation to expose the pipeline are included in Appendix B.

The purpose of the site investigation is to determine and evaluate the extent of the pipeline release of contaminants in accordance with 20.4.1.500 New Mexico Administrative Code (NMAC) incorporating 40 Code of Federal Regulations (CFR) Section 264.101. The investigation activities will be conducted in accordance with Section IV of the Order.

Section 2

Background

This section presents background information for the SWMU, including a review of historical waste management and product storage/handling activities to identify the following:

- Type and characteristics of all waste and all potential contaminants handled in the subject SWMUs;
- Known and possible sources of contamination;
- History of releases; and
- Known extent of contamination.

SWMU No. 3 Underground Piping Currently in Use

The majority of the underground piping at the terminal is considered to still be in use even though petroleum refining operations have recently been suspended and the property is currently used as a petroleum terminal. The terminal operations still include most of the same or similar transfer and storage operations of refined products and crude oil that took place during active refining operations. Crude oil is delivered to the terminal at the truck unloading rack and crosses beneath County Road 4990 to storage tanks within the Terminal Tank Farm. Crude oil now leaves the facility via pipeline. Refined product is currently delivered to the facility via a pipeline operated by a third party and trucks, and is transferred to on-site storage tanks through aboveground lines. Product is moved from the storage tanks to the product loading rack via mostly aboveground pipelines with the exception of lines that run beneath County Road 4990 in open culverts and beneath the actual loading rack.

Figure 2 shows the underground lines that are included in SWMU No. 3. It should be noted that in Figure 2 there are very short segments of pipelines shown as underground pipelines in the Tank Farm but in actuality, these are only very short portions of the above ground lines that cross through tank dike walls. There are no documented historical releases from the active underground pipelines.

Previous Investigations in the Area of SWMU No. 3

Previous investigations have identified and delineated impacts to groundwater from historical site operations. Figure 3 shows the distribution of separate phase hydrocarbon (SPH) in the subsurface

based on the apparent thickness of SPH measured in monitoring wells. Most of the areas with underground piping are not present over locations with measureable SPH. There is an accumulation of SPH in MW-61 and MW-66, which is south of County Road 4990 and near some underground pipelines in the area. Dissolved-phase impacts are depicted on Figure 4.

Recent investigations conducted under the Order for SWMU Groups 2, 3, 4, and 5 have included both soil borings and monitoring wells along the SWMU No. 3 underground lines as shown on Figure 2. The analytical results from analyses of these samples are presented in Tables 1 and 2 and were used to supplement analyses conduct pursuant to the previous Investigation Work Plan for Group 8 SWMUs No. 3 and No. 6 that was approved with modifications on June 7, 2011. These existing sample locations include the following:

- Tank Farm - two soil borings (SWMU 15-3 and 15-6) near active underground hydrocarbon lines;
- Product Loading Rack – soil borings SWMU 22-12 and 22-13, monitoring well SWMU 22-15/MW-61, and MW-65;
- Crude Unloading Rack Area – borings/monitoring wells SMWU 22-16/MW-63 and SWMU 24-7/MW-64;
- Fire Training Area – soil borings SWMU 10-1 and 10-2;
- Aeration Basins – monitoring wells MW-55 and MW-56;
- Former South Evaporation Pond – soil borings SWMU 7-1 and 7-3;
- Inactive Landfill – soil borings SWMU 8-6, 8-8, and 8-10, and monitoring well SWMU 8-6A/MW-52; and
- Tank Farm - soil borings SWMU 15-1, 15-2, and 15-3.

The most recent investigation activities included collection and analysis of soil samples for potential site-related constituents beginning on January 25, 2012 and continuing through February 6, 2012. The samples were collected from 27 soil borings, which were completed using hollow-stem augers. At active underground pipelines, soil borings were drilled laterally within 5 feet of the pipeline to reduce the potential for accidentally striking an underground pipeline. The closest soil boring to the location of the recent release is SWMU 3-20 and it was located on the opposite or south side of County Road 4990. Soil samples were collected from depths of 2' - 4', 10.5' – 11.5', and 14.5' – 15.5' and no hydrocarbon constituents were detected above screening levels (Table 3).

Recent Release from Slop Oil Pipeline

The recent release of slop oil was discovered on May 17, 2018 on the north side of County Road 4990. There are 15 pipelines that run through a culvert, which crosses beneath County Road 4990. One line (slop oil line) was identified as having a crack located approximately 10 feet to the north of the County road. The material described as slop oil consists of petroleum products that originate at the truck loading rack and crude oil that originates at the crude oil unloading rack. Small volumes of water may also be contained with the hydrocarbons. The end of the culvert was exposed on both the north and south side of the road and it was determined that no material had been released on the south side of the road.

The pipeline was placed out of serviced and evacuated of hydrocarbons, free liquids removed and the immediate area hydro-excavated to expose the pipeline and the adjacent pipelines. Photos are included in Appendix B. Due to concerns about threatening the mechanical integrity of the adjacent pipelines, which includes pipelines beneath the slop oil line, no additional excavation was possible. The excavation was backfilled due to potential traffic hazards along the immediately adjacent county road.

Prior to backfilling, composite soil samples were collected from the north and west sidewalls and the bottom of the excavation. The composite samples were a five part composite from each surface as per OCD direction. The samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) and total petroleum hydrocarbons (TPH). The results are summarized in Table 4 along with potential soil screening levels and the analytical report is included in Appendix C. Concentrations of individual constituents and TPH were both found to exceed screening levels. The removed soils were analyzed and characterized for off-site disposal. On June 12, 2018, 205 cubic yards of soil were transported off-site and on June 13, 2018, 80 cubic yards were transported off-site for disposal. The analyses and waste manifest are included in Appendix C.

Section 3

Site Conditions

The surface and subsurface conditions that could affect the fate and transport of any contaminants are discussed below. This information is based on recent visual observations and historical subsurface investigations.

3.1 Surface Conditions

Regionally, the surface topography slopes toward the floodplain of the San Juan River, which runs along the northern boundary of the terminal complex. To the south of the terminal, the drainage is to the northwest. North of the terminal, across the San Juan River, surface water flows in a southeasterly direction toward the San Juan River. The portion of the terminal property, where the majority of the underground piping is located, is generally of low relief with an overall northwest gradient of approximately 0.02 ft/ft. The terminal sits on an alluvial floodplain terrace deposit and there is a steep bluff (approx. drop of 90 feet) at the northern boundary of the terminal where the San Juan River intersects the floodplain terrace, which marks the southern boundary of the floodplain.

There are two locally significant arroyos, one immediately east and another immediately west of the terminal. No underground piping crosses either of these arroyos. These arroyos collect most of the surface water flows in the area, thus significantly reducing surface water flows across the terminal. A minor drainage feature is located on the eastern portion of the terminal, where the former Landfill Pond (SWMU No. 9) was located and there are several steep arroyos along the northern terminal boundary that capture local surface water flows and minor groundwater discharges.

The terminal complex is bisected by County Rd #4990 (Sullivan Road), which runs east-west. The process units and wastewater treatment systems are located north of the county road. The crude oil and product loading racks, LPG storage tanks and loading racks, maintenance buildings/90-day storage area, pipeline offices, transportation truck shop, and the Class I injection well are located south of the county road. The underground piping is present across the terminal with the majority of the pipelines (i.e., wastewater lines) running near the perimeter of the property. There is very little vegetation throughout these areas with most surfaces composed of concrete, asphalt, or gravel. The land surface near the underground piping is primarily bare soil with gravel or asphalt roads. The

area between the terminal and the San Juan River does have limited vegetation on steep slopes that do not support dense vegetation.

3.2 Subsurface Conditions

Numerous soil borings and monitoring wells have been completed across the terminal property during previous site investigations and installation of the slurry wall, which runs along the northern and western terminal boundary. 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 coarse 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 Inc., 1994).

Figures 5, 6 and 7 present cross-sections of the shallow subsurface based on borings logs from on-site monitoring well completions. The uppermost aquifer is under water table conditions and occurs within the sand and gravel deposits of the Jackson Lake Formation. The Nacimiento Formation functions as an aquitard at the site that prevents contaminants from migrating to deeper aquifers. The potentiometric surface as measured in August 2017 is presented as Figure 8 and shows the groundwater flowing to the northwest across the area of SWMU No. 3. The depth to groundwater varies from approximately 30 feet in the southern portion of the site near the wastewater line, which runs to the evaporation ponds and injection well, to less than 15 feet in the northern portion of the site where the wastewater discharge line runs along the northern boundary of the tank farm.

One particular characteristic of the subsurface that may affect the potential for releases from underground piping is the corrosivity of the soils. The corrosion of metals (e.g., buried steel piping) in the subsurface environment is caused by moisture, pH, redox potential, microbes in soils, and soil type (Ekine and Emujakporue, 2010). A review of this list of attributes and subsurface conditions within the subject area of investigation does not reveal any potential obvious areas with soils likely to be more corrosive in any particular location, with the possible exception of locations with higher moisture content. All of the underground piping lies within the Jackson Lake Formation deposits, which is predominated by quartzose sand and silt deposits. The soils developed from the Jackson

Lake Formation parent material in the area of investigation are all within the same soils map unit (i.e., the Doak-Avalon association) and thus the identifiable soil properties (e.g., pH) based on available government soil surveys are anticipated to be similar throughout the area of investigation. The underground pipelines are anticipated to be well above the depth of saturation.

Section 4

Scope of Services

4.1 Anticipated Activities

Pursuant to Section IV of the Order, a scope of services has been developed to determine and evaluate the presence, nature, extent, fate, and transport of contaminants resulting from the release of slop oil discovered on May 17, 2018. To accomplish this objective soil samples will be collected in the area of the release. Four soil borings are proposed to be drilled to a minimum depth of six feet below the pipeline or to the vertical extent of any observed impacts, whichever is deeper. Soil borings will be installed and samples collected as discussed in Section 5.2.

4.2 Background Information Research

Documents containing the results of previous investigations and subsequent routine groundwater monitoring data from monitoring wells were reviewed to facilitate development of this work plan. The previously collected data provide detailed information on the overall subsurface conditions, including hydrogeology and contaminant distribution within groundwater on a site-wide basis.

4.3 Collection and Management of Investigation Derived Waste

Drill cuttings, excess sample material and decontamination fluids, and all other investigation derived waste (IDW) associated with soil borings will be contained and characterized using methods based on the boring location, boring depth, drilling method, and type of contaminants suspected or encountered. All decontamination water will be disposed in the terminal wastewater treatment system upstream of the API Separator. An IDW management plan is included as Appendix D.

4.4 Surveys

The horizontal coordinates and elevation of each boring and the locations of all other pertinent structures will be determined by a registered New Mexico professional land surveyor in accordance with the State Plane Coordinate System (NMSA 1978 47-1-49-56 (Repl. Pamp. 1993)). The surveys will be conducted in accordance with Sections 500.1 through 500.12 of the Regulations and Rules of the Board of Registration for Professional Engineers and Surveyors Minimum Standards for Surveying in New Mexico. Horizontal positions will be measured to the nearest 0.1-ft and vertical elevations will be measured to the nearest 0.01-ft.

Section 5

Investigation Methods

The purpose of the site investigation is to determine and evaluate the presence, nature, and extent of releases of contaminants. Guidance on selecting and developing sampling plans as provided in *Guidance for Choosing a Sampling Design for Environmental Data Collection* (EPA, 2000) was utilized to select the appropriate sampling strategy.

5.1 Drilling Activities

Soil borings will be drilled using either hollow-stem auger or if necessary, air rotary methods including ODEX. The preferred method will be hollow-stem auger to increase the ability to recover undisturbed samples and potential contaminants. Shallow soil samples may be collected using a hand auger until the boring has cleared any underground utilities. The drilling equipment will be properly decontaminated before drilling each boring.

The NMED/OCD will be notified as early as practicable if conditions arise or are encountered that do not allow the advancement of borings to the specified depths or at planned sampling locations. Appropriate actions (e.g., installation of protective surface casing or relocation of borings to a less threatening location) will be taken to minimize any negative impacts from investigative borings. Soil samples will be collected continuously and logged by a qualified geologist or engineer.

The drilling and sampling will be accomplished under the direction of a qualified engineer or geologist who will maintain a detailed log of the materials and conditions encountered in each boring. Both sample information and visual observations of the cuttings and core samples will be recorded on the boring log. Known site features and/or site survey grid markers will be used as references to locate each boring prior to surveying the location as described in Section 4.4. The boring locations will be measured to the nearest foot, and locations will be recorded on a scaled site map upon completion of each boring.

5.2 Soil Sampling

Since the location of the release is known, a judgmental sampling design is appropriate. Borings located along the pipelines will be spaced off the pipeline to avoid hitting the pipeline while drilling but kept within a maximum of five feet of the pipelines, as possible considering necessary safety

concerns. Four soil borings are proposed, with one on either side of the excavation (east and west) and the other two borings to the north along the pipeline (Figure 9). The slop oil line and the other lines that run together extend below ground approximately 40 feet to the north, where they come above-ground. The two northern borings will be located approximately 20 feet north of the excavation. No soil borings are proposed to the south of the road, as the release only exited the northern end of the culvert. All soil borings will be extended to a minimum depth of six feet below the depth of the adjacent pipelines. If there is screening evidence of impacted soils (e.g., petroleum odor, staining, or elevated photo-ionization detector or a combustible gas indicator readings) at six feet below the pipeline, then the boring will be extended deeper until either there is no evidence of impacts or groundwater is encountered, whichever occurs first.

The decision to use a hand auger vs. a drilling rig will be based on accessibility and health and safety concerns, although most locations are anticipated to be completed using a drilling rig. A decontaminated split-barrel sampler or continuous five-foot core barrel will be used to obtain samples during the drilling of each boring. Soil samples may be collected using decontaminated, hand-held stainless steel sampling device, shelly tube, or thin-wall sampler, or a pre-cleaned disposable sampling device. A portion of the samples will be placed in pre-cleaned, laboratory-prepared sample containers for laboratory chemical analysis. The use of an Encore® Sampler or other similar device will be used during collection of soil samples for VOC analysis. The remaining portions of the sample will be used for logging and field screening as discussed in Section 5.2.1. Sample handling and chain-of-custody procedures will be in accordance with the procedures presented below in Section 5.4.

Discrete soil samples will be collected for laboratory analyses from within the following intervals:

- 1-2' below the bottom depth of the adjacent pipeline (all soil borings);
- 5-6' below the bottom depth of the adjacent pipeline or the lowermost one foot interval on soil borings penetrating deeper than six feet below the pipeline (all soil borings);
- from the interval in each soil boring with the greatest apparent degree of contamination based on field screening (only soil borings with observed potential impacts);
- From the 6" interval at the top of saturation (applicable only to borings that reach saturation); and
- Any additional intervals as determined based on field screening results.

Quality Assurance/Quality Control (QA/QC) samples will be collected to monitor the validity of the soil sample collection procedures as follows:

- Field duplicates will be collected at a rate of 10%, with a minimum of one field duplicate being collected; and
- Equipment rinsate blanks will be collected at a rate of one per day, by pouring distilled water over decontaminated sampling equipment (e.g., split spoon samplers).

5.2.1 Soil Sample Field Screening and Logging

Samples obtained from the borings will be screened in the field on 2.5 foot intervals for evidence of contaminants. Field screening results will be recorded on the exploratory boring logs and will be used to aid in the selection of soil samples for laboratory analysis. The primary screening methods include: (1) visual examination, (2) olfactory examination, and (3) headspace vapor screening for volatile organic compounds. Additional screening for site- or release-specific characteristics such as pH or for specific compounds using field test kits may be conducted where appropriate.

Visual screening includes examination of soil samples for evidence of staining caused by petroleum-related compounds or other substances that may cause staining of natural soils such as elemental sulfur or cyanide compounds. Headspace vapor screening targets volatile organic compounds and involves placing a soil sample in a foil sealed container allowing space for ambient air. The container will be sealed and then shaken gently to expose the soil to the air trapped in the container. The sealed container will be allowed to rest for a minimum of 5 minutes while vapors equilibrate. Vapors present within the headspace will then be measured by inserting the probe of the instrument in a small opening through the foil. The maximum value and the ambient air temperature will be recorded on the field boring log for each sample.

The monitoring instruments will be calibrated each day to the manufacturer's standard for instrument operation. A photo-ionization detector (PID) equipped with a 10.6 or higher electron volt (eV) lamp or a combustible gas indicator will be used for VOC field screening. Field screening results may be site- and boring-specific and the results may vary with instrument type, the media screened, weather conditions, moisture content, soil type, and type of contaminant. Conditions capable of influencing the results of field screening will be recorded on the field logs.

The physical characteristics of the samples (such as mineralogy, ASTM soil classification, moisture content, texture, color, presence of stains or odors, and/or field screening results), depth where each

sample was obtained, method of sample collection, and other observations will be recorded in the field log by a qualified geologist or engineer. Detailed logs of each boring will be completed in the field by a qualified engineer or geologist. Additional information, such as the presence of water-bearing zones and any unusual or noticeable conditions encountered during drilling, will be recorded on the logs.

5.3 Groundwater Water Monitoring

Groundwater has been sampled at monitoring wells located at the terminal from as early as 1984. Based on the fact that there are numerous wells that provide information on water quality across much of the subject investigation area, no groundwater samples are proposed under this Scope of Work.

5.4 Sample Handling

At a minimum, the following procedures will be used at all times when collecting samples during investigation, corrective action, and monitoring activities:

1. Neoprene, nitrile, or other protective gloves will be worn when collecting samples. New disposable gloves will be used to collect each sample;
2. All samples collected of each medium for chemical analysis will be transferred into clean sample containers supplied by the project analytical laboratory with the exception of soil, rock, and sediment samples obtained in Encore® samplers. Sample container volumes and preservation methods will be in accordance with the most recent standard EPA and industry accepted practices for use by accredited analytical laboratories. Sufficient sample volume will be obtained for the laboratory to complete the method-specific QC analyses on a laboratory-batch basis; and
3. Sample labels and documentation will be completed for each sample following procedures discussed below. Immediately after the samples are collected, they will be stored in a cooler with ice or other appropriate storage method until they are delivered to the analytical laboratory. Standard chain-of-custody procedures, as described below, will be followed for all samples collected. All samples will be submitted to the laboratory soon enough to allow the laboratory to conduct the analyses within the method holding times. At a minimum, all samples will be submitted to the laboratory within 48 hours after their collection.

Chain-of-custody and shipment procedures will include the following:

1. Chain-of-custody forms will be completed at the end of each sampling day, prior to the transfer of samples off site.
2. Individual sample containers will be packed to prevent breakage and transported in a sealed cooler with ice or other suitable coolant or other EPA or industry-wide accepted method. The drainage hole at the bottom of the cooler will be sealed and secured in case of sample container leakage.
3. Each cooler or other container will be delivered directly to the analytical laboratory.
4. Glass bottles will be separated in the shipping container by cushioning material to prevent breakage.
5. Plastic containers will be protected from possible puncture during shipping using cushioning material.
6. The chain-of-custody form and sample request form will be shipped inside the sealed storage container to be delivered to the laboratory.
7. Chain-of-custody seals will be used to seal the sample-shipping container in conformance with EPA protocol.
8. Signed and dated chain-of-custody seals will be applied to each cooler prior to transport of samples from the site.
9. Upon receipt of the samples at the laboratory, the custody seals will be broken, the chain-of-custody form will be signed as received by the laboratory, and the conditions of the samples will be recorded on the form. The original chain-of-custody form will remain with the laboratory and copies will be returned to the relinquishing party.
10. Copies of all chain-of-custody forms generated as part of sampling activities will be maintained on-site.

5.5 Decontamination Procedures

The objective of the decontamination procedures is to minimize the potential for cross-contamination. A designated decontamination area will be established for decontamination of drilling equipment and reusable sampling equipment. The drilling rig will be decontaminated prior to entering the site or unit. Drilling equipment or other exploration equipment that may come in contact with the borehole will be decontaminated by high pressure washing prior to drilling each new boring.

Sampling or measurement equipment, including but not limited to stainless steel sampling tools and split-barrel or core samplers, will be decontaminated in accordance with the following procedures or other methods approved by the Department before each sampling attempt or measurement:

1. Brush equipment with a wire or other suitable brush, if necessary or practicable, to remove large particulate matter;
2. Rinse with potable tap water;
3. Wash with nonphosphate detergent or other detergent approved by the Department (examples include Fantastik™, Liqui-Nox®);
4. Rinse with potable tap water; and
5. Double rinse with deionized water.

All decontamination solutions will be collected and stored temporarily as described in Section 4.3. Decontamination procedures and the cleaning agents used will be documented in the daily field log.

5.6 Field Equipment Calibration Procedures

Field equipment requiring calibration will be calibrated to known standards, in accordance with the manufacturers' recommended schedules and procedures. At a minimum, calibration checks will be conducted daily, or at other intervals approved by the Department, and the instruments will be recalibrated, if necessary. Calibration measurements will be recorded in the daily field logs. If field equipment becomes inoperable, its use will be discontinued until the necessary repairs are made. In the interim, a properly calibrated replacement instrument will be used.

5.7 Documentation of Field Activities

Daily field activities, including observations and field procedures, will be recorded in a field log book. The original field forms will be maintained at the facility. Copies of the completed forms will be maintained in a bound and sequentially numbered field file for reference during field activities. Indelible ink will be used to record all field activities. Photographic documentation of field activities will be performed, as appropriate. The daily record of field activities will include the following:

1. Site or unit designation;
2. Date;
3. Time of arrival and departure;
4. Field investigation team members including subcontractors and visitors;
5. Weather conditions;

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6. Daily activities and times conducted;
 7. Observations;
 8. Record of samples collected with sample designations and locations specified;
 9. Photographic log, as appropriate;
 10. Field monitoring data, including health and safety monitoring;
 11. Equipment used and calibration records, if appropriate;
 12. List of additional data sheets and maps completed;
 13. An inventory of the waste generated and the method of storage or disposal; and
 14. Signature of personnel completing the field record.

5.8 Chemical Analyses

All samples collected for laboratory analysis will be submitted to an accredited laboratory. The laboratory will use the most recent standard EPA and industry-accepted analytical methods for target analytes as the testing methods for each medium sampled. Chemical analyses will be performed in accordance with the most recent EPA standard analytical methodologies and extraction methods.

All soil samples will be analyzed by the following methods:

- SW-846 Method 8260 volatile organic compounds;
- SW-846 Method 8270 semi-volatile organic compounds; and
- SW-846 Method 8015B gasoline range (C5-C10), diesel range (>C10-C28), and motor oil range (>C28-C36) organics.

5.9 Data Quality Objectives

The Data Quality Objectives (DQOs) were developed to ensure that newly collected data are of sufficient quality and quantity to address the projects goals, including Quality Assurance/Quality Control (QA/QC) issues (EPA, 2006). The project goals are established in the Order and are to determine and evaluate the presence, nature, and extent of releases of contaminants at specified SWMUs. The type of data required to meet the project goals includes chemical analyses of soil to determine if there has been a release of contaminants at the individual SWMUs.

The quantity of data is SWMU specific and based on the historical operations at individual locations. The quality of data required is consistent across locations and is specified in Section VIII.D.7.c of the

Order. In general, method detection limits should be 20% or less of the applicable background levels, cleanup standards and screening levels.

Additional DQOs include precision, accuracy, representativeness, completeness, and comparability. Precision is a measurement of the reproducibility of measurements under a given set of circumstances and is commonly stated in terms of standard deviation or coefficient of variation (EPA, 1987). Precision is also specific to sampling activities and analytical performance. Sampling precision will be evaluated through the analyses of duplicate field samples and laboratory replicates will be utilized to assess laboratory precision.

Accuracy is a measurement in the bias of a measurement system and may include many sources of potential error, including the sampling process, field contamination, preservation, handling, sample matrix, sample preparation, and analysis techniques (EPA, 1987). An evaluation of the accuracy will be performed by reviewing the results of field/trip blanks, matrix spikes, and laboratory QC samples.

Representativeness is an expression of the degree to which the data accurately and precisely represent the true environmental conditions. Sample locations and the number of samples have been selected to ensure the data is representative of actual environmental conditions. Based on SWMU specific conditions, this may include either biased (i.e., judgmental) locations/depths or unbiased (systematic grid samples) locations, as discussed in Section 5.2 for soils.

Completeness is defined as the percentage of measurements taken that are actually valid measurements, considering field QA and laboratory QC problems. EPA Contract Laboratory Program (CLP) data has been found to be 80-85% complete on a nationwide basis and this has been extrapolated to indicate that Level III, IV, and V analytical techniques will generate data that are approximately 80% complete (EPA, 1987). As an overall project goal, the completeness goal is 85%; however, some samples may be critical base on location or field screening results and thus a sample-by-sample evaluation will be performed to determine if the completeness goals have been obtained.

Comparability is a qualitative parameter, which expresses the confidence with which one data set can be compared to another. Industry standard sample collection techniques and routine EPA analytical methods will be utilized to help ensure data are comparable to historical and future data. Analytical results will be reported in appropriate units for comparison to historical data and cleanup levels.

Section 6

Schedule

This investigation Work Plan will be implemented in accordance with the schedules as specified by NMED and OCD in the Work Plan approval letters.

Section 7 References

Ekine, A.S., and Emujakporue, G.O., 2010, Investigation of Corrosion of Buried Oil Pipeline by the Electrical Geophysical Methods; Journal of Applied Sciences and Environmental Management, Volume 14(1), pp 63-65.

EPA, 1987, Data Quality Objectives for Remedial Response Activities; United States Environmental Protection Agency, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, OSWER Directive 9355.0-7B, 85p

EPA, 2000, Guidance on Choosing a Sampling Design for Environmental Data Collection, EPA/240/R-02/005, EPA QA/G-5S, 168 p.

EPA, 2006, Guidance on Systematic Planning Using the Data Quality Objectives Process, United States Environmental Protection Agency, Office of Environmental Information; EPA/240/B-06/001, p. 111.

Groundwater Technology Inc., 1994, RCRA Facility Investigation/Corrective Measures Study Report Bloomfield Refining Company #50 County Road 4990, Bloomfield, New Mexico, p.51.

NMED, 2007, State of New Mexico Environment Department v. San Juan Refining Company and Giant Industries, Inc.; Order July 27, 2007, p. 133.

Tables

Table 1	Existing Soil Analytical Results
Table 2	Ground Water Analytical Results Summary
Table 3	SWMU 3 Soil Analytical Results Summary
Table 4	Excavation Soil Analytical Results Summary

Table 1
Existing Soil Analytical Results
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level (0-2 ft)	Source	Residential Soil Screening Level (2-10 ft)	Source	Residential Soil Screening Level (>10 ft)	Source	Units	SWMU 8-6 (0-0.5')	SWMU 8-6 (1.5-2.0')	SWMU 8-6a (33-34)	SWMU 8-8 (0-0.5')	SWMU 8-8 (1.5-2.0')	SWMU 8-10 (0-0.5')	SWMU 8-10 (1.5-2.0')
Metals (mg/kg)														
Antimony	3.13E+01	(1)	7.44E+00	(4)	7.44E+00	(4)	mg/Kg	<2.6	<2.7	<2.9	<2.6	<2.6	<2.6	<2.6
Arsenic	3.59E+00	(1)	1.48E-01	(4)	1.48E-01	(4)	mg/Kg	<2.6	3	<2.9	<2.6	<2.6	3	<2.6
Barium	1.56E+04	(1)	3.39E+03	(4)	3.39E+03	(4)	mg/Kg	210	200	130	190	180	440	350
Beryllium	1.56E+02	(1)	1.56E+02	(1)	6.49E+02	(4)	mg/Kg	0.43	0.44	<0.18	0.42	0.43	0.5	0.47
Cadmium	7.79E+01	(1)	1.55E+01	(4)	1.55E+01	(4)	mg/Kg	<0.11	<0.11	<0.12	<0.11	<0.11	<0.11	<0.10
Chromium	1.13E+05	(1)	1.13E+05	(1)	1.11E+09	(4)	mg/Kg	85	100	7.7	83	100	6.1	6.4
Cobalt	2.30E+01	(2)	5.51E+00	(5)	5.51E+00	(5)	mg/Kg	4.2	4.5	2.2	4.1	4	4.8	5.4
Cyanide	1.56E+03	(1)	8.37E+01	(4)	8.37E+01	(4)	mg/Kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Lead	4.00E+02	(1)	--		--		mg/Kg	6.1	5.6	3.8	5.8	5.7	5.1	4.8
Mercury	7.71E+00	(1)	3.30E-01	(4)	3.30E-01	(4)	mg/Kg	0.046	0.045	<0.039	0.044	0.053	<0.035	<0.035
Nickel	1.56E+03	(1)	5.36E+02	(4)	5.36E+02	(4)	mg/Kg	8.5	7.8	2.2	7.4	7	7.2	7.1
Selenium	3.91E+02	(1)	1.09E+01	(4)	1.09E+01	(4)	mg/Kg	<26	<27	<2.9	<26	<26	<26	<26
Silver	3.91E+02	(1)	1.76E+01	(4)	1.76E+01	(4)	mg/Kg	<0.26	<0.27	<0.29	<0.26	<0.26	<0.26	<0.26
Vanadium	3.91E+02	(1)	3.91E+02	(1)	2.05E+03	(4)	mg/Kg	18	18	12	17	16	20	22
Zinc	2.35E+04	(1)	7.67E+03	(4)	7.67E+03	(4)	mg/Kg	89	88	14	84	84	32	32
Volatile Organic Compounds - (EPA Method 8260B) mg/kg														
1,1,1,2-Tetrachloroethane	2.92E+01	(1)	1.94E-02	(4)	1.94E-02	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
1,1,1-Trichloroethane	2.18E+04	(1)	3.35E+01	(4)	3.35E+01	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
1,1,2,2-Tetrachloroethane	7.97E+00	(1)	2.53E-03	(4)	2.53E-03	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
1,1,2-Trichloroethane	1.72E+01	(1)	7.58E-03	(4)	7.58E-03	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
1,1-Dichloroethane	6.29E+01	(1)	6.85E-02	(4)	6.85E-02	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
1,1-Dichloroethene	6.18E+02	(1)	1.34E+00	(4)	1.34E+00	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
1,1-Dichloropropene	--		--		--		mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
1,2,3-Trichlorobenzene	--		--		--		mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
1,2,3-Trichloropropane	9.15E-01	(1)	4.01E-04	(4)	4.01E-04	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
1,2,4-Trichlorobenzene	1.43E+02	(1)	1.15E-01	(4)	1.15E-01	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
1,2,4-Trimethylbenzene	6.70E+01	(2)	2.70E-01	(5)	2.70E-01	(5)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
1,2-Dibromo-3-chloropropane	1.94E-01	(1)	3.35E-05	(4)	3.35E-05	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
1,2-Dibromoethane (EDB)	5.74E-01	(1)	1.78E-04	(4)	1.78E-04	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
1,2-Dichlorobenzene	3.01E+03	(1)	3.53E+00	(4)	3.53E+00	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
1,2-Dichloroethane (EDC)	7.74E+00	(1)	4.11E-03	(4)	4.11E-03	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
1,2-Dichloropropane	1.47E+01	(1)	1.25E-02	(4)	1.25E-02	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
1,3,5-Trimethylbenzene	4.70E+01	(2)	2.25E-01	(5)	2.25E-01	(5)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
1,3-Dichlorobenzene	--		--		--		mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
1,3-Dichloropropane	1.60E+03	(2)	3.04E+00	(5)	3.04E+00	(5)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
1,4-Dichlorobenzene	3.21E+01	(1)	4.02E-02	(4)	4.02E-02	(4)	mg/Kg	NR	NR	<0.20	NR	NR	NR	NR
1-Methylnaphthalene	2.20E+02	(3)	1.69E-01	(5)	1.69E-01	(5)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
2,2-Dichloropropane	--		--		--		mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
2-Butanone (MEK)	3.96E+04	(1)	1.43E+01	(4)	1.43E+01	(4)	mg/Kg	<0.00467	<0.0045	<0.00497	<0.00449	<0.00465	<0.00475	<0.00446
2-Chlorotoluene	1.56E+03	(1)	7.02E+00	(4)	7.02E+00	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
2-Hexanone	--		--		--		mg/Kg	<0.00467	<0.0045	<0.00497	<0.00449	<0.00465	<0.00475	<0.00446
2-Methylnaphthalene	3.10E+02	(2)	1.01E+01	(5)	1.01E+01	(5)	mg/Kg	NR	NR	<0.20	NR	NR	NR	NR

Table 1
Existing Soil Analytical Results
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level (0-2 ft)	Source	Residential Soil Screening Level (2-10 ft)	Source	Residential Soil Screening Level (>10 ft)	Source	Units	SWMU 8-6 (0-0.5')	SWMU 8-6 (1.5-2.0')	SWMU 8-6a (33-34)	SWMU 8-8 (0-0.5')	SWMU 8-8 (1.5-2.0')	SWMU 8-10 (0-0.5')	SWMU 8-10 (1.5-2.0')
4-Chlorotoluene	5.50E+03	(2)	3.15E+01	(5)	3.15E+01	(5)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
4-Isopropyltoluene	--		--		--		mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
4-Methyl-2-pentanone	--		--		--		mg/Kg	<0.00467	<0.0045	<0.00497	<0.00449	<0.00465	<0.00475	<0.00446
Acetone	6.75E+04	(1)	4.32E+01	(4)	4.32E+01	(4)	mg/Kg	0.0669	<0.0045	<0.00497	<0.00449	<0.00465	<0.00475	<0.00446
Benzene	1.55E+01	(1)	2.08E-02	(4)	2.08E-02	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Bromobenzene	9.40E+01	(2)	1.69E-01	(5)	1.69E-01	(5)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Bromodichloromethane	5.25E+00	(1)	3.11E-03	(4)	3.11E-03	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Bromoform	6.10E+02	(3)	2.59E-02	(5)	2.59E-02	(5)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Bromomethane	2.23E+01	(1)	2.18E-02	(4)	2.18E-02	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Carbon disulfide	1.94E+03	(1)	2.84E+00	(4)	2.84E+00	(4)	mg/Kg	<0.00467	<0.0045	<0.00497	<0.00449	<0.00465	<0.00475	<0.00446
Carbon tetrachloride	4.38E+00	(1)	8.32E-03	(4)	8.32E-03	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Chlorobenzene	5.08E+02	(1)	6.06E-01	(4)	6.06E-01	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Chloroethane	--		--		--		mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Chloroform	5.72E+00	(1)	5.27E-03	(4)	5.27E-03	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Chloromethane	3.56E+01	(1)	4.70E-02	(4)	4.70E-02	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
cis-1,2-DCE	7.82E+02	(1)	1.06E+00	(4)	1.06E+00	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
cis-1,3-Dichloropropene	2.35E+01	(1)	1.52E-02	(4)	1.52E-02	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Dibromochloromethane	1.13E+01	(1)	3.80E-03	(4)	3.80E-03	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Dibromomethane	7.80E+02	(2)	1.02E+00	(5)	1.02E+00	(5)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Dichlorodifluoromethane	4.81E+02	(1)	8.14E+00	(4)	8.14E+00	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Ethylbenzene	6.96E+01	(1)	1.64E-01	(4)	1.64E-01	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Hexachlorobutadiene	6.20E+01	(3)	2.14E-02	(5)	2.14E-02	(5)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Isopropylbenzene	3.21E+03	(1)	1.11E+01	(4)	1.11E+01	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Methyl tert-butyl ether (MTBE)	8.62E+02	(1)	2.58E-01	(4)	2.58E-01	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Methylene chloride	1.99E+02	(1)	1.21E-01	(4)	1.21E-01	(4)	mg/Kg	<0.00234	<0.00225	<0.00249	<0.00224	<0.00232	<0.00238	<0.00223
Naphthalene	4.50E+01	(1)	4.72E-02	(4)	4.72E-02	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
n-Butylbenzene	--		--		--		mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
n-Propylbenzene	--		--		--		mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
sec-Butylbenzene	--		--		--		mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Styrene	8.97E+03	(1)	1.76E+01	(4)	1.76E+01	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
tert-Butylbenzene	--		--		--		mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Tetrachloroethene (PCE)	6.99E+00	(1)	5.05E-03	(4)	5.05E-03	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Toluene	5.57E+03	(1)	1.56E+01	(4)	1.56E+01	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
trans-1,2-DCE	2.73E+02	(1)	3.39E-01	(4)	3.39E-01	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
trans-1,3-Dichloropropene	2.35E+01	(1)	1.52E-02	(4)	1.52E-02	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Trichloroethene (TCE)	4.57E+01	(1)	5.96E-02	(4)	5.96E-02	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Trichlorofluoromethane	2.01E+03	(1)	1.01E+01	(4)	1.01E+01	(4)	mg/Kg	0.00214	<0.00112	<0.00124	<0.00112	0.00417	<0.00119	<0.00112
Vinyl chloride	8.65E-01	(1)	3.24E-03	(4)	3.24E-03	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Xylenes, Total	1.09E+03	(1)	1.98E+00	(4)	1.98E+00	(4)	mg/Kg	<0.00117	<0.00112	<0.00124	<0.00112	<0.00116	<0.00119	<0.00112
Semi Volatile Organics - (EPA Method 8270) mg/kg														
1,2,4-Trichlorobenzene	1.43E+02	(1)	1.15E-01	(4)	1.15E-01	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
1,2-Dichlorobenzene	3.01E+03	(1)	3.53E+00	(4)	3.53E+00	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
1,3-Dichlorobenzene	--		--		--		mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
1,4-Dichlorobenzene	3.21E+01	(1)	4.02E-02	(4)	4.02E-02	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21

Table 1
Existing Soil Analytical Results
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level (0-2 ft)	Source	Residential Soil Screening Level (2-10 ft)	Source	Residential Soil Screening Level (>10 ft)	Source	Units	SWMU 8-6 (0-0.5')	SWMU 8-6 (1.5-2.0')	SWMU 8-6a (33-34)	SWMU 8-8 (0-0.5')	SWMU 8-8 (1.5-2.0')	SWMU 8-10 (0-0.5')	SWMU 8-10 (1.5-2.0')
2,4,5-Trichlorophenol	6.11E+03	(1)	8.02E+01	(4)	8.02E+01	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
2,4,6-Trichlorophenol	6.11E+01	(1)	8.02E-01	(4)	8.02E-01	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
2,4-Dichlorophenol	1.83E+02	(1)	1.54E+00	(4)	1.54E+00	(4)	mg/Kg	<2.1	<2.1	<0.47	<2.1	<2.1	<0.42	<0.42
2,4-Dimethylphenol	1.22E+03	(1)	1.03E+01	(4)	1.03E+01	(4)	mg/Kg	<1.6	<1.6	<0.35	<1.6	<1.6	<0.32	<0.31
2,4-Dinitrophenol	1.22E+02	(1)	5.91E-01	(4)	5.91E-01	(4)	mg/Kg	<2.1	<2.1	<0.47	<2.1	<2.1	<0.42	<0.42
2,4-Dinitrotoluene	1.26E+01	(1)	1.75E-02	(4)	1.75E-02	(4)	mg/Kg	<2.6	<2.7	<0.59	<2.6	<2.6	<0.53	<0.52
2,6-Dinitrotoluene	6.12E+01	(1)	3.00E-01	(4)	3.00E-01	(4)	mg/Kg	<2.6	<2.7	<0.59	<2.6	<2.6	<0.53	<0.52
2-Chloronaphthalene	6.26E+03	(1)	1.52E+02	(4)	1.52E+02	(4)	mg/Kg	<1.3	<1.3	<0.29	<1.3	<1.3	<0.26	<0.26
2-Chlorophenol	3.91E+02	(1)	1.72E+00	(4)	1.72E+00	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
2-Methylnaphthalene	3.10E+02	(2)	1.01E+01	(5)	1.01E+01	(5)	mg/Kg	<1.3	<1.3	<0.29	<1.3	<1.3	<0.26	<0.26
2-Methylphenol	3.10E+03	(2)	2.25E+01	(5)	2.25E+01	(5)	mg/Kg	<2.6	<2.7	<0.59	<2.6	<2.6	<0.53	<0.52
2-Nitroaniline	1.80E+02	(2)	3.71E-01	(5)	3.71E-01	(5)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
2-Nitrophenol	--		--		--		mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
3,3'-Dichlorobenzidine	8.71E+00	(1)	1.92E-01	(4)	1.92E-01	(4)	mg/Kg	<1.3	<1.3	<0.29	<1.3	<1.3	<0.26	<0.26
3+4-Methylphenol	3.10E+02	(2)	2.14E+00	(5)	2.14E+00	(5)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
3-Nitroaniline	--		--		--		mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
4,6-Dinitro-2-methylphenol	--		--		--		mg/Kg	<2.6	<2.7	<0.59	<2.6	<2.6	<0.53	<0.52
4-Bromophenyl phenyl ether	--		--		--		mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
4-Chloro-3-methylphenol	--		--		--		mg/Kg	<2.6	<2.7	<0.59	<2.6	<2.6	<0.53	<0.52
4-Chloroaniline	2.40E+01	(3)	1.35E-03	(5)	1.35E-03	(5)	mg/Kg	<2.6	<2.7	<0.59	<2.6	<2.6	<0.53	<0.52
4-Chlorophenyl phenyl ether	--		--		--		mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
4-Nitroaniline	2.40E+02	(3)	1.13E-02	(5)	1.13E-02	(5)	mg/Kg	<1.3	<1.3	<0.29	<1.3	<1.3	<0.26	<0.26
4-Nitrophenol	--		--		--		mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Acenaphthene	3.44E+03	(1)	2.31E+02	(4)	2.31E+02	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Acenaphthylene	--		--		--		mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Aniline	8.50E+02	(3)	3.83E-02	(5)	3.83E-02	(5)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Anthracene	1.72E+04	(1)	3.79E+03	(4)	3.79E+03	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Azobenzene	4.90E+01	(3)	5.74E-03	(5)	5.74E-03	(5)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Benz(a)anthracene	4.81E+00	(1)	3.59E+00	(4)	3.59E+00	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Benzo(a)pyrene	4.81E-01	(1)	4.81E-01	(1)	1.22E+00	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Benzo(b)fluoranthene	4.81E+00	(1)	4.81E+00	(1)	1.25E+01	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Benzo(g,h,i)perylene	--		--		--		mg/Kg	<2.6	<2.7	<0.59	<2.6	<2.6	<0.53	<0.52
Benzo(k)fluoranthene	4.81E+01	(1)	4.81E+01	(1)	1.22E+02	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Benzoic acid	2.40E+05	(2)	3.71E+02	(5)	3.71E+02	(5)	mg/Kg	<2.6	<2.7	<0.59	<2.6	<2.6	<0.53	<0.52
Benzyl alcohol	3.10E+04	(2)	4.73E+01	(5)	4.73E+01	(5)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Bis(2-chloroethoxy)methane	1.80E+02	(2)	2.59E-01	(5)	2.59E-01	(5)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Bis(2-chloroethyl)ether	2.56E+00	(1)	2.62E-04	(4)	2.62E-04	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Bis(2-chloroisopropyl)ether	9.15E+01	(1)	2.88E-02	(4)	2.88E-02	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Bis(2-ethylhexyl)phthalate	2.80E+02	(1)	1.34E+02	(4)	1.34E+02	(4)	mg/Kg	<2.6	<2.7	<0.59	<2.6	<2.6	<0.53	<0.52
Butyl benzyl phthalate	2.60E+03	(3)	7.54E+00	(5)	7.54E+00	(5)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Carbazole	--		--		--		mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Chrysene	4.81E+02	(1)	3.67E+02	(4)	3.67E+02	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Dibenz(a,h)anthracene	4.81E-01	(1)	4.81E-01	(1)	4.07E+00	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Dibenzofuran	--		--		--		mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21

Table 1
Existing Soil Analytical Results
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level (0-2 ft)	Source	Residential Soil Screening Level (2-10 ft)	Source	Residential Soil Screening Level (>10 ft)	Source	Units	SWMU 8-6 (0-0.5')	SWMU 8-6 (1.5-2.0')	SWMU 8-6a (33-34)	SWMU 8-8 (0-0.5')	SWMU 8-8 (1.5-2.0')	SWMU 8-10 (0-0.5')	SWMU 8-10 (1.5-2.0')
Diethyl phthalate	4.89E+04	(1)	1.19E+02	(4)	1.19E+02	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Dimethyl phthalate	6.11E+05	(1)	9.40E+02	(4)	9.40E+02	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Di-n-butyl phthalate	6.11E+03	(1)	9.70E+01	(4)	9.70E+01	(4)	mg/Kg	<2.6	<2.7	<0.59	<2.6	<2.6	<0.53	<0.52
Di-n-octyl phthalate	--		--		--		mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Fluoranthene	2.29E+03	(1)	1.75E+03	(4)	1.75E+03	(4)	mg/Kg	<1.3	<1.3	<0.29	<1.3	<1.3	<0.26	<0.26
Fluorene	2.29E+03	(1)	2.81E+02	(4)	2.81E+02	(4)	mg/Kg	<2.6	<2.7	<0.59	<2.6	<2.6	<0.53	<0.52
Hexachlorobenzene	2.45E+00	(1)	2.48E-02	(4)	2.48E-02	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Hexachlorobutadiene	6.20E+01	(3)	2.14E-02	(5)	2.14E-02	(5)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Hexachlorocyclopentadiene	3.67E+02	(1)	6.90E+00	(4)	6.90E+00	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Hexachloroethane	6.11E+01	(1)	2.17E-01	(4)	2.17E-01	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Indeno(1,2,3-cd)pyrene	4.81E+00	(1)	4.81E+00	(1)	4.16E+01	(4)	mg/Kg	<1.3	<1.3	<0.29	<1.3	<1.3	<0.26	<0.26
Isophorone	4.13E+03	(1)	2.08E+00	(4)	2.08E+00	(4)	mg/Kg	<2.6	<2.7	<0.59	<2.6	<2.6	<0.53	<0.52
Naphthalene	4.50E+01	(1)	4.72E-02	(4)	4.72E-02	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Nitrobenzene	4.94E+01	(1)	7.72E-02	(4)	7.72E-02	(4)	mg/Kg	<2.6	<2.7	<0.59	<2.6	<2.6	<0.53	<0.52
N-Nitrosodi-n-propylamine	6.90E-01	(3)	1.24E-04	(5)	1.24E-04	(5)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
N-Nitrosodiphenylamine	8.00E+02	(1)	1.45E+01	(4)	1.45E+01	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Pentachlorophenol	2.07E+01	(1)	3.30E-01	(4)	3.30E-01	(4)	mg/Kg	<2.1	<2.1	<0.47	<2.1	<2.1	<0.42	<0.42
Phenanthrene	1.83E+03	(1)	9.39E+02	(4)	9.39E+02	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Phenol	1.83E+04	(1)	7.09E+01	(4)	7.09E+01	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Pyrene	1.72E+03	(1)	1.26E+03	(4)	1.26E+03	(4)	mg/Kg	<1.1	<1.1	<0.23	<1.1	<1.1	<0.21	<0.21
Pyridine	7.80E+01	(2)	1.09E-01	(5)	1.09E-01	(5)	mg/Kg	<2.6	<2.7	<0.59	<2.6	<2.6	<0.53	<0.52
Total Petroleum Hydrocarbons - (EPA Method 8015B) mg/kg														
Diesel Range Organics (DRO)	1.83E+03	(8)	1000	(7)	1000	(7)	mg/Kg	93	150	21	61	92	<11	<10
Gasoline Range Organics (GRO)	--		--		--		mg/Kg	<5.0	<5.0	<5.9	<5.0	<5.0	<5.0	<5.0
Motor Oil Range Organics (MRO)	1.83E+03	(8)	1000	(7)	1000	(7)	mg/Kg	300	500	<59	200	270	<53	<52

-- No screening level available

NR - No analytical result reported by the laboratory

NMED screening levels from - Technical Background Document for Development of Soil Screening Levels - Revision 5.0 (August 2009)

EPA screening levels from - Regional Screening Levels (April 2009)

(1) Residential Soil NMED

(2) Residential Soil EPA

(3) Residential Soil EPA - Regional Screening Levels (April 2009) multiplied by 10 pursuant to Provision VII.B. of the July 7, 2007 NMED Order because the constituent is listed as carcinogenic

(4) SoilGW NMED DAF = 11.25

(5) SoilGW Risk-based EPA DAF = 11.25

(6) SoilGW MCL-based EPA DAF=11.25

(7) NMED Oct. 2006 TPH Screening Guidelines(updated with Massachusetts Department of Environmental Protection 2009 tox data - unknown oil, residential, all pathways

(8) NMED Oct. 2006 TPH Screening Guidelines(updated with Massachusetts Department of Environmental Protection 2009 tox data - unknown oil, residential, direct contact pathways

4.2-bolded value exceeds screening level

Table 2
Ground Water Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels	Source	Units	AOC 22-12 (GW)	AOC 22-12/TW-01	AOC 22-13 (GW)	MW-55	MW-56	MW-59	MW-59	MW-61	MW-61	MW-63	MW-63	MW-63 (DUP)	MW-64	MW-64	MW-65	MW-65 (DUP)	MW-65	SWMU 15-2
1,3-Dichloropropane	730	(1)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	--
1,4-Dichlorobenzene	75	(2)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	--
1-Methylnaphthalene	2.3	(1)	µg/L	<200	<400	<400	100	210	<4.0	<4.0	270	150	<4.0	<4.0	<4.0	<4.0	<4.0	150	170	130	--
2,2-Dichloropropane	-		µg/L	<100	<200	<200	<40	<10	<2.0	<2.0	<40	<20	<2.0	<2.0	<2.0	<2.0	<2.0	<40	<40	<20	--
2-Butanone	7100	(1)	µg/L	<500	<1000	<1000	<200	50	<10	<10	<200	<100	<10	<10	<10	<10	<10	<200	<200	<100	<50
2-Chlorotoluene	730	(1)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	--
2-Hexanone	-		µg/L	<500	<1000	<1000	<200	<50	<10	<10	<200	<100	<10	<10	<10	<10	<10	<200	<200	<100	--
2-Methylnaphthalene	150	(1)	µg/L	<200	<400	710	120	260	<4.0	<4.0	450	260	<4.0	<4.0	<4.0	<4.0	<4.0	220	230	210	--
4-Chlorotoluene	2600	(1)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	--
4-Isopropyltoluene	-		µg/L	<50	<100	<100	<20	8.2	<1.0	<1.0	22	13	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	--
4-Methyl-2-pentanone	-		µg/L	<500	<1000	<1000	<200	<50	<10	<10	<200	<100	<10	<10	<10	<10	<10	<200	<200	<100	--
Acetone	22000	(1)	µg/L	<500	<1000	<1000	<200	82	<10	<10	1100	3000	<10	<10	<10	<10	<10	<200	<200	110	<50
Benzene	5	(2)	µg/L	8600	8200	13000	10000	2800	<1.0	<1.0	49	48	<1.0	<1.0	<1.0	<1.0	<1.0	6800	7100	5400	210
Bromobenzene	20	(1)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	<5.0
Bromodichloromethane	0.12	(1)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	<5.0
Bromoform	8.5	(1)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	--
Bromomethane	8.7	(1)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	<5.0
Carbon disulfide	1000	(1)	µg/L	<500	<1000	<1000	<200	<50	<10	<10	<200	<100	<10	<10	<10	<10	<10	<200	<200	<100	<50
Carbon Tetrachloride	5	(2)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	<5.0
Chlorobenzene	100	(2)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	<5.0
Chloroethane	-		µg/L	<100	<200	<200	<40	<10	<2.0	<2.0	<40	<20	<2.0	<2.0	<2.0	<2.0	<2.0	<40	<40	<20	--
Chloroform	100	(3)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	<5.0
Chloromethane	190	(1)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	<5.0
cis-1,2-DCE	70	(2)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	<5.0
cis-1,3-Dichloropropene	-		µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	--
Dibromochloromethane	0.15	(1)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	<5.0
Dibromomethane	370	(1)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	--
Dichlorodifluoromethane	390	(1)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	<5.0
Ethylbenzene	700	(2)	µg/L	2100	2200	4300	1300	310	<1.0	<1.0	1400	1500	<1.0	<1.0	<1.0	<1.0	<1.0	1800	2000	1400	270
Hexachlorobutadiene	0.86	(1)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	--
Isopropylbenzene (Cumene)	680	(1)	µg/L	69	190	240	55	42	<1.0	<1.0	100	70	<1.0	<1.0	<1.0	<1.0	<1.0	84	92	81	--
Methyl tert-butyl ether (MTBE)	12	(1)	µg/L	20000	23000	14000	1900	2100	<1.0	<1.0	380	410	48	54	61	<1.0	<1.0	1700	1800	1700	--
Methylene Chloride	5	(2)	µg/L	<150	<300	<300	<60	<15	<3.0	<3.0	<60	<30	<3.0	<3.0	<3.0	<3.0	<3.0	<60	<60	<30	<15
Naphthalene	0.14	(1)	µg/L	380	480	800	330	360	<2.0	<2.0	690	500	<2.0	<2.0	<2.0	<2.0	<2.0	480	520	450	28
n-Butylbenzene	-		µg/L	<50	<100	420	<20	16	<1.0	<1.0	110	97	<1.0	<1.0	<1.0	<1.0	<1.0	49	50	85	--
n-Propylbenzene	-		µg/L	200	180	700	98	71	<1.0	<1.0	310	240	<1.0	<1.0	<1.0	<1.0	<1.0	230	240	260	--
sec-Butylbenzene	-		µg/L	<50	<100	110	<20	11	<1.0	<1.0	<20	15	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	14	--
Styrene	100	(2)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	<5.0
tert-Butylbenzene	-		µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	--
Tetrachloroethene (PCE)	5	(2)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	--
Toluene	750	(3)	µg/L	870	380	16000	760	5.5	<1.0	<1.0	<20	11	<1.0	<1.0	<1.0	<1.0	<1.0	2500	2800	150	390
trans-1,2-DCE	100	(2)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	<5.0
trans-1,3-Dichloropropene	0.43	(1)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	--
Trichloroethene (TCE)	5	(2)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	<5.0
Trichlorofluoromethane	1300	(1)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	<5.0
Vinyl chloride	1	(3)	µg/L	<50	<100	<100	<20	<5.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<10	<5.0
Xylenes, Total	620	(3)	µg/L	6100	5000	23000	1500	390	<1.5	<1.5	7300	6800	<1.5	<1.5	<1.5	<1.5	<1.5	8500	9200	6400	800
Semi Volatile Organics - (EPA Method 8270W)																					

Table 2
Ground Water Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels	Source	Units	AOC 22-12 (GW)	AOC 22-12/TW-01	AOC 22-13 (GW)	MW-55	MW-56	MW-59	MW-59	MW-61	MW-61	MW-63	MW-63	MW-63 (DUP)	MW-64	MW-64	MW-65	MW-65 (DUP)	MW-65	SWMU 15-2
1,2,4-Trichlorobenzene	70	(2)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
1,2-Dichlorobenzene	600	(2)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
1,3-Dichlorobenzene	-		µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
1,4-Dichlorobenzene	75	(2)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
2,4,5-Trichlorophenol	3700	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
2,4,6-Trichlorophenol	6.1	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
2,4-Dichlorophenol	110	(1)	µg/L	<20	<100	<20	<20	<20	<20	<20	<100	<100	<20	<20	<20	<20	<20	<20	<20	<100	<20
2,4-Dimethylphenol	730	(1)	µg/L	30	<50	<10	<10	<10	<10	<10	<50	130	<10	<10	<10	<10	<10	24	22	<50	<10
2,4-Dinitrophenol	73	(1)	µg/L	<20	<100	<20	<20	<20	<20	<20	<100	<100	<20	<20	<20	<20	<20	<20	<20	<100	<20
2,4-Dinitrotoluene	0.22	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
2,6-Dinitrotoluene	37	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
2-Chloronaphthalene	2900	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
2-Chlorophenol	180	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
2-Methylnaphthalene	150	(1)	µg/L	81	71	100	53	85	<10	<10	17000	1200	<10	<10	<10	<10	<10	160	150	130	-
2-Methylphenol	1800	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
2-Nitroaniline	110	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
2-Nitrophenol	-		µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
3,3'-Dichlorobenzidine	0.15	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
3+4-Methylphenol	180	(1)	µg/L	16	<50	10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
3-Nitroaniline	-		µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
4,6-Dinitro-2-methylphenol	-		µg/L	<20	<100	<20	<20	<20	<20	<20	<100	<100	<20	<20	<20	<20	<20	<20	<20	<100	-
4-Bromophenyl phenyl ether	-		µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
4-Chloro-3-methylphenol	-		µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
4-Chloroaniline	0.34	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
4-Chlorophenyl phenyl ether	-		µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
4-Nitroaniline	3.4	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
4-Nitrophenol	-		µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
Acenaphthene	2200	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
Acenaphthylene	-		µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
Aniline	12	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
Anthracene	11000	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
Azobenzene	0.12	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
Benz(a)anthracene	0.029	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
Benzo(a)pyrene	0.2	(2)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
Benzo(b)fluoranthene	0.029	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
Benzo(g,h,i)perylene	-		µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
Benzo(k)fluoranthene	0.29	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
Benzoic acid	150000	(1)	µg/L	<20	<100	<20	<20	<20	<20	<20	<100	<100	<20	<20	<20	<20	<20	<20	<20	<100	-
Benzyl alcohol	18000	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
Bis(2-chloroethoxy)methane	110	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
Bis(2-chloroethyl)ether	0.012	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
Bis(2-chloroisopropyl)ether	-		µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
Bis(2-ethylhexyl)phthalate	6	(2)	µg/L	<10	<50	<10	<10	<10	<10	<10	140	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
Butyl benzyl phthalate	35	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
Carbazole	-		µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-
Chrysene	2.9	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
Dibenz(a,h)anthracene	0.0029	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
Dibenzofuran	-		µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	-

Table 2
Ground Water Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels	Source	Units	AOC 22-12 (GW)	AOC 22-12/TW-01	AOC 22-13 (GW)	MW-55	MW-56	MW-59	MW-59	MW-61	MW-61	MW-63	MW-63	MW-63 (DUP)	MW-64	MW-64	MW-65	MW-65 (DUP)	MW-65	SWMU 15-2
Diethyl phthalate	29000	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	--
Dimethyl phthalate	-		µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
Di-n-butyl phthalate	-		µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	--
Di-n-octyl phthalate	-		µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	--
Fluoranthene	1500	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
Fluorene	1500	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	300	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
Hexachlorobenzene	1	(2)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
Hexachlorobutadiene	0.86	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	--
Hexachlorocyclopentadiene	50	(2)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
Hexachloroethane	4.8	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
Indeno(1,2,3-cd)pyrene	0.029	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
Isophorone	71	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
Naphthalene	0.14	(1)	µg/L	250	220	110	200	120	<10	<10	7500	690	<10	<10	<10	<10	<10	370	350	290	13
Nitrobenzene	0.12	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
N-Nitrosodimethylamine	0.00042	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
N-Nitrosodi-n-propylamine	0.0096	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
N-Nitrosodiphenylamine	14	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	--
Pentachlorophenol	1	(2)	µg/L	<20	<100	<20	<20	<20	<20	<20	<100	<100	<20	<20	<20	<20	<20	<20	<20	<100	<20
Phenanthrene	-		µg/L	<10	<50	<10	<10	<10	<10	<10	1500	130	<10	<10	<10	<10	<10	<10	<10	<50	--
Phenol	5	(3)	µg/L	30	<50	19	15	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	49	49	<50	<10
Pyrene	1100	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	58	<50	<10	<10	<10	<10	<10	<10	<10	<50	<10
Pyridine	37	(1)	µg/L	<10	<50	<10	<10	<10	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10	<10	<50	--
Alkalinity, Total (As CaCO3)	-		mg/L CaCO3	1100	1200	1200	570	1100	260	500	590	520	640	630	640	300	300	1000	1000	990	--
Bicarbonate	-		mg/L CaCO3	1100	1200	1200	570	1100	260	500	590	520	640	630	640	300	300	1000	1000	990	--
Bromide	-		mg/L	--			--	--	--	--											--
Carbonate	-		mg/L CaCO3	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	--
Chloride	250	(3)	mg/L	140	170	210	77	270	450	580	67	70	210	240	240	1100	1100	140	130	160	--
Fluoride	1.6	(3)	mg/L	--	0.28	--	0.56	0.56			0.38	0.39	0.19	0.17	0.14	0.21	0.19	0.21	0.22	0.24	--
Nitrate (As N)+Nitrite (As N)			mg/L	--	--	--	--	--	--	--	--	<1.0	72	--	--	44	--	<1.0	<1.0	<1.0	--
Nitrogen, Nitrate (As N)	10	(2)	mg/L	0.12	0.19	0.15	0.32	8.1	2.1	2.2	<1.0	--	--	74	75	--	48	--	--	--	--
Nitrogen, Nitrite (As N)	1	(2)	mg/L	<1.0	<2.0	<1.0	<0.10	<1.0	2.2	<5.0	<1.0	--	--	<2.0	--	--	<2.0	--	--	--	--
Sulfate	600	(3)	mg/L	56	39	110	4	19	1000	760	65	110	1600	1500	1500	1800	1700	790	750	950	--
Phosphorus, Orthophosphate (As P)	-		mg/L	--	<0.50	--	<0.50	<0.50	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--
Total Dissolved Solids	1000	(3)	mg/L	2500	1720	1700	740	1700	--	--	820	872	3500	3710	3700	4500	4580	2300	2400	2420	--
Diesel Range Organics (DRO)	1.34	(4)	mg/L	9.4	5.7	65	5.7	5.2			550	59	<1.0	<1.0	<1.0	<1.0	<1.0	14	14	11	--
Gasoline Range Organics (GRO)	1.34	(4)	mg/L	84	54	190	42	16	<1.0	<1.0	24	30	0.055	0.077	0.073	<0.050	<0.050	42	44	43	--
Motor Oil Range Organics (MRO)	-		mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	--
Ethanol	-		mg/L	--	--	--	--	--	<0.050	<0.050	--	--	--	--	--	--	--	<1.0	<1.0	<1.0	

-- No screening level or analytical result available
450 - bolded value exceeds screening level
(1) EPA - Regional Screening Levels (April 2009) - EPA Screening Levels.Tap Water
(2) EPA - Regional Screening Levels (April 2009) - MCL
(3) NMED WQCC standards - Title 20 Chapter 6, Part 2, - 20.6.2.3101 Standards for Ground Water of 10,000 mg/l TDS Concentration or less
(4) NMED TPH Screening Guidelines Oct. 2006 - #3 and #6 fuel oil
* = General Chemistry analytes not required by Work Plan.

Table 3
SWMU 3 Soil Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) Soil/GW NMED	Source	SWMU 3-10 (2-4')	SWMU 3-10 (10-12')	SWMU 3-10 (13.5-14')	SWMU 3-11 (6.5-7.5')	SWMU 3-11 (10.5-11.5')	SWMU 3-12 (5-6')	SWMU 3-12 (9-10')	SWMU 3-13 (5.5-6.5')	SWMU 3-13 (9.5-10.5')	SWMU 3-14 (4.5-5.5')	SWMU 3-14 (8.5-9.5')	SWMU 3-15 (5.5-6.5')	SWMU 3-15 (9.5-10.5')	SWMU 3-16 (4.25-5.25')	SWMU 3-16 (8.25-9.25')	SWMU 3-17 (5-6')	SWMU 3-17 (9-10')	SWMU 3-18 (4.5-5.5')	SWMU 3-18 (8.5-9.5')	SWMU 3-19 (4.5-5.5')	SWMU 3-19 (8.5-9.5')
							1202151-001 2/3/2012	1202151-002 2/3/2012	1202151-003 2/3/2012	1202147-003 2/2/2012	1202147-004 2/2/2012	1201800-015 1/26/2012	1201800-016 1/26/2012	1201800-012 1/26/2012	1201800-014 1/26/2012	1202017-001 1/30/2012	1202017-002 1/30/2012	1201800-008 1/26/2012	1201800-009 1/26/2012	1202148-006 2/2/2012	1202148-008 2/2/2012	1201800-006 1/25/2012	1201800-007 1/25/2012	1201800-010 1/26/2012	1201800-011 1/26/2012	1201827-003 1/26/2012	1201827-004 1/26/2012
Chrysene	1.48E+02	(1)	2.34E+03	(4)	8.99E+01	(8)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Dibenz(a,h)anthracene	1.48E-01	(1)	2.34E+00	(4)	9.52E-01	(8)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Dibenzofuran	-	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Diethyl phthalate	4.89E+04	(1)	1.91E+05	(5)	1.09E+02	(8)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Dimethyl phthalate	6.11E+05	(1)	2.38E+06	(5)	9.06E+02	(8)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Di-n-butyl phthalate	6.11E+03	(1)	2.38E+04	(5)	7.84E+01	(8)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Di-n-octyl phthalate	-	-	-	-	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	
Fluoranthene	2.29E+03	(1)	8.91E+03	(5)	1.37E+03	(8)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Fluorene	2.29E+03	(1)	8.91E+03	(5)	2.29E+02	(8)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Hexachlorobenzene	3.04E+00	(1)	1.20E+01	(4)	4.48E-02	(8)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Hexachlorobutadiene	6.20E+00	(3)	2.20E+02	(7)	2.14E-02	(9)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Hexachlorocyclopentadiene	3.67E+02	(1)	8.11E+02	(5)	5.92E+00	(8)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Hexachloroethane	4.28E+01	(1)	1.67E+02	(5)	9.20E-02	(8)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Indeno(1,2,3-cd)pyrene	1.48E+00	(1)	2.34E+01	(4)	9.71E+00	(8)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Isophorone	5.12E+03	(1)	4.75E+04	(5)	2.16E+00	(8)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Naphthalene	4.30E+01	(1)	1.58E+02	(5)	4.01E-02	(8)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Nitrobenzene	5.35E+01	(1)	3.00E+02	(4)	7.02E-03	(8)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
N-Nitrosodi-n-propylamine	6.90E-02	(3)	2.50E+00	(7)	1.24E-04	(9)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
N-Nitrosodiphenylamine	9.93E+02	(1)	3.91E+03	(4)	6.36E+00	(8)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Pentachlorophenol	8.94E+00	(1)	3.00E+01	(4)	1.44E-01	(8)	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	
Phenanthrene	1.83E+03	(1)	7.15E+03	(5)	3.21E+02	(8)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Phenol	1.83E+04	(1)	6.88E+04	(5)	5.59E+01	(8)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Pyrene	1.72E+03	(1)	6.68E+03	(5)	1.01E+03	(8)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Pyridine	7.80E+01	(2)	1.00E+03	(6)	1.09E-01	(9)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Total Petroleum Hydrocarbons - (EPA Method 8015B) mg/kg																											
Diesel Range Organics (DRO)	1.00E+03	(11)	1.00E+03	(11)	1.00E+03	(11)	<10	<9.9	<9.8	<10	<9.7	<10	<9.7	<10	<9.6	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<9.9	
Gasoline Range Organics (GRO)	--		--		--		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
Motor Oil Range Organics (MRO)	3.00E+03	(12)	5.00E+03	(12)	3.00E+03	(12)	<50	<50	<49	<51	<49	<50	<48	<50	<48	<50	<50	<51	<50	<50	<52	<50	<50	<51	<50	<49	

-- No screening level or analytical result available
NMED - Risk Assessment Guidance for Site Investigations and Remediation (June 14, 2012)

- EPA - Regional Screening Levels (April 2009)
(1) NMED Residential Screening Level
(2) EPA Residential Screening Level
(3) EPA Residential - Screening Levels (April 2009) multiplied by 10 pursuant to Provision VII.B. of the July 7, 2007 NMED Order because the constituent is listed as carcinogenic
(4) NMED Industrial Occupational Screening Level
(5) NMED Construction Worker Screening Level
(6) EPA Industrial - Screening Levels (April 2009)
(7) EPA Industrial - Screening Levels (April 2009) multiplied by 10 pursuant to Provision VII.B. of the July 7, 2007 NMED Order because the constituent is listed as carcinogenic
(8) SoilGW NMED Dilution Attenuation Factor (DAF) = 11.25
(9) SoilGW Risk-based EPA DAF = 11.25
(10) SoilGW MCL-based EPA DAF = 11.25
(11) NMED Table 6-2 TPH Screening Guidelines for Potable Groundwater "uknown oil" with DAF = 1.0 - see report Section 5 for use of screening levels
(12) NMED Table 6-2 TPH Screening Guidelines for Potable Groundwater "Waste Oil" with DAF = 1.0 - see report Section 5 for use of screening levels

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

Table 3
SWMU 3 Soil Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	SWMU 3-20 (2-4')	SWMU 3-20 (10.5-11.5')	SWMU 3-20 (14.5-15.5')	SWMU 3-21 (6.5-7.5')	SWMU 3-21 (10.5-11.5')	SWMU 3-22 (5-6')	SWMU 3-22 (9-10')	SWMU 3-23 (8-9')	SWMU 3-23 (12-13')	SWMU 3-24 (5.5-6.5)	SWMU 3-24 (9.5-10.5')	SWMU 3-25 (5-6')	SWMU 3-25 (9-10')	SWMU 3-26 (2.5-3.5')	SWMU 3-26 (6.5-7.5')	SWMU 3-27 (2.5-3.5')	SWMU 3-27 (6.5-7.5')	SWMU 3-28 (2.5-3.5')	SWMU 3-28 (6.5-7.5')
							1202148-003 2/2/2012	1202148-004 2/2/2012	1202148-005 2/2/2012	1202148-001 2/2/2012	1202148-002 2/2/2012	1201827-001 1/26/2012	1201827-002 1/26/2012	1201800-017 1/26/2012	1201800-018 1/26/2012	1202147-001 2/2/2012	1202147-002 2/2/2012	1201800-004 1/25/2012	1201800-005 1/25/2012	1201871-003 1/30/2012	1201871-004 1/30/2012	1201871-005 1/30/2012	1201871-007 1/30/2012	1201871-008 1/30/2012	1201871-009 1/30/2012
Chrysene	1.48E+02	(1)	2.34E+03	(4)	8.99E+01	(8)	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Dibenz(a,h)anthracene	1.48E-01	(1)	2.34E+00	(4)	9.52E-01	(8)	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Dibenzofuran	-	-	-	-	-	-	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Diethyl phthalate	4.89E+04	(1)	1.91E+05	(5)	1.09E+02	(8)	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Dimethyl phthalate	6.11E+05	(1)	2.38E+06	(5)	9.06E+02	(8)	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Di-n-butyl phthalate	6.11E+03	(1)	2.38E+04	(5)	7.84E+01	(8)	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Di-n-octyl phthalate	-	-	-	-	-	-	<0.50	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	
Fluoranthene	2.29E+03	(1)	8.91E+03	(5)	1.37E+03	(8)	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Fluorene	2.29E+03	(1)	8.91E+03	(5)	2.29E+02	(8)	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Hexachlorobenzene	3.04E+00	(1)	1.20E+01	(4)	4.48E-02	(8)	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Hexachlorobutadiene	6.20E+00	(3)	2.20E+02	(7)	2.14E-02	(9)	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Hexachlorocyclopentadiene	3.67E+02	(1)	8.11E+02	(5)	5.92E+00	(8)	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Hexachloroethane	4.28E+01	(1)	1.67E+02	(5)	9.20E-02	(8)	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Indeno(1,2,3-cd)pyrene	1.48E+00	(1)	2.34E+01	(4)	9.71E+00	(8)	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Isophorone	5.12E+03	(1)	4.75E+04	(5)	2.16E+00	(8)	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Naphthalene	4.30E+01	(1)	1.58E+02	(5)	4.01E-02	(8)	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Nitrobenzene	5.35E+01	(1)	3.00E+02	(4)	7.02E-03	(8)	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
N-Nitrosodi-n-propylamine	6.90E-02	(3)	2.50E+00	(7)	1.24E-04	(9)	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
N-Nitrosodiphenylamine	9.93E+02	(1)	3.91E+03	(4)	6.36E+00	(8)	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Pentachlorophenol	8.94E+00	(1)	3.00E+01	(4)	1.44E-01	(8)	<0.80	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	
Phenanthrene	1.83E+03	(1)	7.15E+03	(5)	3.21E+02	(8)	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Phenol	1.83E+04	(1)	6.88E+04	(5)	5.59E+01	(8)	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Pyrene	1.72E+03	(1)	6.68E+03	(5)	1.01E+03	(8)	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Pyridine	7.80E+01	(2)	1.00E+03	(6)	1.09E-01	(9)	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Total Petroleum Hydrocarbons - (EPA Method 8015B) mg/kg																									
Diesel Range Organics (DRO)	1.00E+03	(11)	1.00E+03	(11)	1.00E+03	(11)	370	<10	<10	<9.9	<9.8	<9.9	<9.8	<9.8	<10	<9.9	<10	<9.8	<10	<9.9	<9.7	<10	<10	<9.8	
Gasoline Range Organics (GRO)	--		--		--		5.4	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
Motor Oil Range Organics (MRO)	3.00E+03	(12)	5.00E+03	(12)	3.00E+03	(12)	<510	<50	<51	<49	<49	<49	<49	<49	<51	<49	<50	<49	<52	<49	<49	<50	<50	<49	

-- No screening level or analytical result available
NMED - Risk Assessment Guidance for Site Investigations and Remediation (June 14, 2012)

- EPA - Regional Screening Levels (April 2009)
(1) NMED Residential Screening Level
(2) EPA Residential Screening Level
(3) EPA Residential - Screening Levels (April 2009) multiplied by 10 pursuant to Provision VII.B. of the July 7, 2007 NMED Order because the constituent is listed as carcinogenic
(4) NMED Industrial Occupational Screening Level
(5) NMED Construction Worker Screening Level
(6) EPA Industrial - Screening Levels (April 2009)
(7) EPA Industrial - Screening Levels (April 2009) multiplied by 10 pursuant to Provision VII.B. of the July 7, 2007 NMED Order because the constituent is listed as carcinogenic
(8) SoilGW NMED Dilution Attenuation Factor (DAF) = 11.25
(9) SoilGW Risk-based EPA DAF = 11.25
(10) SoilGW MCL-based EPA DAF = 11.25
(11) NMED Table 6-2 TPH Screening Guidelines for Potable Groundwater "unknown oil" with DAF = 1.0 - see report Section 5 for use of screening levels
(12) NMED Table 6-2 TPH Screening Guidelines for Potable Groundwater "Waste Oil" with DAF = 1.0 - see report Section 5 for use of screening levels

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

Table 4
Excavation Soil Analytical Results Summary
Western Refining Southwest, Inc. - Bloomfield Terminal
Bloomfield, New Mexico

	Residential Soil Screening Level	Source	Non- Residential Soil Screening Level	Source	NMOCD 19.15.29	North Side Wall	Bottom Floor	West Side Wall
					Lab ID	1806129-1	1806129-2	1806129-3
					Sample Date	6/4/2018	6/4/2018	6/4/2018
Volatiles (mg/kg)								
Benzene	1.77E+01	(1)	8.65E+01	(4)	10	2.8	2.4	15
Ethylbenzene	7.45E+01	(1)	3.65E+02	(4)	BTEX 50	32	64	130
Toluene	5.22E+03	(1)	1.40E+04	(5)		67	93	330
Xylenes, Total	8.63E+02	(1)	7.91E+02	(5)		210	420	760
Total Petroleum Hydrocarbons (mg/kg)								
Gasoline Range Organics (GRO)	1.00E+03	(8)	3.80E+03	(8)	100	2500	3700	8900
Diesel Range Organics (DRO)	1.00E+03	(8)	3.80E+03	(8)		16000	3100	25000
Motor Oil Range Organics (MRO)	1.00E+03	(8)	3.80E+03	(8)		3800	<250 u	4100

- No screening level or analytical result available

NMED - Risk Assessment Guidance for Site Investigations and Remediation (March 2017)

EPA - Regional Screening Levels (June 2017)

(1) NMED Residential Screening Level

(2) EPA Residential Screening Level

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

(4) NMED Industrial Occupational Screening Level

(5) NMED Construction Worker Screening Level

(6) EPA Industrial - Screening Levels

Table 4
Excavation Soil Analytical Results Summary
Western Refining Southwest, Inc. - Bloomfield Terminal
Bloomfield, New Mexico

	Residential Soil Screening Level	Source	Non- Residential Soil Screening Level	Source	NMOCD 19.15.29	North Side Wall	Bottom Floor	West Side Wall
					Lab ID	1806129-1	1806129-2	1806129-3
					Sample Date	6/4/2018	6/4/2018	6/4/2018

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

(8) NMED Table 6-2 TPH Soil Screening Levels "unknown oil" - see report Section 5 for use of screening levels

NMOCD - New Mexico Oil Conservation Division Release Regulations

Bold represents value above Residential Screening Level

yellow highlight represents value above non-residential Screening Level

Bold with yellow highlight value exceeds residential screening level and non-residential screen level

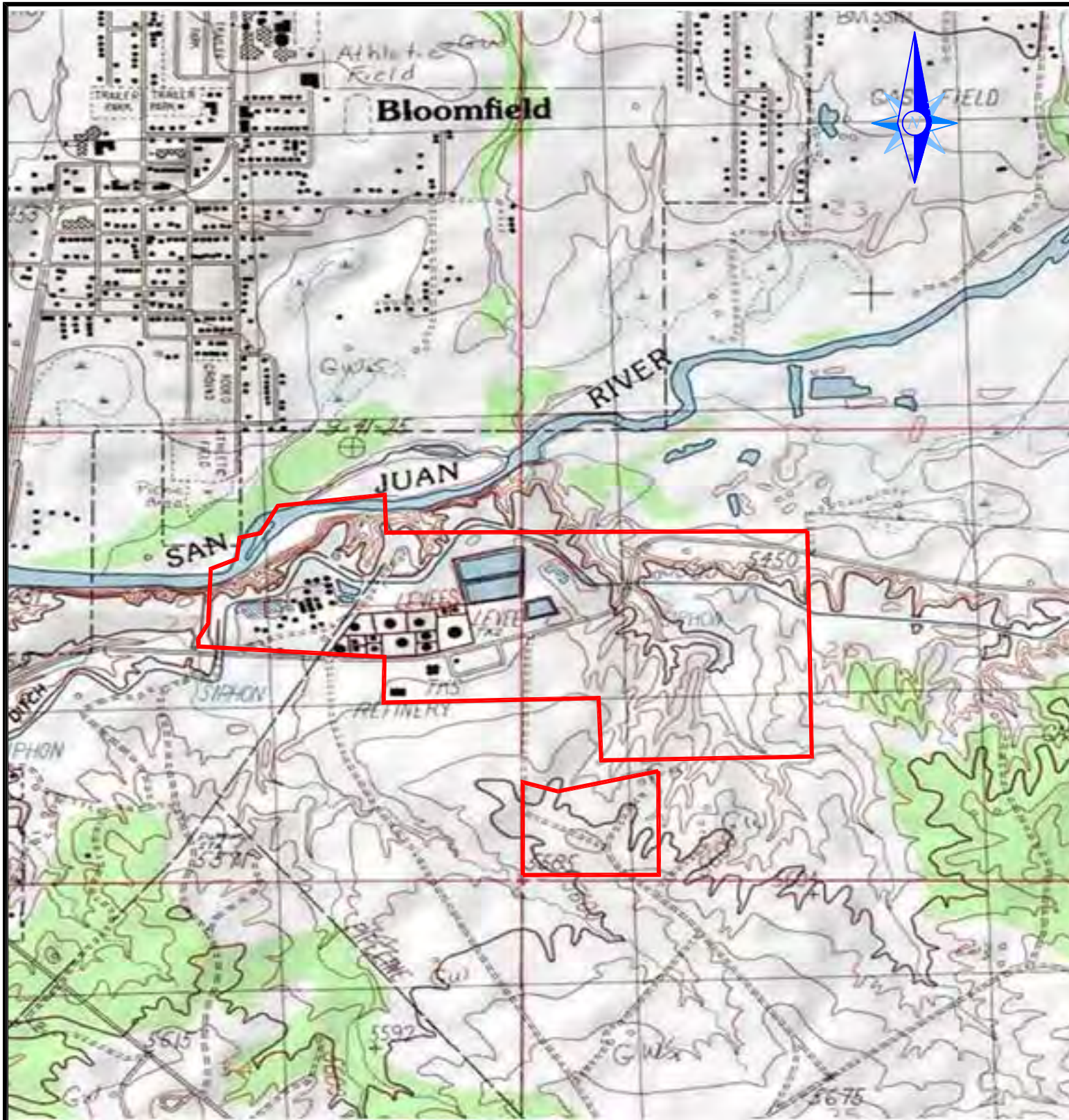
v = reportable detection above the Practical quantitation limit (PQL)

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

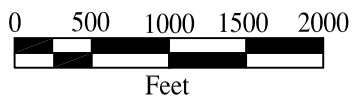
j - estimated result at concentration above MDL but less than PQL

Figures

- Figure 1 Bloomfield Terminal Facility Site Map**
- Figure 2 SWMU No. 3 Location Map**
- Figure 3 Product Thickness Map - August 2017**
- Figure 4 BTEX and MTBE Concentration Map – August 2017**
- Figure 5 Cross Section A-A' West to East**
- Figure 6 Cross Section B-B' North to South**
- Figure 7 Cross Section C-C' North to South**
- Figure 8 Groundwater Elevation and Flow Direction – August 2017**
- Figure 9 Sample Location Map**
-
-



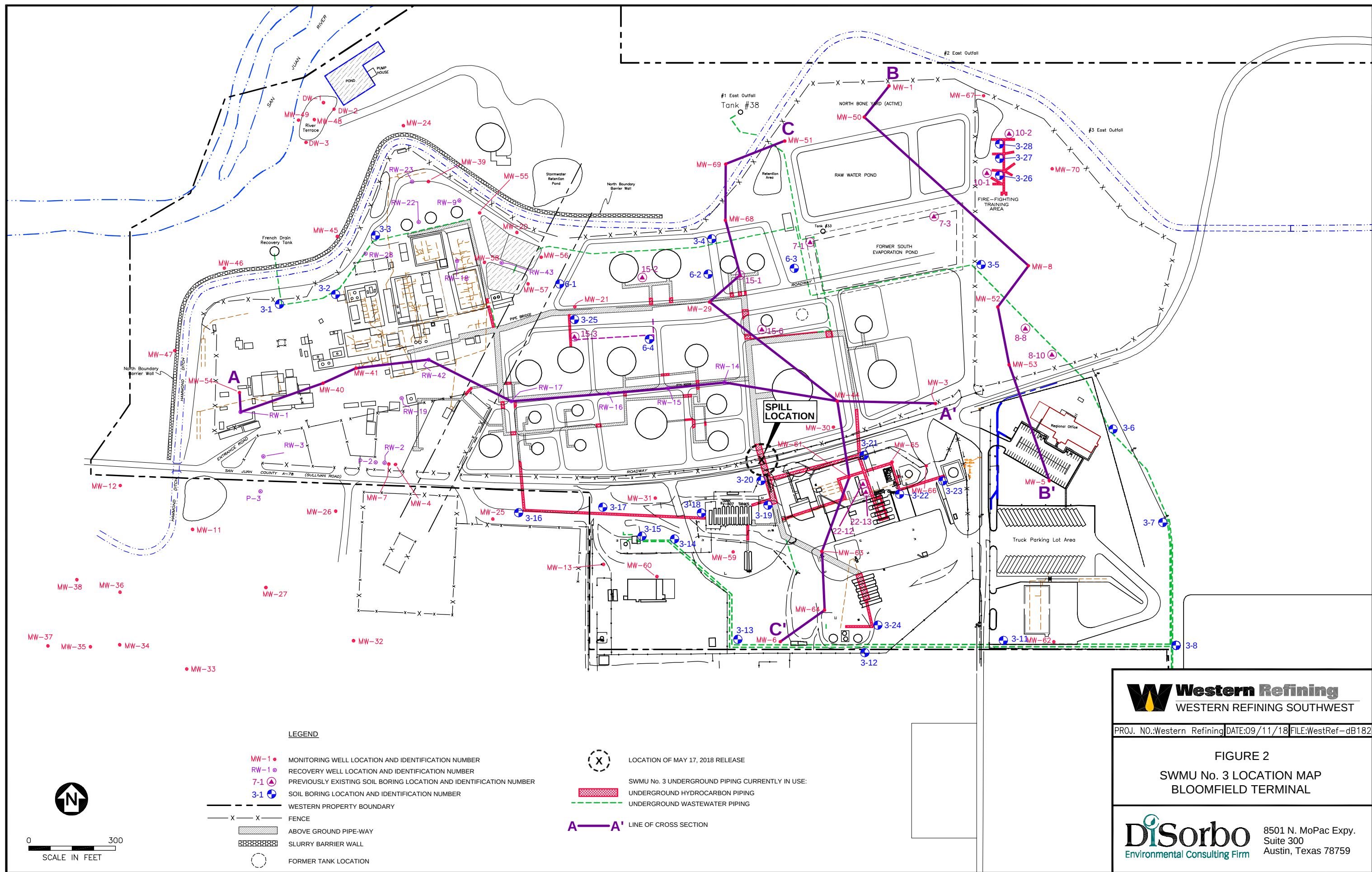
— Approximate Property Boundary

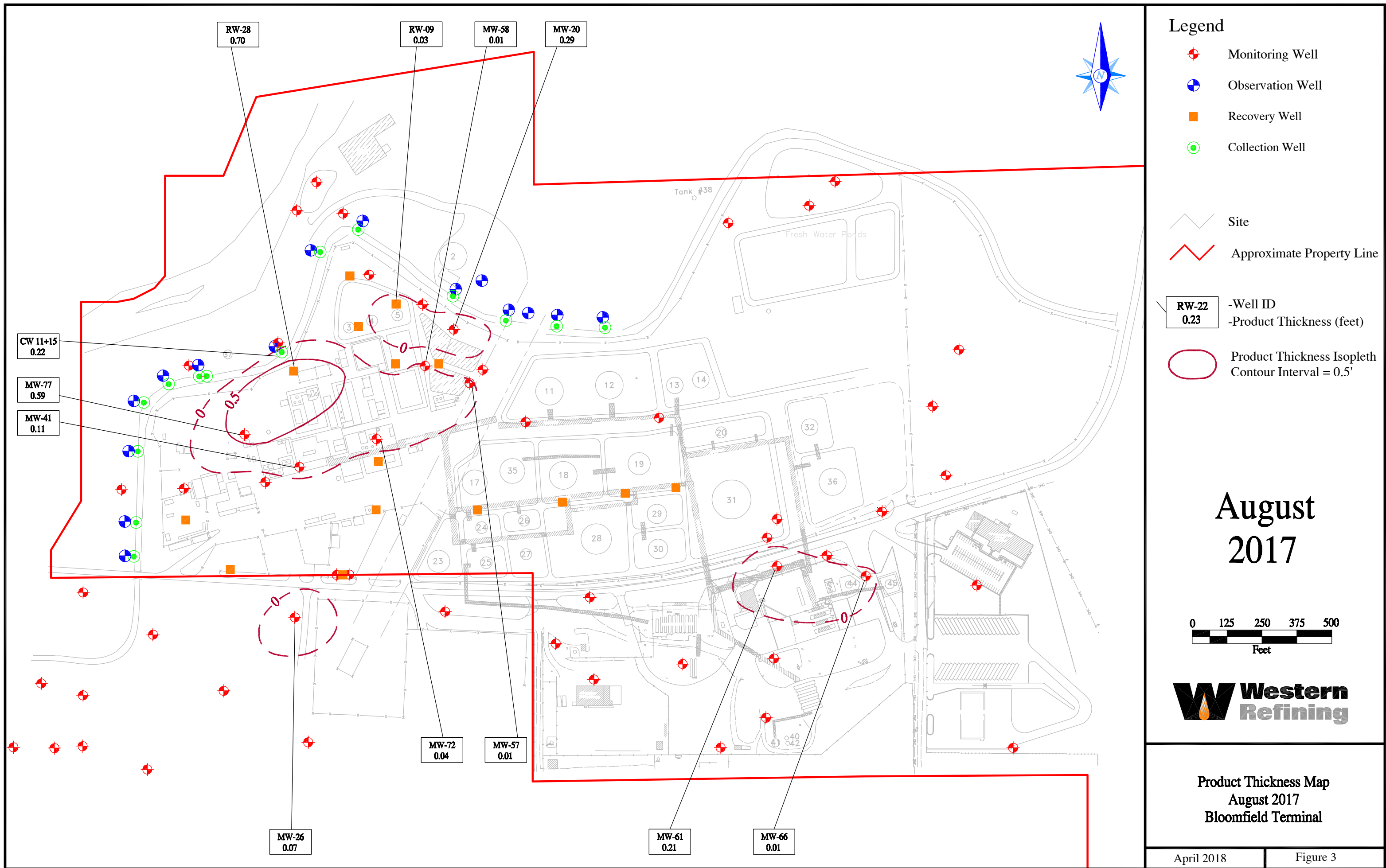


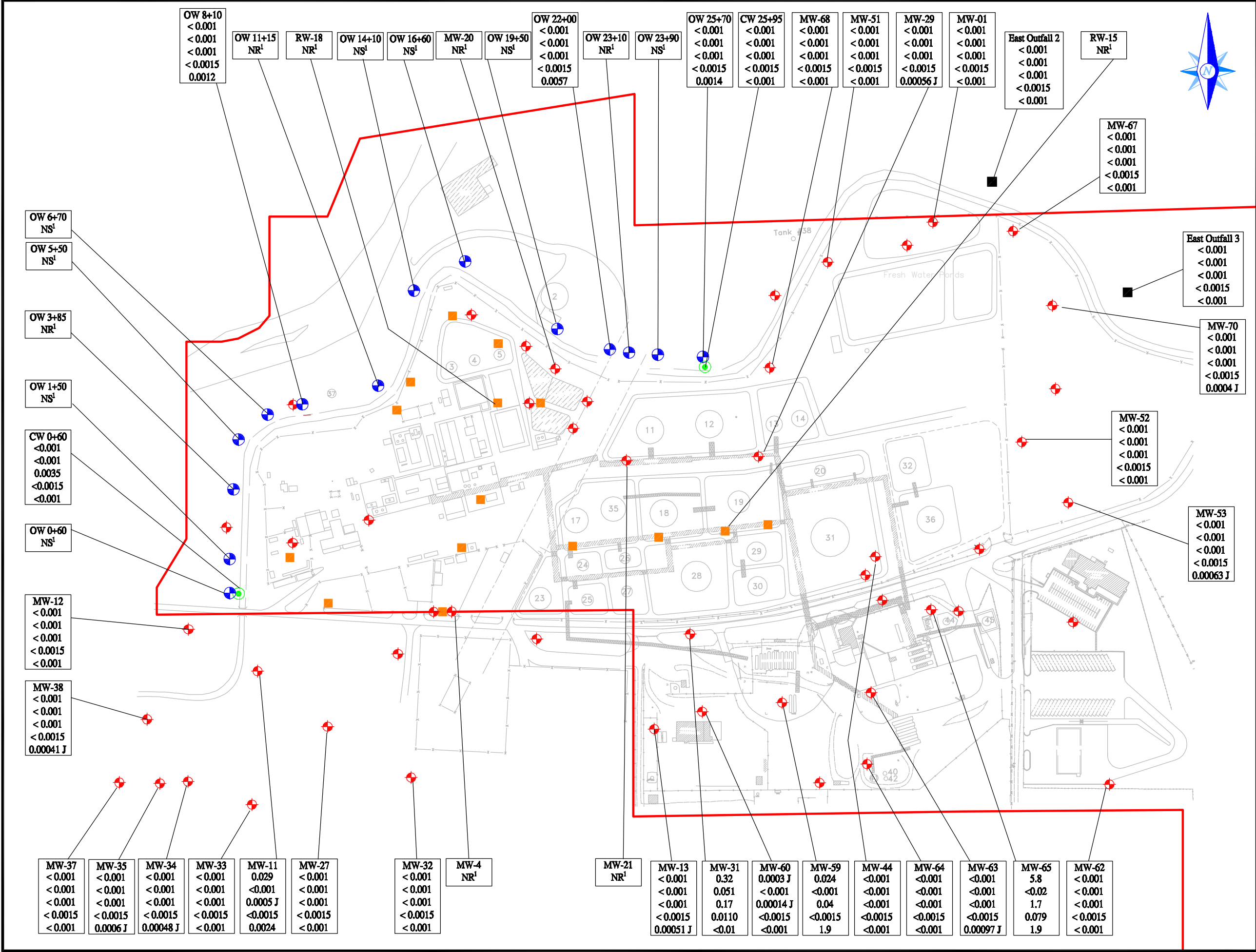
Bloomfield Terminal Facility Site Map

April 2017

Figure 1







Legend

- Monitoring Well
- Observation Well
- Recovery Well
- Collection Well
- Outfall
- Site
- Approximate Property Line

MW-52	-Well ID
<0.001	-Benzene
<0.001	-Toluene
<0.001	-Ethylbenzene
<0.0015	-Xylenes, Total
<0.001	-MTBE

Notes:

All concentrations in milligrams per liter (mg/L)

NS¹ = Well is Dry or Not Enough Water to Sample- No sample

NR¹ = No Sample Required - Well Contains Separate Phase Hydrocarbon



BTEX and MTBE
Concentration Map - August 2017
Bloomfield Terminal

A vertical scale for elevation in feet MSL. Major tick marks are labeled at 5480, 5490, 5500, 5510, 5520, 5530, and 5540. Minor tick marks are present every 10 feet between the major labels.

ELEVATION (FT MSL)

Station	Elevation (FT MSL)
5480	5480
5490	5490
5500	5500
5510	5510
5520	5520
5530	5530
5540	5540

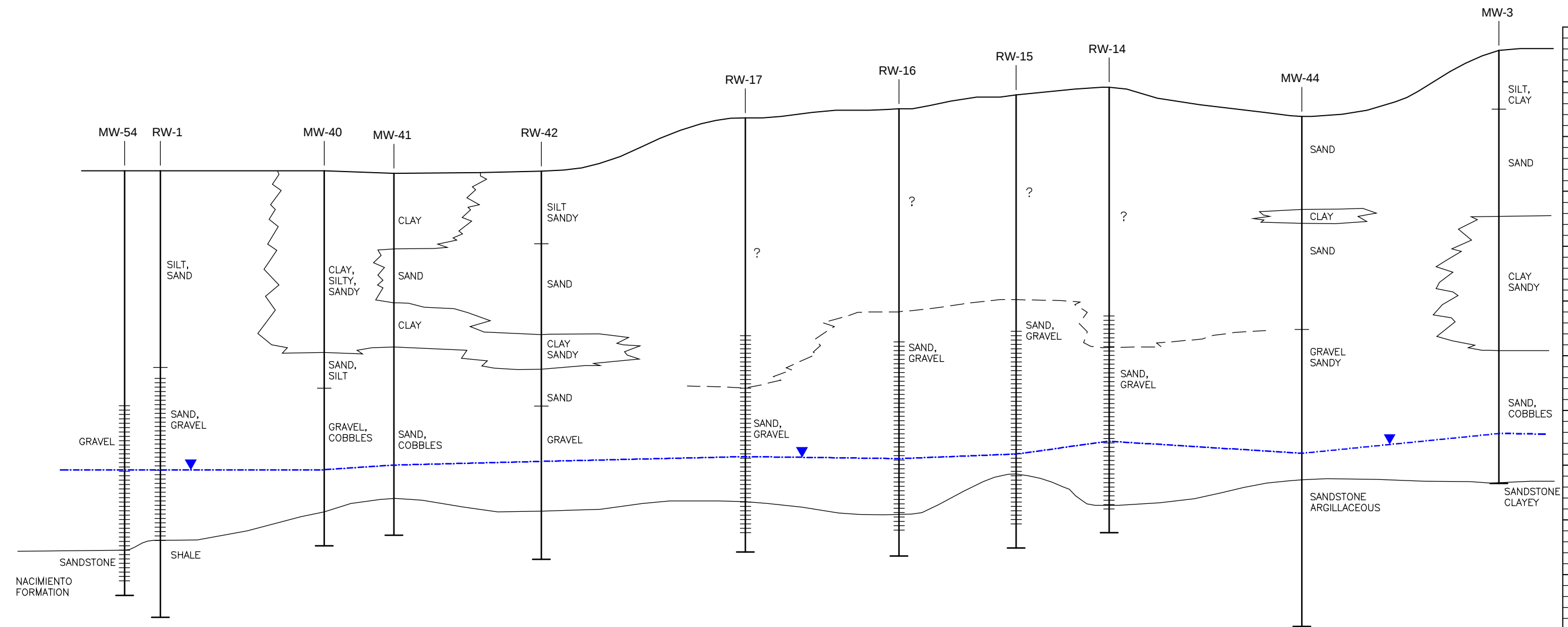
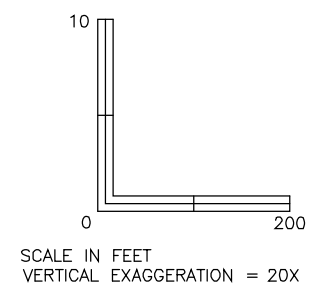


Diagram illustrating the well structure for MW-54. The diagram shows a vertical line representing the well, with labels indicating the well identification (MW-54), the well itself, the screen interval, and the lithologic contacts.

 - POTENTIOMETRIC SURFACE MEASURED APRIL 12, 2010 (RECOVERY PUMPS OFF)



PROJ. NO.: Western Refining	DATE: 12/08/10	FILE: WestRef-B73
-----------------------------	----------------	-------------------

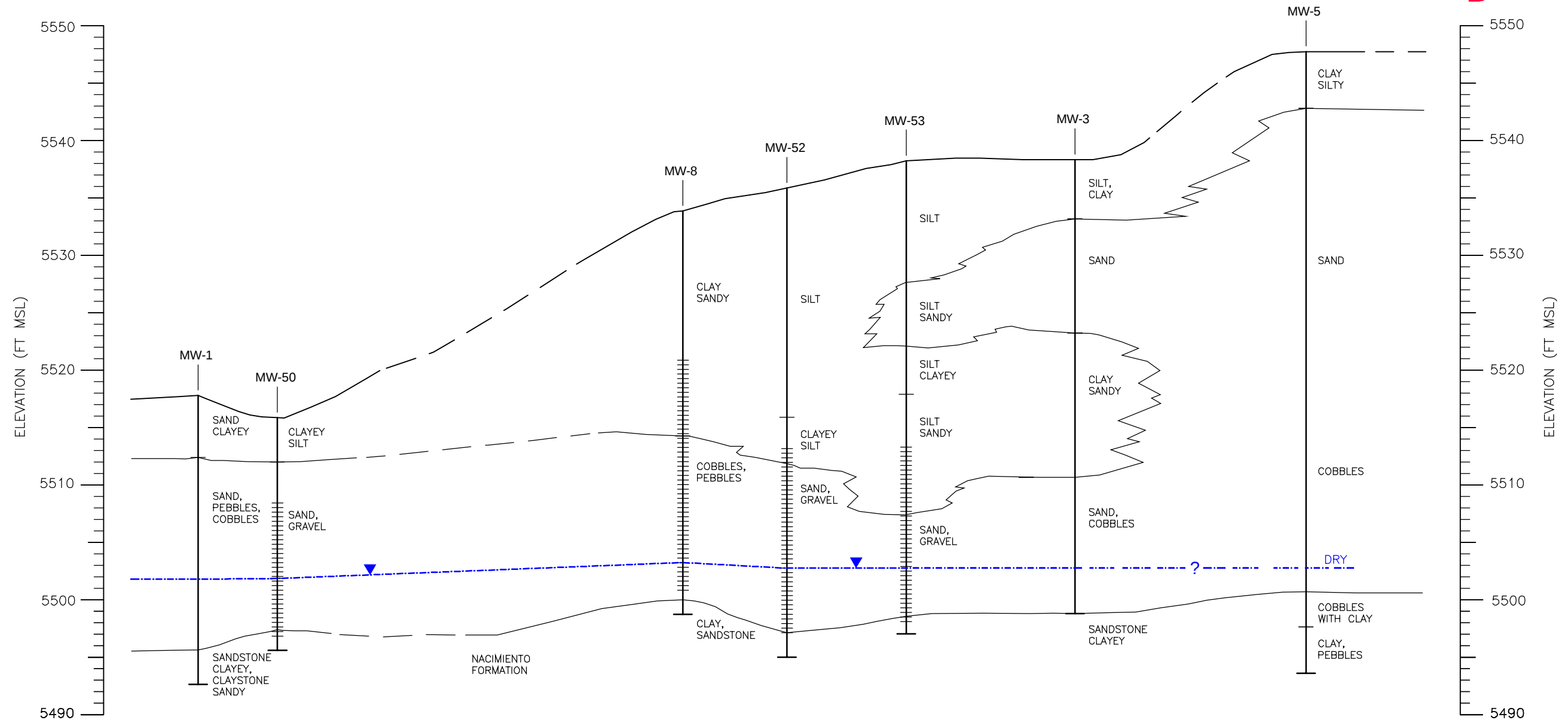
FIGURE 5
CROSS SECTION A-A'
WEST TO EAST
BLOOMFIELD REFINERY



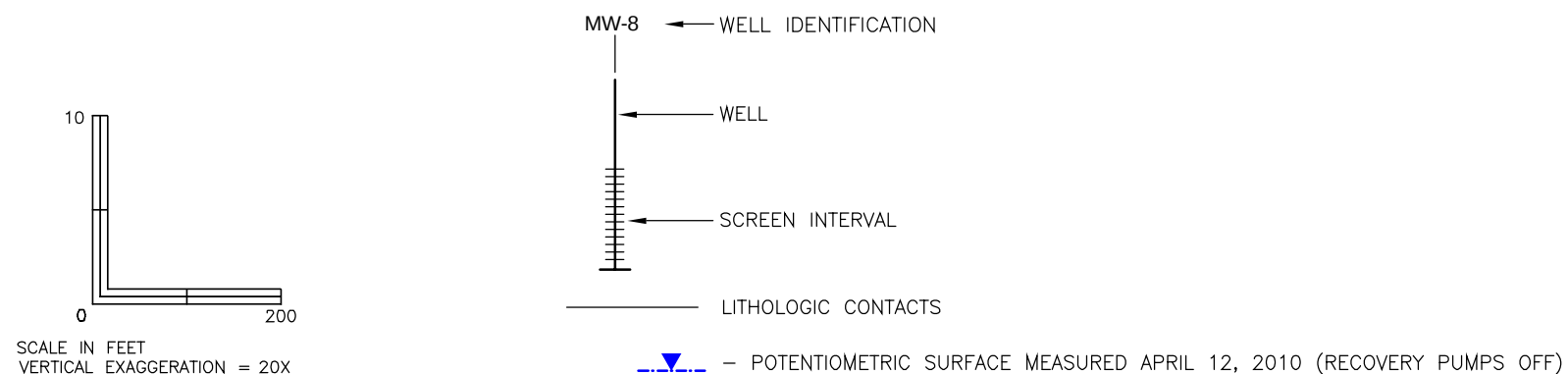
404 Camp Craft Road
Austin, Texas 78746

NORTH
B

SOUTH
B'



EXPLANATION

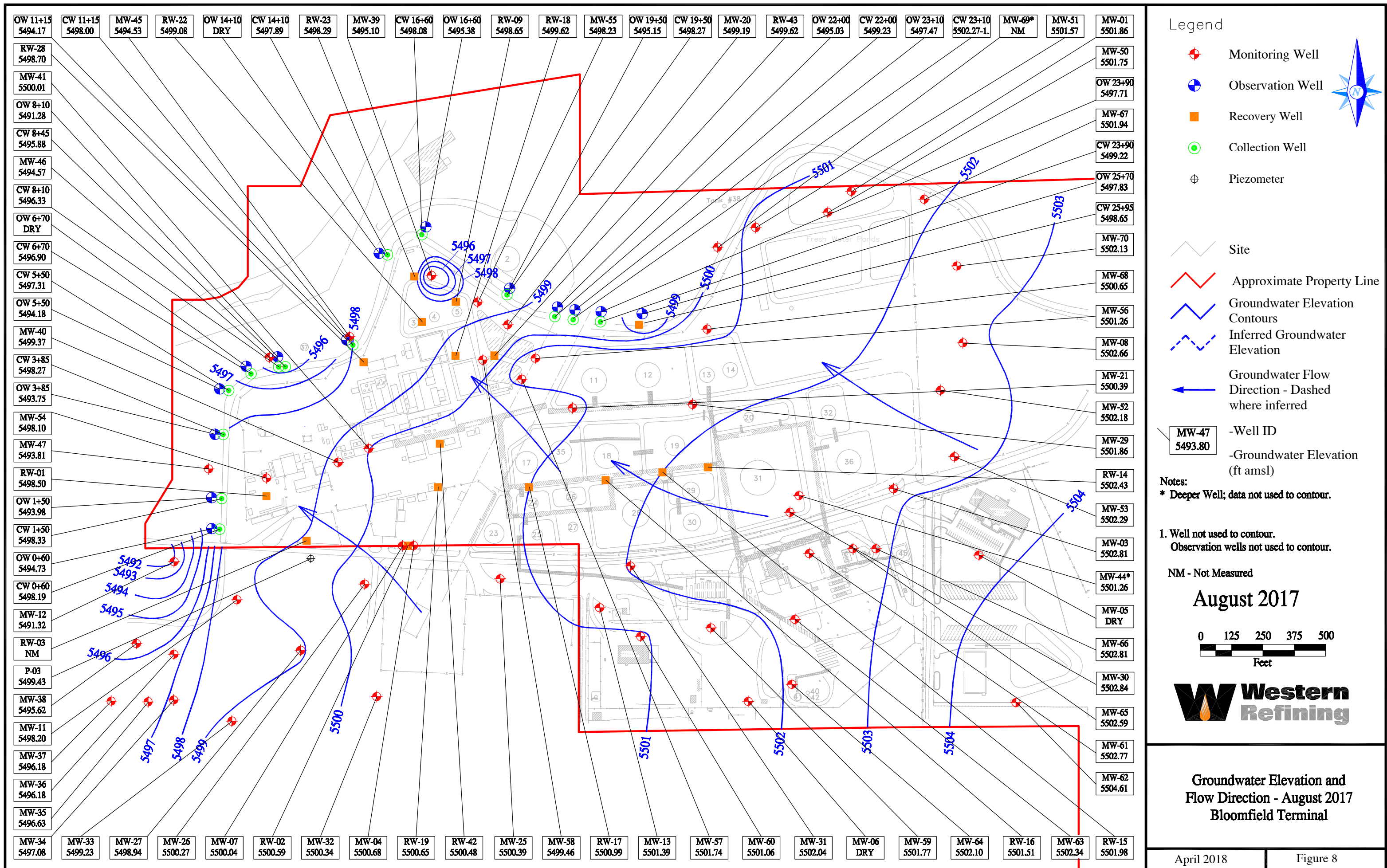


Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 12/08/10 | FILE: WestRef-B74

FIGURE 6
CROSS SECTION B-B'
NORTH TO SOUTH
BLOOMFIELD REFINERY

RPS 404 Camp Craft Road
Austin, Texas 78746





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



0 50
SCALE IN FEET

LEGEND



PROPOSED SOIL BORING LOCATION



EXCAVATION LOCATION



Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining|DATE:09/12/18|FILE:WestRef-dA148

FIGURE 9
SAMPLE LOCATION MAP
BLOOMFIELD TERMINAL

DiSorbo
Environmental Consulting Firm

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

Appendix A
C-141 Form

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised April 3, 2017

Submit 1 Copy to appropriate District Office in
accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Western Refining Terminals, LLC	Contact: Kelly Robinson	
Address: 50 CR 4990	Telephone No.: 505-632-4166	
Facility Name: Bloomfield Terminal	Facility Type: Crude and Products Terminal	
Surface Owner: Western Refining	Mineral Owner	API No.

LOCATION OF RELEASE

Unit Letter	Section 27	Township 29N	Range : 11W	Feet from the	North/South Line	Feet from the	East/West Line	County San Juan
-------------	---------------	-----------------	-------------------	---------------	------------------	---------------	----------------	--------------------

Latitude 36.697049 Longitude -107.972494 NAD83

NATURE OF RELEASE

Type of Release: Crude Oil/Water/Product Mixture	Volume of Release 7 bbls hydrocarbons	Volume Recovered: All standing liquids were recovered.
Source of Release: Crack in the slop line located adjacent/north of county road 4990	Date and Hour of Occurrence: 5/17/2018	Date and Hour of Discovery 5/17/2018 at approximately 6:15am
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? 5/18/2018 to Carl Chavez – NMOCD Santa FE, Vanessa Field- NMOCD, Cory Smith – NMOCD, Leona Tsinnajinnie – NMED-HWB	
By Whom? Kelly Robinson	Date and Hour 5/18/2018 at 3:09pm	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

On Thursday, May 17th, the Bloomfield Terminal identified a leak in an underground pipeline used to transfer water/crude/finished product mixtures from the Terminal Loading/Unloading areas on the south side of County Road 4990 to the on-site Wastewater Treatment System located north of County Road 4990. The leak originated from a crack in the elbow pipe joint. Since the pipe is wrapped in insulation, the wrapping deterred the release of liquids to the surrounding soils. The pipeline was evacuated of hydrocarbons using fire water, and all liquids were evacuated from the pipeline using the on-site vacuum truck. All liquids removed from the pipeline were transferred to the on-site wastewater treatment plant. The line remains out-of-service until the repairs to the line are completed and the section of the pipeline is hydro-tested to ensure the integrity of the pipeline is sound.

Describe Area Affected and Cleanup Action Taken.*

Western contracted a hydro-excavator to hydro-excavate all soils around the leak area. A hydro excavator was the only safe method of excavation due to the fact that there exists additional power and product lines within the vicinity of where the leak occurred. A sufficient amount of soils were removed to be able to thoroughly assess an extended section of the pipeline. All hydro-excavated materials were transferred to secondary containment areas on-site for temporary storage. A sample was collected of the excavated materials for waste characterization and waste profile development. Initial preliminary lab results indicate that the excavated soils are non-hazardous. Western is scheduled to collect samples of the excavated area on Monday, June 4th, 2018. A representative from NMOCD-Aztec Office will be on-site to witness the sampling activities for closure.

A follow-up C-141 report will be submitted following the collection of the field samples and receipt of the waste characterization results.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: <i>Kelly Robinson</i>		<u>OIL CONSERVATION DIVISION</u>	
Printed Name: <i>Kelly Robinson</i>		Approved by Environmental Specialist:	
Title: <i>Environmental Supervisor</i>		Approval Date:	Expiration Date:
E-mail Address: <i>Kelly. Robinson Caudavor</i>		Conditions of Approval:	
Date: <i>6/1/18</i> Phone: <i>505-632-4166</i>		Attached ☐	

* Attach Additional Sheets If Necessary

Appendix B

Photographs



Image of location prior to excavation.
Pipelines pass beneath CR 4990 inside culvert at this
location.

pipeline
corridor

approximate location of
excavation



Picture of excavation looking south at County Road 4990.

Slop Oil Pipeline



Slop oil pipeline

Additional
lines below
slop oil line

Additional pipelines exposed beneath slop oil pipeline.



Looking northwest towards tank farm on north side of CR 4990

Slop oil pipeline

Appendix C

Chemical Analyses and Waste Manifests



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

June 12, 2018

Kelly Robinson

Western Refining Southwest, Inc.

#50 CR 4990

Bloomfield, NM 87413

TEL: (505) 632-4135

FAX (505) 632-3911

RE: Slop line Waste Characterization

OrderNo.: 1805C15

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 1 sample(s) on 5/23/2018 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,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1805C15

Date Reported: 6/12/2018

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: Impacted Soil

Project: Slop line Waste Characterization

Collection Date: 5/22/2018 10:00:00 AM

Lab ID: 1805C15-001

Matrix: SOIL

Received Date: 5/23/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
MERCURY, TCLP							Analyst: rde
Mercury	ND	0.020		mg/L	1	5/25/2018 2:52:33 PM	38334
EPA METHOD 6010B: TCLP METALS							Analyst: MED
Arsenic	ND	5.0		mg/L	1	5/27/2018 3:24:28 PM	38337
Barium	ND	100		mg/L	1	5/27/2018 2:32:07 PM	38337
Cadmium	ND	1.0		mg/L	1	5/27/2018 2:32:07 PM	38337
Chromium	ND	5.0		mg/L	1	5/27/2018 2:32:07 PM	38337
Lead	ND	5.0		mg/L	1	5/27/2018 3:24:28 PM	38337
Selenium	ND	1.0		mg/L	1	5/27/2018 3:24:28 PM	38337
Silver	ND	5.0		mg/L	1	5/27/2018 4:11:56 PM	38337
EPA METHOD 8270C TCLP							Analyst: DAM
2-Methylphenol	ND	200		mg/L	1	6/7/2018 4:03:12 PM	38328
3+4-Methylphenol	ND	200		mg/L	1	6/7/2018 4:03:12 PM	38328
Phenol	ND	200		mg/L	1	6/7/2018 4:03:12 PM	38328
2,4-Dinitrotoluene	ND	0.13		mg/L	1	6/7/2018 4:03:12 PM	38328
Hexachlorobenzene	ND	0.13		mg/L	1	6/7/2018 4:03:12 PM	38328
Hexachlorobutadiene	ND	0.50		mg/L	1	6/7/2018 4:03:12 PM	38328
Hexachloroethane	ND	3.0		mg/L	1	6/7/2018 4:03:12 PM	38328
Nitrobenzene	ND	2.0		mg/L	1	6/7/2018 4:03:12 PM	38328
Pentachlorophenol	ND	100		mg/L	1	6/7/2018 4:03:12 PM	38328
Pyridine	ND	5.0		mg/L	1	6/7/2018 4:03:12 PM	38328
2,4,5-Trichlorophenol	ND	400		mg/L	1	6/7/2018 4:03:12 PM	38328
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	6/7/2018 4:03:12 PM	38328
Cresols, Total	ND	200		mg/L	1	6/7/2018 4:03:12 PM	38328
Surr: 2-Fluorophenol	60.2	22.1-97.5		%Rec	1	6/7/2018 4:03:12 PM	38328
Surr: Phenol-d5	50.7	15-82.7		%Rec	1	6/7/2018 4:03:12 PM	38328
Surr: 2,4,6-Tribromophenol	88.3	39-129		%Rec	1	6/7/2018 4:03:12 PM	38328
Surr: Nitrobenzene-d5	81.4	44.6-120		%Rec	1	6/7/2018 4:03:12 PM	38328
Surr: 2-Fluorobiphenyl	64.9	38.3-115		%Rec	1	6/7/2018 4:03:12 PM	38328
Surr: 4-Terphenyl-d14	83.0	29.6-79.7	S	%Rec	1	6/7/2018 4:03:12 PM	38328
VOLATILES BY 8260B/1311							Analyst: DJF
Benzene	ND	0.50		mg/L	1	5/26/2018 4:13:53 AM	38311
2-Butanone	ND	200		mg/L	1	5/26/2018 4:13:53 AM	38311
Carbon Tetrachloride	ND	0.50		mg/L	1	5/26/2018 4:13:53 AM	38311
Chlorobenzene	ND	100		mg/L	1	5/26/2018 4:13:53 AM	38311
Chloroform	ND	6.0		mg/L	1	5/26/2018 4:13:53 AM	38311
1,4-Dichlorobenzene	ND	7.5		mg/L	1	5/26/2018 4:13:53 AM	38311
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	5/26/2018 4:13:53 AM	38311
1,1-Dichloroethene	ND	0.70		mg/L	1	5/26/2018 4:13:53 AM	38311

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 Quantitative 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.

Analytical Report

Lab Order 1805C15

Date Reported: 6/12/2018

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: Impacted Soil

Project: Slop line Waste Characterization

Collection Date: 5/22/2018 10:00:00 AM

Lab ID: 1805C15-001

Matrix: SOIL

Received Date: 5/23/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
VOLATILES BY 8260B/1311							Analyst: DJF
Hexachlorobutadiene	ND	0.50		mg/L	1	5/26/2018 4:13:53 AM	38311
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	5/26/2018 4:13:53 AM	38311
Trichloroethene (TCE)	ND	0.50		mg/L	1	5/26/2018 4:13:53 AM	38311
Vinyl chloride	ND	0.20		mg/L	1	5/26/2018 4:13:53 AM	38311
Surr: 1,2-Dichloroethane-d4	98.5	70-130		%Rec	1	5/26/2018 4:13:53 AM	38311
Surr: 4-Bromofluorobenzene	108	70-130		%Rec	1	5/26/2018 4:13:53 AM	38311
Surr: Dibromofluoromethane	104	70-130		%Rec	1	5/26/2018 4:13:53 AM	38311
Surr: Toluene-d8	96.8	70-130		%Rec	1	5/26/2018 4:13:53 AM	38311

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 Quantitative 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



Collected date/time: 05/22/18 10:00

L996393

Wet Chemistry by Method 9012 B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND	<u>L6</u>	0.250	1	05/25/2018 09:13	<u>WG1115336</u>

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		25.0	1	05/25/2018 02:15	<u>WG1115336</u>

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	8.08	<u>T8</u>	1	05/25/2018 10:07	<u>WG1115804</u>

Sample Narrative:

L996393-01 WG1115804: 8.08 at 21.9C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DNI at 170		1	05/27/2018 11:13	<u>WG1116347</u>

Tc

Ss

Cr

Sr

Qc

Gl

Al

Sc

ACCOUNT:

Hall Environmental Analysis Laboratory

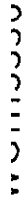
PROJECT:

SDG:

L996393

DATE/TIME:

05/30/18 11:18



QUALITY CONTROL SUMMARY

L996393-01

Method Blank (MB)

(MB) R3313021-1 05/25/18 08:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Cyanide	U		0.0390	0.250

L996171-02 Original Sample (OS) • Duplicate (DUP)

(OS) L996171-02 05/25/18 09:11 • (DUP) R3313021-5 05/25/18 09:12

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	0.000	1	0.000		20

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

(LCS) R3313021-2 05/25/18 08:46 • (LCSD) R3313021-3 05/25/18 08:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	2.50	2.43	2.47	97.3	98.7	50.0-150			1.36	20

L996393-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L996393-01 05/25/18 09:13 • (MS) R3313021-6 05/25/18 09:14 • (MSD) R3313021-7 05/25/18 09:15

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	1.67	ND	1.30	1.24	78.0	74.1	1	75.0-125		Jo	5.04	20

ACCOUNT:

Hall Environmental Analysis Laboratory

PROJECT:

SDG:

L996393

DATE/TIME:

05/30/18 11:18

1	2	3	4	5	6	7	8	9
G	Tc	Ss	Cr	Sr	Qc	Gl	Al	Sc



QUALITY CONTROL SUMMARY

Wet Chemistry by Method 9034-9030B

ONE LAB. NATIONWIDE.

L996393-01

Method Blank (MB)

(MB) R3312979-1 05/25/18 02:15

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Sulfide	U		7.63	25.0

L995509-02 Original Sample (OS) • Duplicate (DUP)

(OS) L995509-02 05/25/18 02:15 • (DUP) R3312979-4 05/25/18 02:15

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Sulfide	ND	ND	1	0.000	J	20

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

(LCS) R3312979-2 05/25/18 02:15 • (LCSD) R3312979-3 05/25/18 02:15

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Reactive Sulfide	100	72.6	78.7	72.6	78.7	70.0-130			8.00	20

ACCOUNT:

Hall Environmental Analysis Laboratory

PROJECT:

SDG:

L996393

DATE/TIME:

05/30/18 11:18

L996323-03 Original Sample (OS) • Duplicate (DUP)
(OS) L996323-03 05/25/18 10:07 • (DUP) R3313049-3 05/25/18 10:07

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Corrosivity by pH	SU 11.3	SU 11.3	1	% 0.0887	%	1

Sample Narrative:
OS: 11.28 at 21.8C
DUP: 11.27 at 22.1C

L996692-04 Original Sample (OS) • Duplicate (DUP)
(OS) L996692-04 05/25/18 10:07 • (DUP) R3313049-4 05/25/18 10:07

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Corrosivity by pH	SU 5.59	SU 5.56	1	% 0.538	%	1

Sample Narrative:
OS: 5.59 at 21.4C
DUP: 5.56 at 21.4C

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)
(LCS) R3313049-1 05/25/18 10:07 • (LCSD) R3313049-2 05/25/18 10:07

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Corrosivity by pH	SU 10.0	SU 9.99	SU 10.0	% 99.9	% 100	% 99.0-101	% 0.200	% 0.200	% 1	% 1

Sample Narrative:
LCS: 9.99 at 19.9C
LCSD: 10.01 at 19.9C

L996393-01 Original Sample (OS) • Duplicate (DUP)

(OS) L996393-01 05/27/18 11:13 • (DUP) R3313317-3 05/27/18 11:13

Analyte	Original Result		DUP Result		DUP RPD		DUP Qualifier		DUP RPD Limits	
	Deg. F	DNI at 170	Deg. F	DNI at 170	%		%		%	
Ignitability	82.0	82.8	82.0	82.8	0.000	1	0.000		10	

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

(LCS) R3313317-1 05/27/18 11:13 • (LCSD) R3313317-2 05/27/18 11:13

Analyte	Spike Amount		LCS Result		LCSD Result		LCS Rec.		LCSD Rec.		Rec. Limits		LCS Qualifier		LCSD Qualifier		RPD		RPD Limits	
	Deg. F	DNI at 170	Deg. F	DNI at 170	Deg. F	DNI at 170	%		%		%		%		%		%		%	
Ignitability	82.0	82.8	82.0	82.8	82.8	82.8	101		101		96.0-104		101		0.000		0.000		10	



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.



QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1805C15

12-Jun-18

Client: Western Refining Southwest, Inc.

Project: Slop line Waste Characterization

Sample ID mb-38311	SampType: MBLK		TestCode: Volatiles by 8260B/1311							
Client ID: PBS	Batch ID: 38311		RunNo: 51554							
Prep Date: 5/24/2018	Analysis Date: 5/26/2018		SeqNo: 1680965		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Hexachlorobutadiene	ND	0.50								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.21		0.2000		104	70	130			
Surr: 4-Bromofluorobenzene	0.23		0.2000		113	70	130			
Surr: Dibromofluoromethane	0.22		0.2000		111	70	130			
Surr: Toluene-d8	0.19		0.2000		95.2	70	130			

Sample ID lcs-38311	SampType: LCS		TestCode: Volatiles by 8260B/1311							
Client ID: LCSS	Batch ID: 38311		RunNo: 51554							
Prep Date: 5/24/2018	Analysis Date: 5/26/2018		SeqNo: 1680966		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.46	0.30	0.4000	0	114	70	130			
Chlorobenzene	0.41	0.30	0.4000	0	104	70	130			
1,1-Dichloroethene	0.49	0.30	0.4000	0	121	70	130			
Trichloroethene (TCE)	0.45	0.30	0.4000	0	112	70	130			
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		98.4	70	130			
Surr: 4-Bromofluorobenzene	0.22		0.2000		110	70	130			
Surr: Dibromofluoromethane	0.21		0.2000		104	70	130			
Surr: Toluene-d8	0.19		0.2000		97.4	70	130			

Sample ID 1805c15-001ams	SampType: MS		TestCode: Volatiles by 8260B/1311							
Client ID: Impacted Soil	Batch ID: 38311		RunNo: 51554							
Prep Date: 5/24/2018	Analysis Date: 5/26/2018		SeqNo: 1680968		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.44	0.30	0.3997	0	110	70	130			
Chlorobenzene	0.41	0.30	0.3997	0	102	70	130			
1,1-Dichloroethene	0.45	0.30	0.3997	0	112	70	130			
Trichloroethene (TCE)	0.44	0.30	0.3997	0	109	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 Quantitative 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#: 1805C15

12-Jun-18

Client: Western Refining Southwest, Inc.

Project: Slop line Waste Characterization

Sample ID	1805c15-001ams	SampType: MS		TestCode: Volatiles by 8260B/1311						
Client ID:	Impacted Soil	Batch ID: 38311		RunNo: 51554						
Prep Date:	5/24/2018	Analysis Date: 5/26/2018		SeqNo: 1680968		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.20		0.1998		97.6	70	130			
Surr: 4-Bromofluorobenzene	0.22		0.1998		109	70	130			
Surr: Dibromofluoromethane	0.21		0.1998		104	70	130			
Surr: Toluene-d8	0.19		0.1998		95.9	70	130			

Sample ID	1805c15-001amsd	SampType: MSD		TestCode: Volatiles by 8260B/1311						
Client ID:	Impacted Soil	Batch ID: 38311		RunNo: 51554						
Prep Date:	5/24/2018	Analysis Date: 5/26/2018		SeqNo: 1680969		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.43	0.30	0.3997	0	107	70	130	2.26	20	
Chlorobenzene	0.40	0.30	0.3997	0	101	70	130	0.954	20	
1,1-Dichloroethene	0.44	0.30	0.3997	0	110	70	130	2.15	20	
Trichloroethene (TCE)	0.42	0.30	0.3997	0	104	70	130	4.47	20	
Surr: 1,2-Dichloroethane-d4	0.19		0.1998		96.5	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.21		0.1998		107	70	130	0	0	
Surr: Dibromofluoromethane	0.20		0.1998		100	70	130	0	0	
Surr: Toluene-d8	0.19		0.1998		95.7	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 Quantitative 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#: 1805C15

12-Jun-18

Client: Western Refining Southwest, Inc.

Project: Slop line Waste Characterization

Sample ID	1805c15-001ams		SampType: MS		TestCode: EPA Method 8270C TCLP					
Client ID:	Impacted Soil		Batch ID: 38328		RunNo: 51800					
Prep Date:	5/25/2018		Analysis Date: 6/7/2018		SeqNo: 1691742		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.073	0.0010	0.1000	0	73.1	43.1	114			
3+4-Methylphenol	0.16	0.0010	0.2000	0	82.0	37.8	128			
2,4-Dinitrotoluene	0.083	0.0010	0.1000	0	83.0	36.5	125			
Hexachlorobenzene	0.078	0.0010	0.1000	0	77.9	41.4	108			
Hexachlorobutadiene	0.063	0.0010	0.1000	0	63.5	30.4	101			
Hexachloroethane	0.059	0.0010	0.1000	0	59.3	37.3	115			
Nitrobenzene	0.084	0.0010	0.1000	0	84.3	40.2	132			
Pentachlorophenol	0.072	0.0010	0.1000	0	71.8	8.72	103			
Pyridine	0.050	0.0010	0.1000	0	50.5	9.36	106			
2,4,5-Trichlorophenol	0.089	0.0010	0.1000	0	88.6	16.5	123			
2,4,6-Trichlorophenol	0.093	0.0010	0.1000	0	93.3	11.3	117			
Cresols, Total	0.24	0.0010	0.3000	0	79.0	23.2	151			
Surr: 2-Fluorophenol	0.12		0.2000		58.4	22.1	97.5			
Surr: Phenol-d5	0.094		0.2000		47.0	15	82.7			
Surr: 2,4,6-Tribromophenol	0.18		0.2000		91.1	39	129			
Surr: Nitrobenzene-d5	0.082		0.1000		82.1	44.6	120			
Surr: 2-Fluorobiphenyl	0.092		0.1000		91.6	38.3	115			
Surr: 4-Terphenyl-d14	0.082		0.1000		81.5	29.6	79.7			S

Sample ID	1805c15-001amsd		SampType: MSD		TestCode: EPA Method 8270C TCLP					
Client ID:	Impacted Soil		Batch ID: 38328		RunNo: 51800					
Prep Date:	5/25/2018		Analysis Date: 6/7/2018		SeqNo: 1691743		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.064	0.0010	0.1000	0	64.1	43.1	114	13.1	28.4	
3+4-Methylphenol	0.14	0.0010	0.2000	0	70.3	37.8	128	15.4	29.4	
2,4-Dinitrotoluene	0.072	0.0010	0.1000	0	71.6	36.5	125	14.7	24.7	
Hexachlorobenzene	0.077	0.0010	0.1000	0	77.3	41.4	108	0.799	20	
Hexachlorobutadiene	0.064	0.0010	0.1000	0	64.0	30.4	101	0.879	29	
Hexachloroethane	0.059	0.0010	0.1000	0	59.4	37.3	115	0.303	25.2	
Nitrobenzene	0.080	0.0010	0.1000	0	79.7	40.2	132	5.56	26.9	
Pentachlorophenol	0.070	0.0010	0.1000	0	70.5	8.72	103	1.83	59.2	
Pyridine	0.050	0.0010	0.1000	0	50.2	9.36	106	0.517	48	
2,4,5-Trichlorophenol	0.075	0.0010	0.1000	0	75.4	16.5	123	16.0	70.8	
2,4,6-Trichlorophenol	0.078	0.0010	0.1000	0	77.5	11.3	117	18.5	78	
Cresols, Total	0.20	0.0010	0.3000	0	68.2	23.2	151	14.7	30.8	
Surr: 2-Fluorophenol	0.11		0.2000		53.6	22.1	97.5	0	0	
Surr: Phenol-d5	0.086		0.2000		42.8	15	82.7	0	0	
Surr: 2,4,6-Tribromophenol	0.18		0.2000		90.2	39	129	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 Quantitative 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#: 1805C15

12-Jun-18

Client: Western Refining Southwest, Inc.

Project: Slop line Waste Characterization

Sample ID	1805c15-001amsd		SampType:	MSD		TestCode:	EPA Method 8270C TCLP			
Client ID:	Impacted Soil		Batch ID:	38328		RunNo:	51800			
Prep Date:	5/25/2018		Analysis Date:	6/7/2018		SeqNo:	1691743		Units: mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.078		0.1000		78.1	44.6	120	0	0	
Surr: 2-Fluorobiphenyl	0.086		0.1000		86.3	38.3	115	0	0	
Surr: 4-Terphenyl-d14	0.079		0.1000		79.4	29.6	79.7	0	0	

Sample ID	lcs-38328		SampType:	LCS		TestCode:	EPA Method 8270C TCLP			
Client ID:	LCSS		Batch ID:	38328		RunNo:	51800			
Prep Date:	5/25/2018		Analysis Date:	6/7/2018		SeqNo:	1691744		Units: mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.074	0.0010	0.1000	0	73.8	47.8	99.2			
3+4-Methylphenol	0.17	0.0010	0.2000	0	82.8	41.5	118			
2,4-Dinitrotoluene	0.10	0.0010	0.1000	0	104	44.4	81			S
Hexachlorobenzene	0.091	0.0010	0.1000	0	91.0	49.5	91.6			
Hexachlorobutadiene	0.072	0.0010	0.1000	0	72.2	38.6	93			
Hexachloroethane	0.063	0.0010	0.1000	0	63.3	39.4	79.9			
Nitrobenzene	0.090	0.0010	0.1000	0	89.6	47.4	96.2			
Pentachlorophenol	0.084	0.0010	0.1000	0	83.7	39.4	79.9			S
Pyridine	0.030	0.0010	0.1000	0	29.9	15	79.9			
2,4,5-Trichlorophenol	0.096	0.0010	0.1000	0	96.0	47.4	118			
2,4,6-Trichlorophenol	0.10	0.0010	0.1000	0	99.7	47.4	101			
Cresols, Total	0.24	0.0010	0.3000	0	79.8	44.1	111			
Surr: 2-Fluorophenol	0.11		0.2000		55.1	22.1	97.5			
Surr: Phenol-d5	0.089		0.2000		44.3	15	82.7			
Surr: 2,4,6-Tribromophenol	0.18		0.2000		89.2	39	129			
Surr: Nitrobenzene-d5	0.078		0.1000		78.2	44.6	120			
Surr: 2-Fluorobiphenyl	0.087		0.1000		87.4	38.3	115			
Surr: 4-Terphenyl-d14	0.086		0.1000		86.0	29.6	79.7			S

Sample ID	mb-38328		SampType:	MBLK		TestCode:	EPA Method 8270C TCLP			
Client ID:	PBS		Batch ID:	38328		RunNo:	51800			
Prep Date:	5/25/2018		Analysis Date:	6/7/2018		SeqNo:	1691745		Units: mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
Phenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								

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 Quantitative 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#: 1805C15

12-Jun-18

Client: Western Refining Southwest, Inc.

Project: Slop line Waste Characterization

Sample ID	mb-38328	SampType: MBLK			TestCode: EPA Method 8270C TCLP					
Client ID:	PBS	Batch ID: 38328			RunNo: 51800					
Prep Date:	5/25/2018	Analysis Date: 6/7/2018			SeqNo: 1691745		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.12		0.2000		59.6	22.1	97.5			
Surr: Phenol-d5	0.093		0.2000		46.5	15	82.7			
Surr: 2,4,6-Tribromophenol	0.18		0.2000		92.0	39	129			
Surr: Nitrobenzene-d5	0.084		0.1000		84.2	44.6	120			
Surr: 2-Fluorobiphenyl	0.071		0.1000		70.6	38.3	115			
Surr: 4-Terphenyl-d14	0.087		0.1000		86.9	29.6	79.7			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 Quantitative 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#: 1805C15

12-Jun-18

Client: Western Refining Southwest, Inc.

Project: Slop line Waste Characterization

Sample ID	MB-38334		SampType: MBLK		TestCode: MERCURY, TCLP					
Client ID:	PBW		Batch ID: 38334		RunNo: 51537					
Prep Date:	5/25/2018		Analysis Date: 5/25/2018		SeqNo: 1679805		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercurv	ND	0.020								

Sample ID	LCS-38334			SampType:	LCS		TestCode:	MERCURY, TCLP			
Client ID:	LCSW			Batch ID:	38334		RunNo:	51537			
Prep Date:	5/25/2018			Analysis Date:	5/25/2018		SeqNo:	1679806		Units:	mg/L
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	ND	0.020	0.005000	0	99.4	80	120				

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative 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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1805C15

12-Jun-18

Client: Western Refining Southwest, Inc.

Project: Slop line Waste Characterization

Sample ID	MB-38337		SampType: MBLK		TestCode: EPA Method 6010B: TCLP Metals					
Client ID:	PBW		Batch ID: 38337		RunNo: 51543					
Prep Date:	5/25/2018		Analysis Date: 5/27/2018		SeqNo: 1680127		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								

Sample ID	LCS-38337		SampType: LCS		TestCode: EPA Method 6010B: TCLP Metals					
Client ID:	LCSW		Batch ID: 38337		RunNo: 51543					
Prep Date:	5/25/2018		Analysis Date: 5/27/2018		SeqNo: 1680128		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	100	0.5000	0	104	80	120			
Cadmium	ND	1.0	0.5000	0	111	80	120			
Chromium	ND	5.0	0.5000	0	103	80	120			

Sample ID	MB-38337	SampType: MBLK			TestCode: EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID: 38337			RunNo: 51543					
Prep Date:	5/25/2018	Analysis Date: 5/27/2018			SeqNo: 1680150		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								

Sample ID	LCS-38337			SampType:	LCS		TestCode:	EPA Method 6010B: TCLP Metals			
Client ID:	LCSW			Batch ID:	38337		RunNo:	51543			
Prep Date:	5/25/2018			Analysis Date:	5/27/2018		SeqNo:	1680151		Units:	mg/L
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic	ND	5.0	0.5000	0	113	80	120				
Lead	ND	5.0	0.5000	0	101	80	120				
Selenium	ND	1.0	0.5000	0	116	80	120				

Sample ID	MB-38337		SampType:	MBLK		TestCode:	EPA Method 6010B: TCLP Metals				
Client ID:	PBW		Batch ID:	38337		RunNo:	51543				
Prep Date:	5/25/2018		Analysis Date:	5/27/2018		SeqNo:	1680171		Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Silver	ND	5.0									

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 Quantitative 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#: 1805C15

12-Jun-18

Client: Western Refining Southwest, Inc.

Project: Slop line Waste Characterization

Sample ID	LCS-38337		SampType: LCS		TestCode: EPA Method 6010B: TCLP Metals					
Client ID:	LCSW		Batch ID: 38337		RunNo: 51543					
Prep Date:	5/25/2018		Analysis Date: 5/27/2018		SeqNo: 1680172		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	ND	5.0	0.1000	0	119	80	120			

Sample ID	MB-38337		SampType: MBLK		TestCode: EPA Method 6010B: TCLP Metals					
Client ID:	PBW		Batch ID: 38337		RunNo: 51599					
Prep Date:	5/25/2018		Analysis Date: 5/30/2018		SeqNo: 1682185		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	ND	5.0								

Sample ID	LCS-38337		SampType: LCS		TestCode: EPA Method 6010B: TCLP Metals					
Client ID:	LCSW		Batch ID: 38337		RunNo: 51599					
Prep Date:	5/25/2018		Analysis Date: 5/30/2018		SeqNo: 1682187		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	ND	5.0	0.1000	0	122	80	120			S

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative 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
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: 1805C15

RcptNo: 1

Received By: Anne Thorne 5/23/2018 7:00:00 AM

Completed By: Anne Thorne 5/23/2018 8:11:07 AM

Reviewed By:

Anne Thorne - 05/23/18

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 $>0^{\circ}\text{C}$ 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 $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client: Western Refining

Mailing Address: 111 CR4990

Bloomfield, NM 87413

Phone #:

email or Fax#:

QA/QC Package:

☒ Standard ☐ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other

☐ EDD (Type)

Project Manager:

Kelly Robinson

Sampler:

Matt Krakow

On Ice: ☒ Yes ☐ No

Sample Temperature: 16

Container Type and #

2-8oz Jar Cold

Preservative Type

1805C15

HEAL No.

201

Date

5-22-18

Time

10:00

Matrix

Impacted soil

Sample Request ID

Impacted soil

Relinquished by:

Matt Krakow

Date:

5/22/18

Time:

1545

Relinquished by:

Matt Krakow

Date:

5/22/18

Time:

1820

Turn-Around Time:

☐ Standard ☒ Rush

ASAP

Project Name:

Slop line - Waste Characterization

Project #:

16

Analysis Request

BTX + MTBE + TMB's (8021)

BTX + MTBE + TMB's (8021)

TPH 8015B (GRO / DRO / MRO)

TPH (Method 418.1)

EDB (Method 504.1)

PAH's (8310 or 8270 SIMS)

RCRA 8 Metals TCLP

Anions (F, Cl, NO₃, NO₂, PO₄, SO₄)

8081 Pesticides / 8082 PCB's

8260B (VOA) TCLP

8270 (Semi-VOA) TCLP

X RCI

BTX + MTBE + TMB's (8021)

TPH 8015B (GRO / DRO / MRO)

TPH (Method 418.1)

EDB (Method 504.1)

PAH's (8310 or 8270 SIMS)

RCRA 8 Metals TCLP

Anions (F, Cl, NO₃, NO₂, PO₄, SO₄)

8081 Pesticides / 8082 PCB's

8260B (VOA) TCLP

8270 (Semi-VOA) TCLP

X RCI

BTX + MTBE + TMB's (8021)

TPH 8015B (GRO / DRO / MRO)

TPH (Method 418.1)

EDB (Method 504.1)

PAH's (8310 or 8270 SIMS)

RCRA 8 Metals TCLP

Anions (F, Cl, NO₃, NO₂, PO₄, SO₄)

8081 Pesticides / 8082 PCB's

8260B (VOA) TCLP

8270 (Semi-VOA) TCLP

X RCI

BTX + MTBE + TMB's (8021)

TPH 8015B (GRO / DRO / MRO)

TPH (Method 418.1)

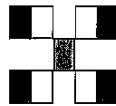
EDB (Method 504.1)

PAH's (8310 or 8270 SIMS)

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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



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 06, 2018

Kelly Robinson

Western Refining Southwest, Inc.

#50 CR 4990

Bloomfield, NM 87413

TEL: (505) 632-4135

FAX (505) 632-3911

RE: Slop Line Area

OrderNo.: 1806129

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 3 sample(s) on 6/5/2018 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,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1806129**

Date Reported: **6/6/2018**

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: North Side Wall

Project: Slop Line Area

Collection Date: 6/4/2018 9:15:00 AM

Lab ID: 1806129-001

Matrix: SOIL

Received Date: 6/5/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: IRM
Diesel Range Organics (DRO)	16000	500		mg/Kg	50	6/5/2018 11:47:53 AM	38483
Motor Oil Range Organics (MRO)	3800	2500		mg/Kg	50	6/5/2018 11:47:53 AM	38483
Surr: DNOP	0	70-130	S	%Rec	50	6/5/2018 11:47:53 AM	38483
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	2500	84		mg/Kg	20	6/5/2018 11:11:04 AM	B51752
Surr: BFB	461	15-316	S	%Rec	20	6/5/2018 11:11:04 AM	B51752
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	2.8	0.42		mg/Kg	20	6/5/2018 11:11:04 AM	D51752
Toluene	67	0.84		mg/Kg	20	6/5/2018 11:11:04 AM	D51752
Ethylbenzene	32	0.84		mg/Kg	20	6/5/2018 11:11:04 AM	D51752
Xylenes, Total	210	1.7		mg/Kg	20	6/5/2018 11:11:04 AM	D51752
Surr: 4-Bromofluorobenzene	143	80-120	S	%Rec	20	6/5/2018 11:11:04 AM	D51752

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	Page 1 of 6
	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 Quantitative 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.

Analytical Report

Lab Order **1806129**

Date Reported: **6/6/2018**

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: Bottom Floor

Project: Slop Line Area

Collection Date: 6/4/2018 9:20:00 AM

Lab ID: 1806129-002

Matrix: SOIL

Received Date: 6/5/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: IRM
Diesel Range Organics (DRO)	3100	50		mg/Kg	5	6/5/2018 1:11:23 PM	38483
Motor Oil Range Organics (MRO)	ND	250		mg/Kg	5	6/5/2018 1:11:23 PM	38483
Surr: DNOP	106	70-130		%Rec	5	6/5/2018 1:11:23 PM	38483
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	3700	210		mg/Kg	50	6/5/2018 11:34:24 AM	B51752
Surr: BFB	297	15-316		%Rec	50	6/5/2018 11:34:24 AM	B51752
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	2.4	1.1		mg/Kg	50	6/5/2018 11:34:24 AM	D51752
Toluene	93	2.1		mg/Kg	50	6/5/2018 11:34:24 AM	D51752
Ethylbenzene	64	2.1		mg/Kg	50	6/5/2018 11:34:24 AM	D51752
Xylenes, Total	420	4.3		mg/Kg	50	6/5/2018 11:34:24 AM	D51752
Surr: 4-Bromofluorobenzene	125	80-120	S	%Rec	50	6/5/2018 11:34:24 AM	D51752

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 Quantitative 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.

Analytical Report

Lab Order **1806129**

Date Reported: **6/6/2018**

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: West Side Wall

Project: Slop Line Area

Collection Date: 6/4/2018 9:25:00 AM

Lab ID: 1806129-003

Matrix: SOIL

Received Date: 6/5/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: IRM
Diesel Range Organics (DRO)	25000	500		mg/Kg	50	6/5/2018 11:23:47 AM	38483
Motor Oil Range Organics (MRO)	4100	2500		mg/Kg	50	6/5/2018 11:23:47 AM	38483
Surr: DNOP	0	70-130	S	%Rec	50	6/5/2018 11:23:47 AM	38483
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	8900	830		mg/Kg	200	6/5/2018 3:52:33 PM	B51752
Surr: BFB	223	15-316		%Rec	200	6/5/2018 3:52:33 PM	B51752
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	15	0.21		mg/Kg	10	6/5/2018 11:57:57 AM	D51752
Toluene	330	8.3		mg/Kg	200	6/5/2018 3:52:33 PM	D51752
Ethylbenzene	130	8.3		mg/Kg	200	6/5/2018 3:52:33 PM	D51752
Xylenes, Total	760	17		mg/Kg	200	6/5/2018 3:52:33 PM	D51752
Surr: 4-Bromofluorobenzene	121	80-120	S	%Rec	200	6/5/2018 3:52:33 PM	D51752

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 Quantitative 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#: 1806129

06-Jun-18

Client: Western Refining Southwest, Inc.

Project: Slop Line Area

Sample ID	MB-38483	SampType:	MBLK		TestCode:	EPA Method 8015M/D: Diesel Range Organics				
Client ID:	PBS	Batch ID:	38483		RunNo:	51727				
Prep Date:	6/5/2018	Analysis Date:	6/5/2018		SeqNo:	1688412	Units:	mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		107	70	130			

Sample ID	LCS-38483		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 38483		RunNo: 51727					
Prep Date:	6/5/2018		Analysis Date: 6/5/2018		SeqNo: 1688626		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	50.00	0	100	70	130			
Surr: DNOP	4.9		5.000		97.9	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative 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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1806129

06-Jun-18

Client: Western Refining Southwest, Inc.

Project: Slop Line Area

Sample ID	RB	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID:	B51752	RunNo:	51752					
Prep Date:		Analysis Date:	6/5/2018	SeqNo:	1689310	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	910		1000		91.1	15	316			

Sample ID	2.5UG GRO LCS	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSS	Batch ID:	B51752	RunNo:	51752					
Prep Date:		Analysis Date:	6/5/2018	SeqNo:	1689311	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	28	5.0	25.00	0	110	75.9	131			
Surr: BFB	1000		1000		102	15	316			

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 Quantitative 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#: 1806129

06-Jun-18

Client: Western Refining Southwest, Inc.

Project: Slop Line Area

Sample ID	RB	SampType:	MBLK	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	PBS	Batch ID:	D51752	RunNo:	51752					
Prep Date:		Analysis Date:	6/5/2018	SeqNo:	1689334	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.99		1.000		98.9	80	120			

Sample ID	100NG BTEX LCS	SampType:	LCS	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	LCSS	Batch ID:	D51752	RunNo:	51752					
Prep Date:		Analysis Date:	6/5/2018	SeqNo:	1689335	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.92	0.025	1.000	0	92.2	77.3	128			
Toluene	0.95	0.050	1.000	0	94.5	79.2	125			
Ethylbenzene	0.96	0.050	1.000	0	95.5	80.7	127			
Xylenes, Total	2.9	0.10	3.000	0	96.4	81.6	129			
Surr: 4-Bromofluorobenzene	1.0		1.000		104	80	120			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

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

Sample Log-In Check List

Client Name: Western Refining Southw

Work Order Number: 1806129

RcptNo: 1

Received By: Anne Thorne 6/5/2018 7:00:00 AM

Completed By: Anne Thorne 6/5/2018 8:15:03 AM

Reviewed By:

Labeled by: JMO 6/5/18
Ar 06/05/18




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? Yes ☒ No ☐

(Note discrepancies on chain of custody)

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? Yes ☒ No ☐

(If no, notify customer for authorization.)

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			

☐ Standard
Project Name:

SLOPE LINE AREA

Project #: 12622864

12622094

Project Manager:

Kelly Robinson

Sampler: K. Robins

Accreditation
☐ NELAP ☐ Other

Sampler:

On Ice: ☒ Yes ☐ No

Sample Temperature: 100

Container Type and #	Preservative Type	HEAL No.
406105110 New 4kt		1806129
402 Jar	None	201
402 Jar	↓	202
402 Jar	↓	203

Received by:

Remarks:

Belinquinished by:

Received by:

Date: _____ Time: _____

11/10/2017

2

4/1/50/90

if necessary, samples submitted to H&E 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.

☐ Standard
Project Name:

SLOPE LINE AREA

Project #: 12622864

12622094

Project Manager:

Kelly Robinson

Sampler: K. Robins

Accreditation
☐ NELAP ☐ Other

Sampler:

On Ice: ☒ Yes ☐ No

Sample Temperature: _____

Container Type and #	Preservative Type	HEAL No.
406105110 New 4kt		1806129
402 Jar	None	201
402 Jar	↓	202
402 Jar	↓	203

Received by:

Remarks:

Belinquinished by:

Received by:

Date : Time :

11/10/2018

2

4/1/50/90

if necessary, samples submitted to H&E 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.

01

SPECIAL WASTE MANIFEST		Manifest Document No.		Page 1 of	
Generator's Name Western Refining Terminal, LLC		Generator's Address 50 CR 4990 Bloomfield, NM 87413		Generator's Telephone No. 505-632-4169	
Origin of Special Waste (Project or Spill Location): 50 CR 4990 Bloomfield NM, 87413					
Transporter #1 Company Name Western Refining Terminals, LLC		Address 50 CR 4990 Bloomfield, NM 87413		Telephone No. 505-632-4169	
Transporter #2 Company Name		Address		Telephone No.	
Destination Facility Name/Site Address Envirotech #43 Rd. 7175 Bloomfield, NM 87413		Facility ID (Permit) Number NM-01-0011		Telephone No. 505-947-6140	
Type and Proper Name of Special Waste		Container(s) No.	Type	Total Quantity	Unit Wt/Vol
Hydrocarbon Contaminated Soil		528	50	18	Yrds
Additional Descriptions for Special Waste Listed Above:					
Special Handling Instructions:					
GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described above by type and proper name of the special waste, and that such waste has been managed, packaged, containerized and labeled in accordance with the requirements of 20.9.8 NMAC (Special Waste Requirements) in addition to any other applicable federal, state or local regulations.					
Printed/Typed Name: DALE Roberts		Signature: <i>Dale Roberts</i>		Date: 6-12-18	
Transporter 1 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name: William F. Wilson		Signature: <i>William F. Wilson</i>		Date: 6-12-18	
Transporter 2 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name:		Signature:		Date:	
Discrepancy Indication Space: 1st Load 22 Yds GR					
Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space.					
Printed/Typed Name: Gary Robinson		Signature: <i>Gary Robinson</i>		Date: 6-12-18	

GENERATOR

TRANSPORTER

FACILITY

03

SPECIAL WASTE MANIFEST		Manifest Document No.		Page 1 of	
Generator's Name Western Refining Terminal, LLC		Generator's Address 50 CR 4990 Bloomfield, NM 87413		Generator's Telephone No. 505-632-4169	
Origin of Special Waste (Project or Spill Location): 50 CR 4990 Bloomfield NM, 87413					
Transporter #1 Company Name Western Refining Terminals, LLC		Address 50 CR 4990 Bloomfield, NM 87413		Telephone No. 505-632-4169	
Transporter #2 Company Name		Address		Telephone No.	
Destination Facility Name/Site Address Envirotech #43 Rd. 7175 Bloomfield, NM 87413		Facility ID (Permit) Number NM-01-0011		Telephone No. 505-947-6140	
Type and Proper Name of Special Waste		Container(s) No.	Type	Total Quantity	Unit Wt/Vol
Hydro Carbon Contaminated Soil		1	BD	25	yds
Additional Descriptions for Special Waste Listed Above:					
Special Handling Instructions:					
GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described above by type and proper name of the special waste, and that such waste has been managed, packaged, containerized and labeled in accordance with the requirements of 20.9.8 NMAC (Special Waste Requirements) in addition to any other applicable federal, state or local regulations.					
Printed/Typed Name: Dale Roberts		Signature: Dale Roberts		Date: 6-12-18	
Transporter 1 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name: Jonnie Valpando		Signature: Jonnie Valpando		Date: 6-12-18	
Transporter 2 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name:		Signature:		Date:	
Discrepancy Indication Space:					
Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space.					
Printed/Typed Name: Gary Robinson		Signature: Gary Robinson		Date:	

GENERATOR

TRANSPORTER

FACILITY

SPECIAL WASTE MANIFEST		Manifest Document No.		Page 1 of	
Generator's Name Western Refining Terminal, LLC		Generator's Address 50 CR 4990 Bloomfield, NM 87413		Generator's Telephone No. 505-632-4169	
Origin of Special Waste (Project or Spill Location): 50 CR 4990 Bloomfield NM, 87413					
Transporter #1 Company Name Western Refining Terminals, LLC		Address 50 CR 4990 Bloomfield, NM 87413		Telephone No. 505-632-4169	
Transporter #2 Company Name		Address		Telephone No.	
Destination Facility Name/Site Address Envirotech #43 Rd. 7175 Bloomfield, NM 87413		Facility ID (Permit) Number NM-01-0011		Telephone No. 505-947-6140	
Type and Proper Name of Special Waste				Container(s) No.	Unit Wt/Vol
Hydro Carbon Contaminated Soil				528 ED	20 YRS GR
Additional Descriptions for Special Waste Listed Above:					
Special Handling Instructions:					
GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described above by type and proper name of the special waste, and that such waste has been managed, packaged, containerized and labeled in accordance with the requirements of 20.9.8 NMAC (Special Waste Requirements) in addition to any other applicable federal, state or local regulations.					
Printed/Typed Name: Dale Roberts		Signature: Dale Roberts		Date: 6-12-18	
Transporter 1 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name: William J. Wilson		Signature: [Signature]		Date: 6-12-18	
Transporter 2 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name:		Signature:		Date:	
Discrepancy Indication Space: 22 yds GR Load 4					
Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space.					
Printed/Typed Name: Gary Robinson		Signature: Gary Robinson		Date: 6-12-18	

GENERATOR

TRANSPORTER

FACILITY

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SPECIAL WASTE MANIFEST		Manifest Document No.		Page 1 of	
Generator's Name Western Refining Terminal, LLC		Generator's Address 50 CR 4990 Bloomfield, NM 87413		Generator's Telephone No. 505-632-4169	
Origin of Special Waste (Project or Spill Location): 50 CR 4990 Bloomfield NM, 87413					
Transporter #1 Company Name Western Refining Terminals, LLC		Address 50 CR 4990 Bloomfield, NM 87413		Telephone No. 505-632-4169	
Transporter #2 Company Name		Address		Telephone No.	
Destination Facility Name/Site Address Envirotech #43 Rd. 7175 Bloomfield, NM 87413		Facility ID (Permit) Number NM-01-0011		Telephone No. 505-947-6140	
Type and Proper Name of Special Waste		Container(s) No.	Type	Total Quantity	Unit Wt/Vol
Hydro Carbon Contaminated Soil		1	DP	10	yds
Additional Descriptions for Special Waste Listed Above:					
Special Handling Instructions:					
GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described above by type and proper name of the special waste, and that such waste has been managed, packaged, containerized and labeled in accordance with the requirements of 20.9.8 NMAC (Special Waste Requirements) in addition to any other applicable federal, state or local regulations.					
Printed/Typed Name: Dale Roberts		Signature: Dale Roberts		Date: 6-12-18	
Transporter 1 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name: Dean Benally		Signature: D Benally		Date: 6/12/18	
Transporter 2 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name:		Signature:		Date:	
Discrepancy Indication Space: Load 5					
Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space.					
Printed/Typed Name: Gary Robinson		Signature: Gary Robinson		Date: 6-12-18	

GENERATOR

TRANSPORTER

FACILITY

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SPECIAL WASTE MANIFEST		Manifest Document No.		Page 1 of	
Generator's Name Western Refining Terminal, LLC		Generator's Address 50 CR 4990 Bloomfield, NM 87413		Generator's Telephone No. 505-632-4169	
Origin of Special Waste (Project or Spill Location): 50 CR 4990 Bloomfield NM, 87413					
Transporter #1 Company Name Western Refining Terminals, LLC		Address 50 CR 4990 Bloomfield, NM 87413		Telephone No. 505-632-4169	
Transporter #2 Company Name		Address		Telephone No.	
Destination Facility Name/Site Address Envirotech #43 Rd. 7175 Bloomfield, NM 87413		Facility ID (Permit) Number NM-01-0011		Telephone No. 505-947-6140	
Type and Proper Name of Special Waste		Container(s) No.	Type	Total Quantity	Unit Wt/Vol
Contaminated Material from job site.		1	ED	25	YDS
Hydro Carbon Contaminated Soil					
Additional Descriptions for Special Waste Listed Above:					
Special Handling Instructions:					
GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described above by type and proper name of the special waste, and that such waste has been managed, packaged, containerized and labeled in accordance with the requirements of 20.9.8 NMAC (Special Waste Requirements) in addition to any other applicable federal, state or local regulations.					
Printed/Typed Name: DACE Roberts		Signature: [Signature]		Date: 6-12-18	
Transporter 1 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name: Jonnie Valpando		Signature: [Signature]		Date: 6-12-18	
Transporter 2 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name:		Signature:		Date: 6-12-18	
Discrepancy Indication Space: Load 6					
Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space.					
Printed/Typed Name: Gary Robinson		Signature: [Signature]		Date: 6-12-18	

GENERATOR

TRANSPORTER

FACILITY

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SPECIAL WASTE MANIFEST		Manifest Document No.		Page 1 of	
Generator's Name Western Refining Terminal, LLC		Generator's Address 50 CR 4990 Bloomfield, NM 87413		Generator's Telephone No. 505-632-4169	
Origin of Special Waste (Project or Spill Location): 50 CR 4990 Bloomfield NM, 87413					
Transporter #1 Company Name Western Refining Terminals, LLC		Address 50 CR 4990 Bloomfield, NM 87413		Telephone No. 505-632-4169	
Transporter #2 Company Name		Address		Telephone No.	
Destination Facility Name/Site Address Envirotech #43 Rd. 7175 Bloomfield, NM 87413		Facility ID (Permit) Number NM-01-0011		Telephone No. 505-947-6140	
Type and Proper Name of Special Waste				Container(s) No.	Unit Wt/Vol
Hydro Carbon Contaminated Soil				528 ED	20 yds
Additional Descriptions for Special Waste Listed Above:					
Special Handling Instructions:					
GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described above by type and proper name of the special waste, and that such waste has been managed, packaged, containerized and labeled in accordance with the requirements of 20.9.8 NMAC (Special Waste Requirements) in addition to any other applicable federal, state or local regulations.					
Printed/Typed Name: Dale Roberts		Signature: Dale Roberts		Date: 6-12-18	
Transporter 1 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name: Wilton T. Wilson		Signature: Wilton T. Wilson		Date: 6-12-18	
Transporter 2 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name:		Signature:		Date:	
Discrepancy Indication Space: 1000000 D.H. load 7					
Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space.					
Printed/Typed Name: Gary Robinson		Signature: Gary Robinson		Date: 6-12-18	

GENERATOR

TRANSPORTER

FACILITY

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SPECIAL WASTE MANIFEST		Manifest Document No.		Page 1 of	
Generator's Name Western Refining Terminal, LLC		Generator's Address 50 CR 4990 Bloomfield, NM 87413		Generator's Telephone No. 505-632-4169	
Origin of Special Waste (Project or Spill Location): 50 CR 4990 Bloomfield NM, 87413					
Transporter #1 Company Name Western Refining Terminals, LLC		Address 50 CR 4990 Bloomfield, NM 87413		Telephone No. 505-632-4169	
Transporter #2 Company Name		Address		Telephone No.	
Destination Facility Name/Site Address Envirotech #43 Rd. 7175 Bloomfield, NM 87413		Facility ID (Permit) Number NM-01-0011		Telephone No. 505-947-6140	
Type and Proper Name of Special Waste				Container(s) No.	Total Quantity
Hydrocarbon Contaminated Soil				1	10
Additional Descriptions for Special Waste Listed Above:					
Special Handling Instructions:					
GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described above by type and proper name of the special waste, and that such waste has been managed, packaged, containerized and labeled in accordance with the requirements of 20.9.8 NMAC (Special Waste Requirements) in addition to any other applicable federal, state or local regulations.					
Printed/Typed Name: Alice Roberts		Signature: Alice Roberts		Date: 6-12-18	
Transporter 1 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name: Dean Benally		Signature: D Ben		Date: 6/12/18	
Transporter 2 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name:		Signature:		Date:	
Discrepancy Indication Space: XXXXXX D.H. Load 8					
Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space.					
Printed/Typed Name: Gary Robinson		Signature: Gary Robinson		Date: 06-12-18	

GENERATOR

TRANSPORTER

FACILITY

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SPECIAL WASTE MANIFEST		Manifest Document No.		Page 1 of	
Generator's Name Western Refining Terminal, LLC		Generator's Address 50 CR 4990 Bloomfield, NM 87413		Generator's Telephone No. 505-632-4169	
Origin of Special Waste (Project or Spill Location): 50 CR 4990 Bloomfield NM, 87413					
Transporter #1 Company Name Western Refining Terminals, LLC		Address 50 CR 4990 Bloomfield, NM 87413		Telephone No. 505-632-4169	
Transporter #2 Company Name		Address		Telephone No.	
Destination Facility Name/Site Address Envirotech #43 Rd. 7175 Bloomfield, NM 87413		Facility ID (Permit) Number NM-01-0011		Telephone No. 505-947-6140	
Type and Proper Name of Special Waste		Container(s) No.	Type	Total Quantity	Unit Wt/Vol
Hydrocarbon Contaminated Soil		1	5	20	yds
Additional Descriptions for Special Waste Listed Above:					
Special Handling Instructions:					
GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described above by type and proper name of the special waste, and that such waste has been managed, packaged, containerized and labeled in accordance with the requirements of 20.9.8 NMAC (Special Waste Requirements) in addition to any other applicable federal, state or local regulations.					
Printed/Typed Name: Dale Roberts		Signature: Dale Roberts		Date: 6-12-18	
Transporter 1 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name: Jonie Valenzuela		Signature: Jonie Valenzuela		Date: 6-12-18	
Transporter 2 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name:		Signature:		Date:	
Discrepancy Indication Space: Load 9					
Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space.					
Printed/Typed Name: Gary Robinson		Signature: Gary Robinson		Date: 6-12-18	

GENERATOR

TRANSPORTER

FACILITY

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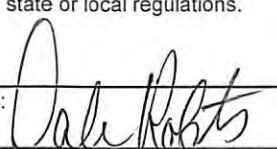
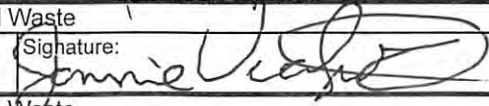
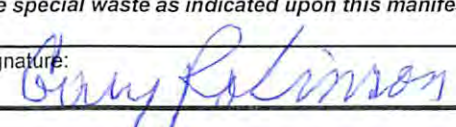
SPECIAL WASTE MANIFEST		Manifest Document No.		Page 1 of	
Generator's Name Western Refining Terminal, LLC		Generator's Address 50 CR 4990 Bloomfield, NM 87413		Generator's Telephone No. 505-632-4169	
Origin of Special Waste (Project or Spill Location): 50 CR 4990 Bloomfield NM, 87413					
Transporter #1 Company Name Western Refining Terminals, LLC		Address 50 CR 4990 Bloomfield, NM 87413		Telephone No. 505-632-4169	
Transporter #2 Company Name		Address		Telephone No.	
Destination Facility Name/Site Address Envirotech #43 Rd. 7175 Bloomfield, NM 87413		Facility ID (Permit) Number NM-01-0011		Telephone No. 505-947-6140	
Type and Proper Name of Special Waste		Container(s) No.	Type	Total Quantity	Unit Wt/Vol
Hydro Carbon Contaminated Soil		528	ED	20	yds
Additional Descriptions for Special Waste Listed Above:					
Special Handling Instructions:					
GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described above by type and proper name of the special waste, and that such waste has been managed, packaged, containerized and labeled in accordance with the requirements of 20.9.8 NMAC (Special Waste Requirements) in addition to any other applicable federal, state or local regulations.					
Printed/Typed Name: Dale Roberts		Signature: Dale Roberts		Date: 6-12-18	
Transporter 1 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name: William T. Wilson		Signature: [Signature]		Date: 6-12-18	
Transporter 2 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name:		Signature:		Date:	
Discrepancy Indication Space: Load 10					
Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space.					
Printed/Typed Name: Gary Robinson		Signature: Gary Robinson		Date: 6-12-18	

GENERATOR

TRANSPORTER

FACILITY

SPECIAL WASTE MANIFEST		Manifest Document No.		Page 1 of		
Generator's Name Western Refining Terminal, LLC		Generator's Address 50 CR 4990 Bloomfield, NM 87413		Generator's Telephone No. 505-632-4169		
Origin of Special Waste (Project or Spill Location): 50 CR 4990 Bloomfield NM, 87413						
Transporter #1 Company Name Western Refining Terminals, LLC		Address 50 CR 4990 Bloomfield, NM 87413		Telephone No. 505-632-4169		
Transporter #2 Company Name		Address		Telephone No.		
Destination Facility Name/Site Address Envirotech #43 Rd. 7175 Bloomfield, NM 87413		Facility ID (Permit) Number NM-01-0011		Telephone No. 505-947-6140		
GENERATOR	Type and Proper Name of Special Waste		Container(s) No.	Type	Total Quantity	Unit Wt/Vol
	Hydro Carbon Contaminated Soil		1	TO	10	yds GP
Additional Descriptions for Special Waste Listed Above:						
Special Handling Instructions:						
GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described above by type and proper name of the special waste, and that such waste has been managed, packaged, containerized and labeled in accordance with the requirements of 20.9.8 NMAC (Special Waste Requirements) in addition to any other applicable federal, state or local regulations.						
Printed/Typed Name: DACE Roberts		Signature: <i>Dace Roberts</i>		Date: 6-12-18		
TRANSPORTER	Transporter 1 Acknowledgement of Receipt of Special Waste					
	Printed/Typed Name: Dean Benally		Signature: <i>Dean Benally</i>		Date: 6/12/18	
	Transporter 2 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name:		Signature:		Date:		
FACILITY	Discrepancy Indication Space: load 11					
	Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space.					
	Printed/Typed Name: Gary Robinson		Signature: <i>Gary Robinson</i>		Date: 6-12-18	

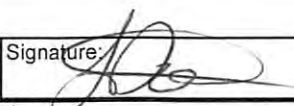
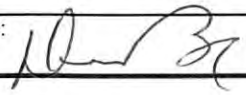
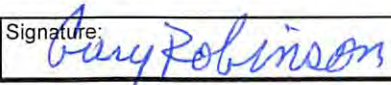
SPECIAL WASTE MANIFEST		Manifest Document No.		Page 1 of	
Generator's Name Western Refining Terminal, LLC		Generator's Address 50 CR 4990 Bloomfield, NM 87413		Generator's Telephone No. 505-632-4169	
Origin of Special Waste (Project or Spill Location): 50 CR 4990 Bloomfield NM, 87413					
Transporter #1 Company Name Western Refining Terminals, LLC		Address 50 CR 4990 Bloomfield, NM 87413		Telephone No. 505-632-4169	
Transporter #2 Company Name		Address		Telephone No.	
Destination Facility Name/Site Address Envirotech #43 Rd. 7175 Bloomfield, NM 87413		Facility ID (Permit) Number NM-01-0011		Telephone No. 505-947-6140	
Type and Proper Name of Special Waste		Container(s) No.		Total Quantity	Unit Wt/Vol
		Type			
Hydro Carbon Contaminated Soil		1		25	lbs
Additional Descriptions for Special Waste Listed Above:					
Special Handling Instructions:					
GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described above by type and proper name of the special waste, and that such waste has been managed, packaged, containerized and labeled in accordance with the requirements of 20.9.8 NMAC (Special Waste Requirements) in addition to any other applicable federal, state or local regulations.					
Printed/Typed Name: Dale Roberts		Signature: 		Date: 6-12-18	
Transporter 1 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name: Bonnie Valpando		Signature: 		Date: 6-12-18	
Transporter 2 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name:		Signature:		Date:	
Discrepancy Indication Space: Load 12					
Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space.					
Printed/Typed Name: Gary Robinson		Signature: 		Date: 6-12-18	

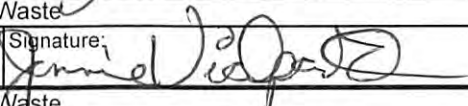
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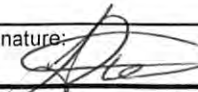
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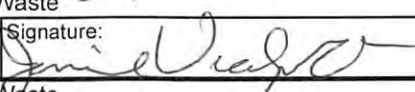
FACILITY

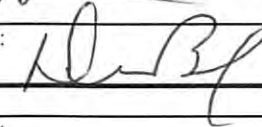
GENERATOR	SPECIAL WASTE MANIFEST		Manifest Document No.		Page 1 of	
	Generator's Name Western Refining Terminal, LLC		Generator's Address 50 CR 4990 Bloomfield, NM 87413		Generator's Telephone No. 505-632-4169	
	Origin of Special Waste (Project or Spill Location): 50 CR 4990 Bloomfield NM, 87413					
	Transporter #1 Company Name Western Refining Terminals, LLC		Address 50 CR 4990 Bloomfield, NM 87413		Telephone No. 505-632-4169	
	Transporter #2 Company Name		Address		Telephone No.	
	Destination Facility Name/Site Address Envirotech #43 Rd. 7175 Bloomfield, NM 87413		Facility ID (Permit) Number NM-01-0011		Telephone No. 505-947-6140	
	Type and Proper Name of Special Waste <i>Hydro Carbon Contaminated Soil</i>		Container(s) No.	Type	Total Quantity	Unit Wt/Vol
Additional Descriptions for Special Waste Listed Above:						
Special Handling Instructions:						
GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described above by type and proper name of the special waste, and that such waste has been managed, packaged, containerized and labeled in accordance with the requirements of 20.9.8 NMAC (Special Waste Requirements) in addition to any other applicable federal, state or local regulations.						
Printed/Typed Name: <i>Dale Roberts</i>		Signature: <i>Dale Roberts</i>		Date: <i>6-12-18</i>		
TRANSPORTER	Transporter 1 Acknowledgement of Receipt of Special Waste					
	Printed/Typed Name: <i>Dean Benally</i>		Signature: <i>D Benally</i>		Date: <i>6/12/18</i>	
	Transporter 2 Acknowledgement of Receipt of Special Waste					
FACILITY	Printed/Typed Name:		Signature:		Date:	
	Discrepancy Indication Space: <i>load 13</i>					
Facility Owner or Operator: <i>I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space.</i>						
Printed/Typed Name: <i>McC Chapman</i>		Signature: <i>[Signature]</i>		Date: <i>6-12-18</i>		

SPECIAL WASTE MANIFEST		Manifest Document No.		Page 1 of	
Generator's Name Western Refining Terminal, LLC		Generator's Address 50 CR 4990 Bloomfield, NM 87413		Generator's Telephone No. 505-632-4169	
Origin of Special Waste (Project or Spill Location): 50 CR 4990 Bloomfield NM, 87413					
Transporter #1 Company Name Western Refining Terminals, LLC		Address 50 CR 4990 Bloomfield, NM 87413		Telephone No. 505-632-4169	
Transporter #2 Company Name		Address		Telephone No.	
Destination Facility Name/Site Address Envirotech #43 Rd. 7175 Bloomfield, NM 87413		Facility ID (Permit) Number NM-01-0011		Telephone No. 505-947-6140	
Type and Proper Name of Special Waste		Container(s) No.		Total Quantity	Unit Wt/Vol
		Type			
Crude Impacted Dirt		1 DP		10	yds
Additional Descriptions for Special Waste Listed Above:					
Special Handling Instructions:					
GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described above by type and proper name of the special waste, and that such waste has been managed, packaged, containerized and labeled in accordance with the requirements of 20.9.8 NMAC (Special Waste Requirements) in addition to any other applicable federal, state or local regulations.					
Printed/Typed Name: Frank Dodine		Signature: 		Date: 6-13-18	
TRANSPORTER 1 Acknowledgement of Receipt of Special Waste Printed/Typed Name: Dean Benally Signature:  Date: 6/13/18					
TRANSPORTER 2 Acknowledgement of Receipt of Special Waste Printed/Typed Name: Signature: Date:					
Discrepancy Indication Space: load 1					
FACILITY Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space.					
Printed/Typed Name: Gary Robinson		Signature: 		Date: 6-13-18	

GENERATOR	SPECIAL WASTE MANIFEST		Manifest Document No.		Page 1 of
	Generator's Name Western Refining Terminal, LLC		Generator's Address 50 CR 4990 Bloomfield, NM 87413		Generator's Telephone No. 505-632-4169
	Origin of Special Waste (Project or Spill Location): 50 CR 4990 Bloomfield NM, 87413				
	Transporter #1 Company Name Western Refining Terminals, LLC		Address 50 CR 4990 Bloomfield, NM 87413		Telephone No. 505-632-4169
	Transporter #2 Company Name		Address		Telephone No.
	Destination Facility Name/Site Address Envirotech #43 Rd. 7175 Bloomfield, NM 87413		Facility ID (Permit) Number NM-01-0011		Telephone No. 505-947-6140
	Type and Proper Name of Special Waste		Container(s) No.	Total Quantity	Unit Wt/Vol
			Type		
	crude Impacted Dirt			20 yds	Re
Additional Descriptions for Special Waste Listed Above:					
Special Handling Instructions:					
GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described above by type and proper name of the special waste, and that such waste has been managed, packaged, containerized and labeled in accordance with the requirements of 20.9.8 NMAC (Special Waste Requirements) in addition to any other applicable federal, state or local regulations.					
Printed/Typed Name: Frank Dooling		Signature: 		Date: 6-13-18	
TRANSPORTER	Transporter 1 Acknowledgement of Receipt of Special Waste				
	Printed/Typed Name: Janie Vigilando		Signature: 		
	Date: 6-13-18				
FACILITY	Transporter 2 Acknowledgement of Receipt of Special Waste				
	Printed/Typed Name:		Signature:		
	Date:				
Discrepancy Indication Space: load 2					
Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space.					
Printed/Typed Name: Gary Robinson		Signature: 		Date: 6-13-18	

SPECIAL WASTE MANIFEST		Manifest Document No.		Page 1 of	
Generator's Name Western Refining Terminal, LLC		Generator's Address 50 CR 4990 Bloomfield, NM 87413		Generator's Telephone No. 505-632-4169	
Origin of Special Waste (Project or Spill Location): 50 CR 4990 Bloomfield NM, 87413					
Transporter #1 Company Name Western Refining Terminals, LLC		Address 50 CR 4990 Bloomfield, NM 87413		Telephone No. 505-632-4169	
Transporter #2 Company Name		Address		Telephone No.	
Destination Facility Name/Site Address Envirotech #43 Rd. 7175 Bloomfield, NM 87413		Facility ID (Permit) Number NM-01-0011		Telephone No. 505-947-6140	
Type and Proper Name of Special Waste		Container(s)	Total	Unit	
		No. Type Quantity Wt/Vol			
Crude Impacted Dirt		1	DP	10	yds GR
Additional Descriptions for Special Waste Listed Above:					
Special Handling Instructions:					
GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described above by type and proper name of the special waste, and that such waste has been managed, packaged, containerized and labeled in accordance with the requirements of 20.9.8 NMAC (Special Waste Requirements) in addition to any other applicable federal, state or local regulations.					
Printed/Typed Name: FRANK ROBINSON		Signature: 		Date: 6-17-18	
Transporter 1 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name: Dean Benally		Signature: 		Date: 6/13/18	
Transporter 2 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name:		Signature:		Date:	
Discrepancy Indication Space: Load 3					
Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space.					
Printed/Typed Name: Gary Robinson		Signature: 		Date: 6-13-18	

SPECIAL WASTE MANIFEST		Manifest Document No.		Page 1 of	
Generator's Name Western Refining Terminal, LLC		Generator's Address 50 CR 4990 Bloomfield, NM 87413		Generator's Telephone No. 505-632-4169	
Origin of Special Waste (Project or Spill Location): 50 CR 4990 Bloomfield NM, 87413					
Transporter #1 Company Name Western Refining Terminals, LLC		Address 50 CR 4990 Bloomfield, NM 87413		Telephone No. 505-632-4169	
Transporter #2 Company Name		Address		Telephone No.	
Destination Facility Name/Site Address Envirotech #43 Rd. 7175 Bloomfield, NM 87413		Facility ID (Permit) Number NM-01-0011		Telephone No. 505-947-6140	
Type and Proper Name of Special Waste		Container(s) No.	Type	Total Quantity	Unit Wt/Vol
Crude Impacted Dirt		1	55	20	yds
Additional Descriptions for Special Waste Listed Above:					
Special Handling Instructions:					
GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described above by type and proper name of the special waste, and that such waste has been managed, packaged, containerized and labeled in accordance with the requirements of 20.9.8 NMAC (Special Waste Requirements) in addition to any other applicable federal, state or local regulations.					
Printed/Typed Name: Frank Doolin		Signature: 		Date: 10-13-18	
Transporter 1 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name: Jesse Valpando		Signature: 		Date: 6-13-18	
Transporter 2 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name:		Signature:		Date:	
Discrepancy Indication Space: load 4					
Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space.					
Printed/Typed Name: Gary Robinson		Signature: 		Date: 6-13-18	

GENERATOR	SPECIAL WASTE MANIFEST		Manifest Document No.		Page 1 of	
	Generator's Name Western Refining Terminal, LLC		Generator's Address 50 CR 4990 Bloomfield, NM 87413		Generator's Telephone No. 505-632-4169	
	Origin of Special Waste (Project or Spill Location): 50 CR 4990 Bloomfield NM, 87413					
	Transporter #1 Company Name Western Refining Terminals, LLC		Address 50 CR 4990 Bloomfield, NM 87413		Telephone No. 505-632-4169	
	Transporter #2 Company Name		Address		Telephone No.	
	Destination Facility Name/Site Address Envirotech #43 Rd. 7175 Bloomfield, NM 87413		Facility ID (Permit) Number NM-01-0011		Telephone No. 505-947-6140	
	Type and Proper Name of Special Waste		Container(s) No.		Total Quantity	Unit Wt/Vol
			Type			
	Crude Impacted Dirt				10	yd ³
Additional Descriptions for Special Waste Listed Above:						
Special Handling Instructions:						
GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described above by type and proper name of the special waste, and that such waste has been managed, packaged, containerized and labeled in accordance with the requirements of 20.9.8 NMAC (Special Waste Requirements) in addition to any other applicable federal, state or local regulations.						
Printed/Typed Name: FRANK Dooling		Signature: 		Date: 6-13-18		
TRANSPORTER	Transporter 1 Acknowledgement of Receipt of Special Waste					
	Printed/Typed Name: Dean Benally		Signature: 		Date: 6/13/18	
	Transporter 2 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name:		Signature:		Date:		
FACILITY	Discrepancy Indication Space: load 5					
	Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space.					
	Printed/Typed Name: Gary Robinson		Signature: 		Date: 6-13-18	

SPECIAL WASTE MANIFEST		Manifest Document No.		Page 1 of	
Generator's Name Western Refining Terminal, LLC		Generator's Address 50 CR 4990 Bloomfield, NM 87413		Generator's Telephone No. 505-632-4169	
Origin of Special Waste (Project or Spill Location): 50 CR 4990 Bloomfield NM, 87413					
Transporter #1 Company Name Western Refining Terminals, LLC		Address 50 CR 4990 Bloomfield, NM 87413		Telephone No. 505-632-4169	
Transporter #2 Company Name		Address		Telephone No.	
Destination Facility Name/Site Address Envirotech #43 Rd. 7175 Bloomfield, NM 87413		Facility ID (Permit) Number NM-01-0011		Telephone No. 505-947-6140	
Type and Proper Name of Special Waste		Container(s) No.		Total Quantity	Unit Wt/Vol
		Type			
CRUDE IMPREGATED DIRT		1 55		10	YDS
Additional Descriptions for Special Waste Listed Above:					
Special Handling Instructions:					
GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described above by type and proper name of the special waste, and that such waste has been managed, packaged, containerized and labeled in accordance with the requirements of 20.9.8 NMAC (Special Waste Requirements) in addition to any other applicable federal, state or local regulations.					
Printed/Typed Name: FRANK DOOLING		Signature: 		Date: 6-13-18	
Transporter 1 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name: JOHNIE VIALPANDA		Signature: 		Date: 6-13-18	
Transporter 2 Acknowledgement of Receipt of Special Waste					
Printed/Typed Name:		Signature:		Date:	
Discrepancy Indication Space: load 6					
Facility Owner or Operator: I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space.					
Printed/Typed Name: GARY ROBINSON		Signature: 		Date: 6-13-18	

GENERATOR

TRANSPORTER

FACILITY

Appendix D

Investigation Derived Waste (IDW) Management

Plan

IDW Management Plan

All IDW will be properly characterized and disposed of in accordance with all federal, State, and local rules and regulations for storage, labeling, handling, transport, and disposal of waste. If soils are found to be non-hazardous and concentrations of constituents are less than the NMED residential soil screening levels, then soils may be reused on-site pursuant to the approval of the NMED. The IDW may be characterized for disposal based on the known or suspected contaminants potentially present in the waste. It is assumed that there are no listed wastes present in environmental media at any of the planned investigation areas.

A dedicated decontamination facility will be setup prior to any sample collection activities. The decontamination facility will be designed so as to capture and contain all decontamination fluids (e.g., wash water and rinse water) and foreign materials washed off the sampling equipment. The fluids will be pumped directly into suitable storage containers (e.g., labeled 55-gallon drums), which will be located at satellite accumulation areas until the fluids are disposed in the terminal wastewater treatment system upstream of the API separator. The solids captured in the decontamination facility will be shoveled into 55-gallon drums and stored at the designated satellite accumulation area pending proper waste characterization for off-site disposal.

Drill cuttings generated during installation of soil borings will be placed directly into 55-gallon drums and staged in the satellite accumulation area pending results of the waste characterization sampling. The portion of soil cores, which are not retained for analytical testing, will be placed into the same 55-gallon drums used to store the associated drill cuttings.

The solids (e.g., drill cuttings and used soil cores) will be characterized by testing to determine if there are any hazardous characteristics in accordance with 40 Code of Federal Regulations (CFR) Part 261. This includes tests for ignitability, corrosivity, reactivity, and toxicity. If the materials are not characteristically hazardous, then further testing will be performed pursuant to the requirements of the facility to which the materials will be transported. Depending upon the results of analyses for individual investigation soil samples, additional analyses may include TPH and polynuclear aromatic hydrocarbons.

All miscellaneous waste materials (e.g., discarded gloves, packing materials, etc.) will be placed into the terminal's solid waste storage containers for off-site disposal.