

**NM2 - \_\_\_\_10\_\_\_\_**

**APPROVED  
FACILITY  
BACKGROUND**

**\_\_\_\_June 15, 2020\_\_\_\_**

**Jones, Brad A., EMNRD**

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**From:** Enviro, OCD, EMNRD  
**Sent:** Tuesday, June 16, 2020 10:10 AM  
**To:** Devin Hencmann; McCartney, Gregory J.  
**Cc:** Jones, Brad A., EMNRD  
**Subject:** Re: Attn: Brad Jones Bisti Landfarm Background sampling update  
**Attachments:** 2020 0615 NM2-010 Facility Background approval signed.pdf

Dear Mr. McCartney,

Please see the attached approval for the Bisti Landfarm facility background. If you have any questions regarding this matter, please do not hesitate to contact me.

Sincerely.

Brad

**Brad A. Jones**  
*Environmental Engineer*  
*EMNRD Oil Conservation Division*  
*1220 S. Saint Francis Drive*  
*Santa Fe, New Mexico 87505*  
*E-mail: [brad.a.jones@state.nm.us](mailto:brad.a.jones@state.nm.us)*  
*Office: (505) 476-3487*  
*Fax: (505) 476-3462*

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**From:** Devin Hencmann <dhenemann@ltenv.com>  
**Sent:** Thursday, April 30, 2020 2:34 PM  
**To:** Enviro, OCD, EMNRD  
**Subject:** [EXT] Attn: Brad Jones Bisti Landfarm Background sampling update

Brad,

See the attached letter and table updating the background sample letter dated 4/20/2020.

Let me know if you have any questions.

Thank you,  
Devin



Devin Hencmann  
Project Geologist  
(970) 385-1096 office  
(970) 403-6023 cell  
848 East 2<sup>nd</sup> Avenue, Durango CO 81301

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State of New Mexico  
Energy, Minerals and Natural Resources Department

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**Michelle Lujan Grisham**  
Governor

**Sarah Cottrell Propst**  
Cabinet Secretary

**Todd E. Leahy, JD, PhD**  
Deputy Secretary

**Adrienne Sandoval, Division Director**  
Oil Conservation Division



June 15, 2020

Greg McCartney,  
Western Refining Southwest, Inc.  
111 County Road 4990  
Bloomfield, New Mexico 87413

**RE:   OCD's Review and Determination of the Supplemental Background Sampling Results and Addendum to the 2015 Supplemental Background Sampling Results Western Refining Southwest, Inc.  
Bisti Landfarm  
Permit NM2-010  
Location: Unit F of Section 16, Township 25 North, Range 12 West, NMPM  
San Juan County, New Mexico**

Dear Mr. McCartney:

The Oil Conservation Division (OCD) has completed the review Western Refining Southwest, Inc.'s (Western) of the 2015 Supplemental Background Sampling Results, dated April 20, 2020, and the updated Table 1 of the Addendum to the 2015 Supplemental Background Sampling Results, dated April 30, 2020, which is based upon OCD's August 18, 2015 approval of Western's Supplement Facility Background Sampling Plan, dated July 24, 2015.

The OCD hereby grants Western approval of the 2015 Supplemental Background Sampling Results, dated April 20, 2020, and the updated Table 1 of the Addendum to the 2015 Supplemental Background Sampling Results, dated April 30, 2020, with the following conditions:

1. Western shall comply with all applicable requirements of the Oil and Gas Act (Chapter 70, Article 2 NMSA 1978), the existing permit NM2-010, the transitional provisions of 19.15.36.20 NMAC, and all conditions specified in this approval;
2. Western shall utilize the background soil concentrations and PQLs highlighted in grey on the updated Table 1 of the Addendum to the 2015 Supplemental Background Sampling Results, dated April 30, 2020 to compare to the vadose zone monitoring results to determine whether a release has occurred; and

3. Western must submit a closure and post-closure care plan for OCD review and approval prior to utilizing the background soil concentrations and PQLs highlighted in grey on the updated Table 1 of the Addendum to the 2015 Supplemental Background Sampling Results, dated April 30, 2020 for the metals required of 19.15.36.15.(F) NMAC, as demonstrated by EPA methods 6010B, 7060A, 7080A, 7130, 7190, 7420, 7471, and 7741A in the treatment zone (soils being remediated) monitoring closure comparison.

Please be advised that approval of this request does not relieve Western of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve Western of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If there are any questions regarding this matter, please do not hesitate to contact me at (505) 476-3487 or [brad.a.jones@state.nm.us](mailto:brad.a.jones@state.nm.us).

Sincerely,

A handwritten signature in blue ink, appearing to read 'Brad A. Jones', with a stylized flourish at the end.

Brad A. Jones  
Environmental Engineer

BAJ/baj

cc: Devin Hencmann, LT Environmental, Inc.

## Jones, Brad A., EMNRD

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**From:** Enviro, OCD, EMNRD  
**Sent:** Monday, June 15, 2020 10:18 AM  
**To:** Jones, Brad A., EMNRD  
**Subject:** Fw: Attn: Brad Jones Bisti Landfarm Background sampling update  
**Attachments:** Addendum\_Bisti 2015 Background Sampling Results.pdf

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**From:** Devin Hencmann <dhenemann@ltenv.com>  
**Sent:** Thursday, April 30, 2020 2:34 PM  
**To:** Enviro, OCD, EMNRD  
**Subject:** [EXT] Attn: Brad Jones Bisti Landfarm Background sampling update

Brad,

See the attached letter and table updating the background sample letter dated 4/20/2020.

Let me know if you have any questions.

Thank you,  
Devin



Devin Hencmann  
Project Geologist  
(970) 385-1096 office  
(970) 403-6023 cell  
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April 30, 2020

Mr. Brad Jones  
New Mexico Oil Conservation Division  
1220 South Saint Francis Drive  
Santa Fe, New Mexico 87505

**RE: Addendum to the 2015 Supplemental Background Sampling Results  
711 Permit NM-02-0010  
Western Refining Southwest, Inc.  
Bisti Landfarm  
San Juan County, New Mexico**

Dear Mr. Jones:

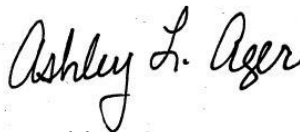
This Addendum to the *2015 Supplemental Background Sampling Results* letter (dated April 20, 2020) is being submitted per our phone conversation on April 23, 2020. Specifically, the attached Table 1 has been revised to reflect that the laboratory practical quantitation limit (PQL) achieved during the 2015 sampling event will be used for benzene, toluene, ethylbenzene, xylenes, and diesel range organics. The 2015 PQL will be used to compare future sampling results obtained during the Bisti Landfarm monitoring required under 711 permit NM-02-0010. No other revisions were made. Please see the attached updated Table 1.

Sincerely,

LT ENVIRONMENTAL, INC.



Stuart Hyde, LG  
Project Geologist



Ashley Ager, PG  
Senior Geologist

cc: Greg McCartney, Marathon Petroleum Company LP

**Attachments:**

Updated Table 1: Background Soil Laboratory Analytical Results

**TABLE 1**  
**BACKGROUND SOIL LABORATORY ANALYTICAL RESULTS**  
**BISTI LANDFARM**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**

| ANALYTE                                          | UNITS | BACKGROUND<br>SAMPLE | BACKGROUND<br>SAMPLE |
|--------------------------------------------------|-------|----------------------|----------------------|
|                                                  |       | 27-Mar-98            | 1-Sept-15            |
| BTEX Compounds by EPA Method 8260B               |       |                      |                      |
| Benzene                                          | mg/kg | <0.05                | <0.048               |
| Toluene                                          | mg/kg | <0.05                | <0.048               |
| Ethylbenzene                                     | mg/kg | <0.05                | <0.048               |
| Xylenes, Total                                   | mg/kg | <0.05                | <0.048               |
| Petroleum Hydrocarbons by EPA Method 8015M/D     |       |                      |                      |
| Gasoline Range Organics (GRO)                    | mg/kg | NA                   | <4.8                 |
| Diesel Range Organics (DRO)                      | mg/kg | <50                  | <9.9                 |
| Motor Oil Range Organics (MRO)                   | mg/kg | NA                   | <50                  |
| Total Petroleum Hydrocarbons by EPA Method 418.1 |       |                      |                      |
| TPH (418.1)                                      | mg/kg | NA                   | <20                  |
| Volatile Organic Compounds by EPA Method 8260B   |       |                      |                      |
| benzene                                          | mg/kg | NA                   | <0.048               |
| toluene                                          | mg/kg | NA                   | <0.048               |
| ethylbenzene                                     | mg/kg | NA                   | <0.048               |
| methyl tert-butyl ether (MTBE)                   | mg/kg | NA                   | <0.048               |
| 1,2-dichloroethane (EDC)                         | mg/kg | NA                   | <0.048               |
| 1,2-dibromoethane (EDB)                          | mg/kg | NA                   | <0.048               |
| naphthalene                                      | mg/kg | NA                   | <0.095               |
| 1-methylnaphthalene                              | mg/kg | NA                   | <0.19                |
| 2-methylnaphthalene                              | mg/kg | NA                   | <0.19                |
| bromodichloromethane                             | mg/kg | NA                   | <0.048               |
| bromoform (tribromomethane)                      | mg/kg | NA                   | <0.048               |
| bromomethane                                     | mg/kg | NA                   | <0.14                |
| carbon tetrachloride (tetrachloromethane)        | mg/kg | NA                   | <0.048               |
| chlorobenzene (monochlorobenzene)                | mg/kg | NA                   | <0.048               |
| chloroform (trichloromethane)                    | mg/kg | NA                   | <0.048               |
| chloromethane                                    | mg/kg | NA                   | <0.14                |
| cis-1,2-dichloroethene (cis-1,2-DCE)             | mg/kg | NA                   | <0.048               |
| cis-1,3-dichloropropene                          | mg/kg | NA                   | <0.048               |
| 1,2-dichlorobenzene                              | mg/kg | NA                   | <0.048               |
| 1,4-dichlorobenzene                              | mg/kg | NA                   | <0.048               |
| dichlorodifluoromethane                          | mg/kg | NA                   | <0.048               |

| ANALYTE                                                    | UNITS | BACKGROUND<br>SAMPLE | BACKGROUND<br>SAMPLE |
|------------------------------------------------------------|-------|----------------------|----------------------|
|                                                            |       | 27-Mar-98            | 1-Sept-15            |
| 1,1-dichloroethane                                         | mg/kg | NA                   | <0.048               |
| 1,1-dichloroethene                                         | mg/kg | NA                   | <0.048               |
| 1,2-dichloropropane                                        | mg/kg | NA                   | <0.048               |
| 1,1-dichloropropene                                        | mg/kg | NA                   | <0.095               |
| hexachlorobutadiene                                        | mg/kg | NA                   | <0.095               |
| methylene chloride (dichloromethane)                       | mg/kg | NA                   | <0.14                |
| styrene                                                    | mg/kg | NA                   | <0.048               |
| 1,1,2,2-tetrachloroethane                                  | mg/kg | NA                   | <0.048               |
| tetrachloroethene (PCE)                                    | mg/kg | NA                   | <0.048               |
| trans-1,2-dichloroethene (trans-1,2-DCE)                   | mg/kg | NA                   | <0.048               |
| trans-1,3-dichloropropene                                  | mg/kg | NA                   | <0.048               |
| 1,2,4-trichlorobenzene                                     | mg/kg | NA                   | <0.048               |
| 1,1,1-trichloroethane                                      | mg/kg | NA                   | <0.048               |
| 1,1,2-trichloroethane                                      | mg/kg | NA                   | <0.048               |
| trichloroethene (TCE)                                      | mg/kg | NA                   | <0.048               |
| trichlorofluoromethane                                     | mg/kg | NA                   | <0.048               |
| vinyl chloride (chloroethene)                              | mg/kg | NA                   | <0.048               |
| xylene, total                                              | mg/kg | NA                   | <0.095               |
| <b>Polycyclic Aromatic Hydrocarbons by EPA Method 8310</b> |       |                      |                      |
| Naphthalene                                                | mg/kg | NA                   | <0.25                |
| 1-Methylnaphthalene                                        | mg/kg | NA                   | <0.25                |
| 2-Methylnaphthalene                                        | mg/kg | NA                   | <0.25                |
| Benzo(a)pyrene                                             | mg/kg | NA                   | <0.0099              |
| <b>Total Phenol by Method 9066</b>                         |       |                      |                      |
|                                                            | mg/kg | NA                   | <0.67                |
| <b>Metals by EPA Method 6010/6020</b>                      |       |                      |                      |
| Arsenic                                                    | mg/kg | 2.8                  | NA                   |
| Barium                                                     | mg/kg | 180                  | NA                   |
| Cadmium                                                    | mg/kg | <1.3                 | NA                   |
| Calcium                                                    | mg/kg | 2,500                | NA                   |
| Chromium                                                   | mg/kg | <5.0                 | NA                   |
| Copper                                                     | mg/kg | NA                   | 3.2                  |
| Iron                                                       | mg/kg | NA                   | 7200                 |
| Lead                                                       | mg/kg | 6.8                  | NA                   |
| Magnesium                                                  | mg/kg | 1,300                | NA                   |
| Manganese                                                  | mg/kg | NA                   | 150                  |
| Mercury                                                    | mg/kg | <0.5                 | NA                   |
| Potassium                                                  | mg/kg | 810                  | NA                   |
| Selenium                                                   | mg/kg | <2.5                 | NA                   |
| Silver                                                     | mg/kg | <1.3                 | NA                   |

Table 1\_Background Samples.xlsx 4/24/2020

| ANALYTE                                             | UNITS    | BACKGROUND<br>SAMPLE | BACKGROUND<br>SAMPLE |
|-----------------------------------------------------|----------|----------------------|----------------------|
|                                                     |          | 27-Mar-98            | 1-Sept-15            |
| Uranium                                             | mg/kg    | NA                   | <4.9                 |
| Zinc                                                | mg/kg    | NA                   | 14                   |
| <b>Polychlorinated Biphenyls by EPA Method 8082</b> |          |                      |                      |
| Aroclor 1016                                        | mg/kg    | NA                   | <0.020               |
| Aroclor 1221                                        | mg/kg    | NA                   | <0.020               |
| Aroclor 1232                                        | mg/kg    | NA                   | <0.020               |
| Aroclor 1242                                        | mg/kg    | NA                   | <0.020               |
| Aroclor 1248                                        | mg/kg    | NA                   | <0.020               |
| Aroclor 1254                                        | mg/kg    | NA                   | <0.020               |
| Aroclor 1260                                        | mg/kg    | NA                   | <0.020               |
| <b>Cyanide by Method 9012B</b>                      | mg/kg    | NA                   | <0.25                |
| <b>Anions by EPA Method 300.0</b>                   |          |                      |                      |
| Chloride                                            | mg/kg    | <50                  | NA                   |
| Fluoride                                            | mg/kg    | NA                   | 0.84                 |
| Nitrogen, Nitrate (As N)                            | mg/kg    | NA                   | <0.30                |
| <b>pH by Method SM4500-H+B</b>                      | pH units | NA                   | 7.89                 |
| <b>Radiochemistry by EPA Method 901.1</b>           |          |                      |                      |
| Radium-226                                          | pCi/g    | NA                   | 0.737 +/- 0.242      |
| Radium-228                                          | pCi/g    | NA                   | 0.806 +/- 0.338      |
| <b>General Chemistry</b>                            |          |                      |                      |
| Bicarbonate                                         | mg/kg    | 110                  | NA                   |
| Carbonate                                           | mg/kg    | 26                   | NA                   |
| Sodium                                              | mg/kg    | 90                   | NA                   |
| Sulfate                                             | mg/kg    | 140                  | NA                   |

**Notes:**

< - indicates result is less than the stated practical quantitation limit (PQL)

NA - not analyzed

Where two results are listed, the background will be considered the lower of the two.

April 20, 2020

Mr. Brad Jones  
New Mexico Oil Conservation Division  
1220 South Saint Francis Drive  
Santa Fe, New Mexico 87505

**RE: 2015 Supplemental Background Sampling Results  
711 Permit NM-02-0010  
Western Refining Southwest, Inc.  
Bisti Landfarm  
San Juan County, New Mexico**

Dear Mr. Jones:

On behalf of Western Refining Southwest, Inc. (Western), LT Environmental (LTE) is submitting soil-sampling data collected at the Bisti Landfarm (the Site, shown on Figure 1) in September 2015 to update background concentrations of several constituents. A *Background Sampling Plan* (cover letter dated July 24, 2015) was submitted to and approved by the New Mexico Oil Conservation Division (NMOCD) in their letter dated August 18, 2015 (Attachment 1). The supplemental background samples were subsequently collected and analyzed in September 2015; however, the sampling results were not officially submitted to NMOCD for review. This letter summarizes the results from the 2015 background-sampling event.

## **SITE DESCRIPTION AND BACKGROUND**

The Site occupies approximately 28 acres in the northwest quarter of the southeast quarter of Section 16, Township 25 North, Range 12 West in San Juan County, New Mexico (Figure 1). Petroleum hydrocarbon-impacted soil was originally disposed of at the Site in three treatment cells depending on the origin of the soil: the API Cell, Crude Cell, and Cell 1 (which was closed in 2004 and is no longer active). The Crude Cell is further divided into four source zones containing material originating from Pettigrew, East Line, Bisti, and West Line. These boundaries are shown on Figure 2.

As required by the original Rule 711, under which the landfarm was permitted, one background soil sample was collected on March 27, 1998. This sample was collected at a location in the middle of the then proposed landfarm at a depth of 2 feet below ground surface (bgs). Rule 711 required the soil sample be analyzed for arsenic, barium, cadmium, calcium, chromium, lead, magnesium, potassium, selenium, silver, sodium, mercury, sulfate, chloride, carbonate, bicarbonate, BTEX compounds (benzene, toluene, ethylbenzene, and total xylenes), and total petroleum hydrocarbons (TPH) as diesel-range organics (DRO). The laboratory analytical results for the original background samples are presented in Table 1.

## SUPPLEMENT BACKGROUND SAMPLING AND RESULTS

In order to update the background data set collected in 1998, Western prepared a *Background Sampling Plan* (dated July 24, 2015) outlining the procedures for collecting and analyzing an additional background sample. This work was performed to update the list of constituents then required by 19.15.36 of the New Mexico Administrative Code (NMAC). A discrete sample was collected to the west of the landfarm boundary and at a depth of 2 feet bgs. LTE determined the sample location to be upgradient/uphill of the landfarm and the least likely location to be potentially affected by current and/or historical oil and gas activities to the east, southeast, and southwest. The sampling location is shown on Figure 2.

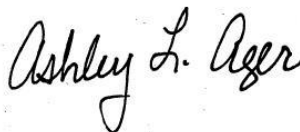
The collected sample was analyzed for constituents that were listed in Subsections A and B of 20.6.2.3103 NMAC at the time that the sample was collected (2015). The analyzed constituents, analytical methods, and results are presented in attached Table 1 (along with historical background sampling results). Analytical laboratory reports also are attached in Attachment 2. With these results, the higher of the detected background soil concentration or the laboratory practical quantitation limit (PQL) of each constituent will be used to compare ongoing landfarm-monitoring samples and eventual treatment zone closure samples. When results are available from both 1998 and 2015, the highest of the results will be applied as background.

Sincerely,

LT ENVIRONMENTAL, INC.



Stuart Hyde, LG  
Project Geologist



Ashley Ager, PG  
Senior Geologist

cc: Greg McCartney, Marathon Petroleum Company LP

### Attachments:

Figure 1: Site Location Map

Figure 2: Site Map and Background Sample Location

Table 1: Background Soil Laboratory Analytical Results

Attachment 1: NMOCD Approval Letter, Re: LTE *Background Sampling Plan*

Attachment 2: Analytical Laboratory Reports

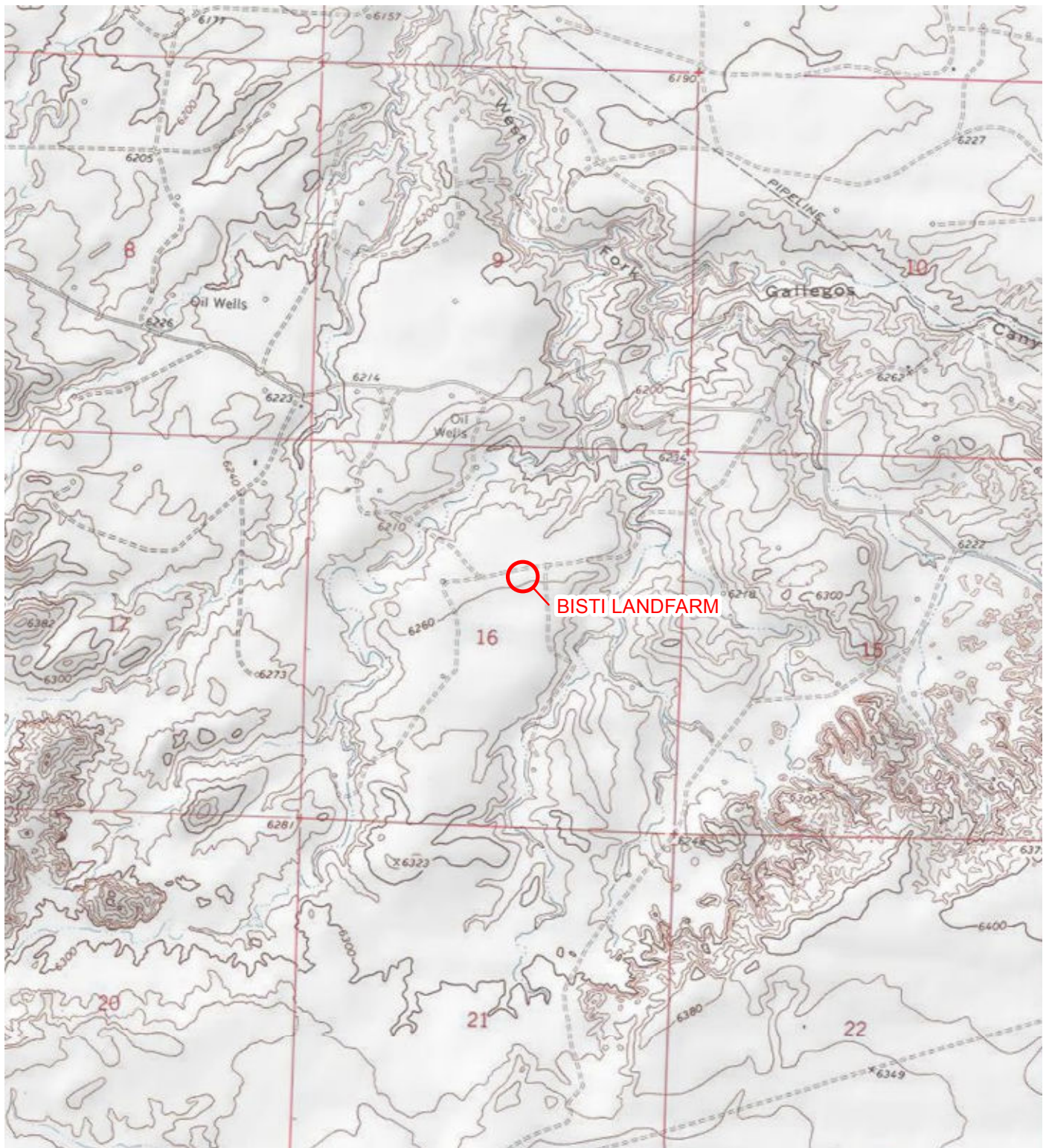
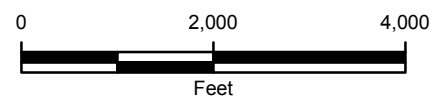


IMAGE COURTESY OF ESRI/USGS

**LEGEND**

 SITE LOCATION



NEW MEXICO

**FIGURE 1**  
**SITE LOCATION MAP**  
**BISTI LANDFARM**  
**SEC 16 T25N R12W**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**

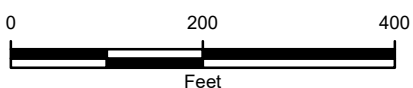




# LEGEND

- ▲ 2015 BACKGROUND SOIL SAMPLE LOCATION
- x — x FENCE
- APPROXIMATE SOURCE IDENTITY BOUNDARY
- CELL 1 BOUNDARY
- API CELL BOUNDARY
- CRUDE CELL BOUNDARY

IMAGE COURTESY OF ESRI



**FIGURE 2**  
2015 BACKGROUND SOIL SAMPLE LOCATION  
BISTI LANDFARM  
SEC 16 T25N R12W  
SAN JUAN COUNTY, NEW MEXICO  
**WESTERN REFINING SOUTHWEST, INC.**



**TABLE 1**  
**BACKGROUND SOIL LABORATORY ANALYTICAL RESULTS**

**BISTI LANDFARM**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**

| ANALYTE                                          | UNITS | BACKGROUND<br>SAMPLE | BACKGROUND<br>SAMPLE |
|--------------------------------------------------|-------|----------------------|----------------------|
|                                                  |       | 27-Mar-98            | 1-Sept-15            |
| BTEX Compounds by EPA Method 8260B               |       |                      |                      |
| Benzene                                          | mg/kg | <0.05                | <0.048               |
| Toluene                                          | mg/kg | <0.05                | <0.048               |
| Ethylbenzene                                     | mg/kg | <0.05                | <0.048               |
| Xylenes, Total                                   | mg/kg | <0.05                | <0.048               |
| Petroleum Hydrocarbons by EPA Method 8015M/D     |       |                      |                      |
| Gasoline Range Organics (GRO)                    | mg/kg | NA                   | <4.8                 |
| Diesel Range Organics (DRO)                      | mg/kg | <50                  | <9.9                 |
| Motor Oil Range Organics (MRO)                   | mg/kg | NA                   | <50                  |
| Total Petroleum Hydrocarbons by EPA Method 418.1 |       |                      |                      |
| TPH (418.1)                                      | mg/kg | NA                   | <20                  |
| Volatile Organic Compounds by EPA Method 8260B   |       |                      |                      |
| benzene                                          | mg/kg | NA                   | <0.048               |
| toluene                                          | mg/kg | NA                   | <0.048               |
| ethylbenzene                                     | mg/kg | NA                   | <0.048               |
| methyl tert-butyl ether (MTBE)                   | mg/kg | NA                   | <0.048               |
| 1,2-dichloroethane (EDC)                         | mg/kg | NA                   | <0.048               |
| 1,2-dibromoethane (EDB)                          | mg/kg | NA                   | <0.048               |
| naphthalene                                      | mg/kg | NA                   | <0.095               |
| 1-methylnaphthalene                              | mg/kg | NA                   | <0.19                |
| 2-methylnaphthalene                              | mg/kg | NA                   | <0.19                |
| bromodichloromethane                             | mg/kg | NA                   | <0.048               |
| bromoform (tribromomethane)                      | mg/kg | NA                   | <0.048               |
| bromomethane                                     | mg/kg | NA                   | <0.14                |
| carbon tetrachloride (tetrachloromethane)        | mg/kg | NA                   | <0.048               |
| chlorobenzene (monochlorobenzene)                | mg/kg | NA                   | <0.048               |
| chloroform (trichloromethane)                    | mg/kg | NA                   | <0.048               |
| chloromethane                                    | mg/kg | NA                   | <0.14                |
| cis-1,2-dichloroethene (cis-1,2-DCE)             | mg/kg | NA                   | <0.048               |
| cis-1,3-dichloropropene                          | mg/kg | NA                   | <0.048               |
| 1,2-dichlorobenzene                              | mg/kg | NA                   | <0.048               |
| 1,4-dichlorobenzene                              | mg/kg | NA                   | <0.048               |

| ANALYTE                                                    | UNITS | BACKGROUND<br>SAMPLE | BACKGROUND<br>SAMPLE |
|------------------------------------------------------------|-------|----------------------|----------------------|
|                                                            |       | 27-Mar-98            | 1-Sept-15            |
| dichlorodifluoromethane                                    | mg/kg | NA                   | <0.048               |
| 1,1-dichloroethane                                         | mg/kg | NA                   | <0.048               |
| 1,1-dichloroethene                                         | mg/kg | NA                   | <0.048               |
| 1,2-dichloropropane                                        | mg/kg | NA                   | <0.048               |
| 1,1-dichloropropene                                        | mg/kg | NA                   | <0.095               |
| hexachlorobutadiene                                        | mg/kg | NA                   | <0.095               |
| methylene chloride (dichloromethane)                       | mg/kg | NA                   | <0.14                |
| styrene                                                    | mg/kg | NA                   | <0.048               |
| 1,1,2,2-tetrachloroethane                                  | mg/kg | NA                   | <0.048               |
| tetrachloroethene (PCE)                                    | mg/kg | NA                   | <0.048               |
| trans-1,2-dichloroethene (trans-1,2-DCE)                   | mg/kg | NA                   | <0.048               |
| trans-1,3-dichloropropene                                  | mg/kg | NA                   | <0.048               |
| 1,2,4-trichlorobenzene                                     | mg/kg | NA                   | <0.048               |
| 1,1,1-trichloroethane                                      | mg/kg | NA                   | <0.048               |
| 1,1,2-trichloroethane                                      | mg/kg | NA                   | <0.048               |
| trichloroethene (TCE)                                      | mg/kg | NA                   | <0.048               |
| trichlorofluoromethane                                     | mg/kg | NA                   | <0.048               |
| vinyl chloride (chloroethene)                              | mg/kg | NA                   | <0.048               |
| xylenes, total                                             | mg/kg | NA                   | <0.095               |
| <b>Polycyclic Aromatic Hydrocarbons by EPA Method 8310</b> |       |                      |                      |
| Naphthalene                                                | mg/kg | NA                   | <0.25                |
| 1-Methylnaphthalene                                        | mg/kg | NA                   | <0.25                |
| 2-Methylnaphthalene                                        | mg/kg | NA                   | <0.25                |
| Benzo(a)pyrene                                             | mg/kg | NA                   | <0.0099              |
| <b>Total Phenol by Method 9066</b>                         |       | NA                   | <0.67                |
| <b>Metals by EPA Method 6010/6020</b>                      |       |                      |                      |
| Arsenic                                                    | mg/kg | 2.8                  | NA                   |
| Barium                                                     | mg/kg | 180                  | NA                   |
| Cadmium                                                    | mg/kg | <1.3                 | NA                   |
| Calcium                                                    | mg/kg | 2,500                | NA                   |
| Chromium                                                   | mg/kg | <5.0                 | NA                   |
| Copper                                                     | mg/kg | NA                   | 3.2                  |
| Iron                                                       | mg/kg | NA                   | 7200                 |
| Lead                                                       | mg/kg | 6.8                  | NA                   |
| Magnesium                                                  | mg/kg | 1,300                | NA                   |
| Manganese                                                  | mg/kg | NA                   | 150                  |
| Mercury                                                    | mg/kg | <0.5                 | NA                   |

| ANALYTE                                             | UNITS    | BACKGROUND<br>SAMPLE | BACKGROUND<br>SAMPLE |
|-----------------------------------------------------|----------|----------------------|----------------------|
|                                                     |          | 27-Mar-98            | 1-Sept-15            |
| Potassium                                           | mg/kg    | 810                  | NA                   |
| Selenium                                            | mg/kg    | <2.5                 | NA                   |
| Silver                                              | mg/kg    | <1.3                 | NA                   |
| Uranium                                             | mg/kg    | NA                   | <4.9                 |
| Zinc                                                | mg/kg    | NA                   | 14                   |
| <b>Polychlorinated Biphenyls by EPA Method 8082</b> |          |                      |                      |
| Aroclor 1016                                        | mg/kg    | NA                   | <0.020               |
| Aroclor 1221                                        | mg/kg    | NA                   | <0.020               |
| Aroclor 1232                                        | mg/kg    | NA                   | <0.020               |
| Aroclor 1242                                        | mg/kg    | NA                   | <0.020               |
| Aroclor 1248                                        | mg/kg    | NA                   | <0.020               |
| Aroclor 1254                                        | mg/kg    | NA                   | <0.020               |
| Aroclor 1260                                        | mg/kg    | NA                   | <0.020               |
| <b>Cyanide by Method 9012B</b>                      | mg/kg    | NA                   | <0.25                |
| <b>Anions by EPA Method 300.0</b>                   |          |                      |                      |
| Chloride                                            | mg/kg    | <50                  | NA                   |
| Fluoride                                            | mg/kg    | NA                   | 0.84                 |
| Nitrogen, Nitrate (As N)                            | mg/kg    | NA                   | <0.30                |
| <b>pH by Method SM4500-H+B</b>                      | pH units | NA                   | 7.89                 |
| <b>Radiochemistry by EPA Method 901.1</b>           |          |                      |                      |
| Radium-226                                          | pCi/g    | NA                   | 0.737 +/- 0.242      |
| Radium-228                                          | pCi/g    | NA                   | 0.806 +/- 0.338      |
| <b>General Chemistry</b>                            |          |                      |                      |
| Bicarbonate                                         | mg/kg    | 110                  | NA                   |
| Carbonate                                           | mg/kg    | 26                   | NA                   |
| Sodium                                              | mg/kg    | 90                   | NA                   |
| Sulfate                                             | mg/kg    | 140                  | NA                   |

**Notes:**

< - indicates result is less than the stated practical quantitation limit (PQL)

NA - not analyzed

Where two results are listed, the background will be considered the higher of the two.

State of New Mexico  
Energy, Minerals and Natural Resources Department

---

**Susana Martinez**  
Governor

**David Martin**  
Cabinet Secretary

**Brett F. Woods, Ph.D.**  
Deputy Cabinet Secretary

**David R. Catanach, Division Director**  
Oil Conservation Division



August 18, 2015

Kelly Robinson  
Western Refining Southwest, Inc.  
111 County Road 4990  
Bloomfield, New Mexico 87413

**RE: Supplement Facility Background Sampling Plan Review  
Western Refining Southwest, Inc.  
Bisti Landfarm  
Permit NM2-010  
Location: Unit F of Section 16, Township 25 North, Range 12 West, NMPM  
San Juan County, New Mexico**

Dear Ms. Robinson:

The Oil Conservation Division (OCD) has completed the review of Western Refining Southwest, Inc.'s (Western) Supplement Facility Background Sampling Plan, dated July 24, 2015, to obtain additional background data to combine with the existing 1998 background data in order to complete vadose zone monitoring assessments to determine whether a release has occurred within the vadose zone. Based upon the information provided in the background sampling plan, Western's proposal is **hereby approved** with the following understandings and conditions:

1. Western shall comply with the applicable requirements of the Surface Waste Management Facilities Rule (19.15.36 NMAC), the Oil and Gas Act (Chapter 70, Article 2 NMSA 1978), Permit NM2-010, and all conditions specified in this approval;
2. OCD conditionally approves the "summation of gasoline range organics (GRO), diesel range organics (DRO), and motor oil range organics (MRO) determined by United States Environmental Protection Agency Method 8015 as a valid method for assessing total petroleum hydrocarbon (TPH) concentration in the vadose zone," if the test method is able to demonstrate a carbon range of C<sub>6</sub> through C<sub>36</sub>, which OCD considers to be the equivalent to EPA Method 418.1.
3. Western shall obtain written approval from OCD prior to implementing any changes to the July 24, 2015 Supplement Facility Background Sampling Plan.

Ms. Robinson  
Permit NM2-010  
August 18, 2015  
Page 2 of 2

Please be advised that approval of this request does not relieve Western of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve Western of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If there are any questions regarding this matter, please do not hesitate to contact me at (505) 476-3487 or [brad.a.jones@state.nm.us](mailto:brad.a.jones@state.nm.us).

Sincerely,

A handwritten signature in black ink, appearing to read 'Brad A. Jones', with a large, stylized flourish extending to the right.

Brad A. Jones  
Environmental Engineer

BAJ/baj

cc: OCD District III Office, Aztec



LOGISTICS

July 24, 2015

Mr. Brad Jones  
New Mexico Oil Conservation Division  
1220 South Saint Francis Drive  
Santa Fe, New Mexico 87505

RECEIVED 000

2015 JUL 29 PM 1:32

FedEx Tracking #: 7741 4321 1764

**RE: Background Sampling Plan  
Bisti Landfarm 711 Permit NM-02-0010  
San Juan County, New Mexico**

Dear Mr. Jones:

Western Refining Southwest, Inc. (Western) is submitting the above reference Plan pursuant to two comment letters received from the New Mexico Oil Conservation Division (NMOCD) dated May 29<sup>th</sup>, and June 3<sup>rd</sup>, 2015, regarding the Bisti Landfarm 2014 Annual Sampling Report and the May 2014 Release Response Report, respectively. The purpose of the Background Sampling Plan is to obtain additional background data as needed to comply with 19.15.36.15.E NMAC. The additional data will be used to complete a vadose zone assessment, update the 2012 Five-Year Vadose Zone Monitoring Report, update the most recent Quarterly Monitoring Report dated June 2015, and incorporate into the revised Release Response Plan currently being submitted to NMOCD under a separate cover by way of an addendum.

As allowed by the NMOCD in the May 29, 2015 letter, Western requests NMOCD approval to recognize the summation of gasoline range organics (GRO), diesel range organics (DRO), and motor oil range organics (MRO) determined by United States Environmental Protection Agency Method 8015 as a valid method for assessing total petroleum hydrocarbon (TPH) concentration in the vadose zone. This analytical method includes a carbon range of C<sub>6</sub> to C<sub>36</sub> as required for NMOCD approval.

Western's scheduling of fieldwork is contingent upon approval of this Background Sampling Plan by the NMOCD. Western intends to conduct the described background sampling activities within two weeks of the receipt of NMOCD approval, and a schedule of reporting is proposed in the attached document based on receipt of laboratory analytical results.

If you have any questions or comments regarding this Background Sampling Plan, please do not hesitate to contact me at (505) 632-4166 or [Kelly.Robinson@wnr.com](mailto:Kelly.Robinson@wnr.com).

Sincerely,

Kelly R. Robinson  
Environmental Manager  
Western Refining Southwest, Inc.

WNR  
NYSE

**BACKGROUND SAMPLING PLAN**  
**BISTI LANDFARM 711 PERMIT NM-02-0010**  
**SAN JUAN COUNTY, NEW MEXICO**

**JUNE 2015**

**Prepared for:**

**WESTERN REFINING SOUTHWEST, INC.**  
**111 County Road 4990**  
**Bloomfield, New, Mexico 87413**



**Prepared by:**

**LT ENVIRONMENTAL, INC.**  
**2243 Main Avenue, Suite 3**  
**Durango, Colorado 81301**  
**(970) 385-1096**



|                                            |   |
|--------------------------------------------|---|
| 1.0 INTRODUCTION .....                     | 1 |
| 2.0 SITE DESCRIPTION AND BACKGROUND .....  | 2 |
| 3.0 PROPOSED BACKGROUND SAMPLING PLAN..... | 3 |
| 4.0 SCHEDULE .....                         | 4 |

## **FIGURES**

|          |                              |
|----------|------------------------------|
| FIGURE 1 | SITE LOCATION MAP            |
| FIGURE 2 | PROPOSED BACKGROUND LOCATION |

## **TABLES**

|         |                                          |
|---------|------------------------------------------|
| TABLE 1 | HISTORICAL BACKGROUND RESULTS            |
| TABLE 2 | BACKGROUND LABORATORY ANALYTICAL RESULTS |

## **APPENDICES**

|            |                                          |
|------------|------------------------------------------|
| APPENDIX A | HISTORICAL LABORATORY ANALYTICAL RESULTS |
|------------|------------------------------------------|

## **1.0 INTRODUCTION**

LT Environmental, Inc. (LTE) was contracted by Western Refining Southwest, Inc. (Western) to develop a Background Sampling Plan to update the existing background data for the Bisti Landfarm, Permit Number NM-02-0010. The Bisti Landfarm was permitted in February 1998 under the New Mexico Oil and Gas Conservation Division (NMOCD) Rule 711 to Giant Industries, Arizona (Giant). In 2007, the NMOCD passed new rules (19.15.36 of the New Mexico Administrative Code [NMAC] [Rule 36]) pertaining to surface waste management facilities and required site compliance with the transitional provisions of Rule 36. This report presents a Background Sampling Plan to establish background concentrations for analytes required for a complete vadose zone soil assessment in Rule 36.

## **2.0 SITE DESCRIPTION AND BACKGROUND**

The Site is located in the northwest quarter of the southeast quarter of Section 16, Township 25 North, Range 12 West in San Juan County, New Mexico (Figure 1). Giant and Western disposed of impacted soil at the Bisti Landfarm resulting in three cells: API Cell, Crude Cell (containing material originating from Pettigrew, East Line, Bisti, and West Line source areas), and Cell 1 (Figure 2).

As part of the original Rule 711 application requirements, one background soil sample was collected on March 27, 1998, in the middle of the proposed landfarm from 2 feet below ground surface. Rule 711 required the soil sample be analyzed for arsenic, barium, cadmium, calcium, chromium, lead, magnesium, potassium, selenium, silver, sodium, mercury, sulfate, chloride, carbonate, bicarbonate, benzene, toluene, ethylbenzene, and total xylenes (BTEX), and total petroleum hydrocarbons (TPH)-diesel range organics (DRO). The laboratory analytical results for the original background sample are presented in Table 1 and the laboratory report is included in Appendix A.

### **3.0 PROPOSED BACKGROUND SAMPLING ACTIVITIES**

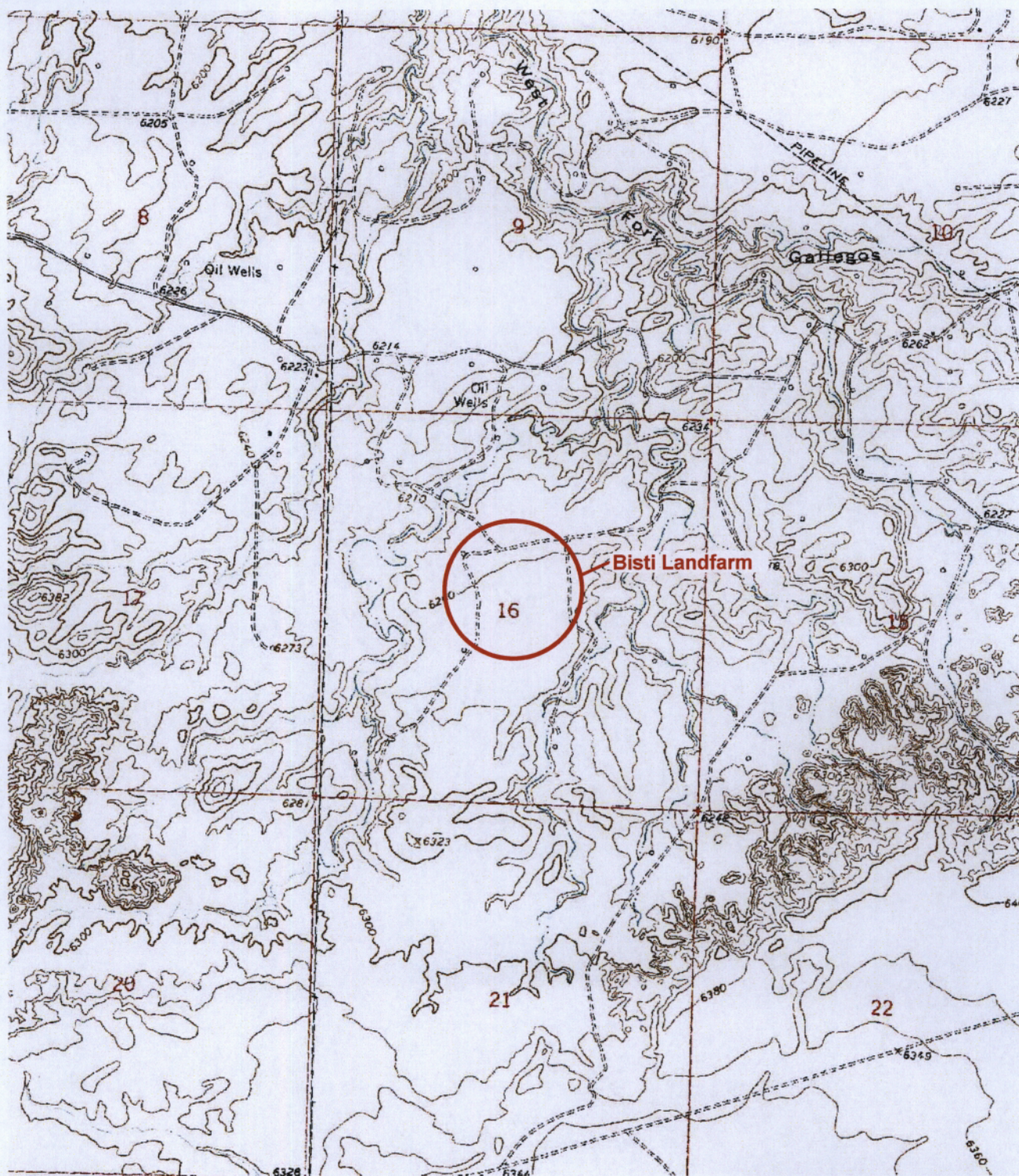
In order to update the existing background data set, Western proposes to collect one background soil sample according to the sampling protocol required in the original Rule 711 Permit to establish background concentrations for additional analytes required for a complete vadose zone soil assessment by Rule 36.

Western will collect one soil sample west of the landfarm from two feet below the native ground surface. The proposed sample location is outside the fenced area of current and historical landfarm activities and topographically higher than the landfarm. LTE determined the proposed location to be the least likely upgradient location to be potentially affected by current and historical oil and gas activities to the east, southeast, and southwest. The proposed sampling location is depicted on Figure 2. The soil sample will be analyzed for constituents listed in subsections A and B of 20.6.2.3103 of the NMAC. The proposed parameters and associated analytical methods are listed in Table 2.

#### **4.0 SCHEDULE**

Western's scheduling of fieldwork is contingent upon response to this Plan from the NMOCD. Western intends to conduct the described background sampling activities within two weeks of the receipt of NMOCD approval of this background sampling plan. As required in the letter from NMOCD dated June 3, 2015, Western will provide the additional background results in an amendment to the 2012 Five-Year Vadose Zone Assessment. The amendment will consist of a revised table showing all existing and new background data compared to the laboratory results of the five-year vadose zone sampling event. The majority of the laboratory analyses will require a minimum of three weeks and the radionuclide analysis requires a minimum of 28 days in the laboratory; therefore, Western will submit the amendment within two weeks of receipt of all laboratory analysis.

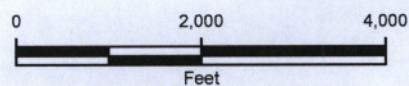
## FIGURES



# **LEGEND**

 SITE LOCATION

IMAGE COURTESY OF USDA/NRCS, VARIOUS DATES



**FIGURE 1**  
**SITE LOCATION MAP**  
**BISTI LANDFARM**  
**SEC 16 T25N R12W**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**





# **LEGEND**

- ▲ PROPOSED BACKGROUND SAMPLE LOCATION
- x — x FENCE
- APPROXIMATE SOURCE IDENTITY BOUNDARY
- CELL 1 BOUNDARY
- API CELL BOUNDARY
- CRUDE CELL BOUNDARY

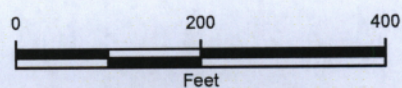


IMAGE COURTESY OF ESRI

**FIGURE 2**  
**PROPOSED BACKGROUND SAMPLE LOCATION MAP**  
**BISTI LANDFARM**  
**SEC 16 T25N R12W**  
**SAN JUAN COUNTY, NEW MEXICO**  
**WESTERN REFINING SOUTHWEST, INC.**



## TABLES

**TABLE 1**  
**Background Laboratory Analytical Results**  
**Bisti Landfarm**  
**Western Refining Southwest, Inc.**

| ANALYTE                                  | UNIT  | BACKGROUND<br>SAMPLE |
|------------------------------------------|-------|----------------------|
|                                          |       | 27-Mar-98            |
| Benzene                                  | mg/kg | <0.05                |
| Toluene                                  | mg/kg | <0.05                |
| Ethylbenzene                             | mg/kg | <0.05                |
| Xylenes, Total                           | mg/kg | <0.05                |
| DRO (C <sub>10</sub> - C <sub>28</sub> ) | mg/kg | <50                  |
| Arsenic                                  | mg/kg | 2.8                  |
| Barium                                   | mg/kg | 180                  |
| Cadmium                                  | mg/kg | <1.3                 |
| Calcium                                  | mg/kg | 2,500                |
| Bibarbonate                              | mg/kg | 110                  |
| Carbonate                                | mg/kg | 26                   |
| Chloride                                 | mg/kg | <50                  |
| Chromium                                 | mg/kg | <5.0                 |
| Lead                                     | mg/kg | 6.8                  |
| Magnesium                                | mg/kg | 1,300                |
| Mercury                                  | mg/kg | <0.5                 |
| Potassium                                | mg/kg | 810                  |
| Selenium                                 | mg/kg | <2.5                 |
| Silver                                   | mg/kg | <1.3                 |
| Sodium                                   | mg/kg | 90                   |
| Sulfate                                  | mg/kg | 140                  |

**Notes:**

DRO - diesel range organics

mg/kg - milligrams per kilograms

< - indicates result is less than the stated method reporting limit

**TABLE 2**  
**Proposed Background Analytes and Methods**  
**Bisti Landfarm**  
**Western Refining Southwest, Inc.**

| PROPOSED ANALYTE                         | PROPOSED METHOD   |
|------------------------------------------|-------------------|
| Carbon tetrachloride                     | EPA Method 8260B  |
| 1,2-Dichloroethane (EDC)                 | EPA Method 8260B  |
| 1,1-dichloroethylene (1,1-DCE)           | EPA Method 8260B  |
| 1,1,2,2-Tetrachloroethylene (PCE)        | EPA Method 8260B  |
| 1,1,2-Trichloroethylene (TCE)            | EPA Method 8260B  |
| Methylene chloride                       | EPA Method 8260B  |
| Chloroform                               | EPA Method 8260B  |
| 1,1-Dichloroethane                       | EPA Method 8260B  |
| Ethylene Dibromide (EDB)                 | EPA Method 8260B  |
| 1,1,1-Trichloroethane                    | EPA Method 8260B  |
| 1,1,2-Trichloroethane                    | EPA Method 8260B  |
| 1,1,2,2-Tetrachloroethane                | EPA Method 8260B  |
| Vinyl chloride                           | EPA Method 8260B  |
| Aroclor 1016                             | EPA Method 8082   |
| Aroclor 1221                             | EPA Method 8082   |
| Aroclor 1232                             | EPA Method 8082   |
| Aroclor 1242                             | EPA Method 8082   |
| Aroclor 1248                             | EPA Method 8082   |
| Aroclor 1254                             | EPA Method 8082   |
| Aroclor 1260                             | EPA Method 8082   |
| Radium 226                               | EPA Method 901.1  |
| Radium 228                               | EPA Method 901.1  |
| Phenol                                   | EPA Method 9065   |
| Naphthalene                              | EPA Method 8310   |
| 1-Methylnaphthalene                      | EPA Method 8310   |
| 2-Methylnaphthalene                      | EPA Method 8310   |
| Benzo(a)pyrene                           | EPA Method 8310   |
| GRO (C <sub>6</sub> - C <sub>10</sub> )  | EPA Method 8015M  |
| MRO (C <sub>28</sub> - C <sub>36</sub> ) | EPA Method 8015M  |
| Total Petroleum Hydrocarbons             | EPA Method 418.1  |
| Copper                                   | EPA Method 6010 B |
| Iron                                     | EPA Method 6010 B |
| Manganese                                | EPA Method 6010 B |
| Uranium                                  | EPA Method 6010 B |
| Zinc                                     | EPA Method 6010 B |
| pH                                       | SM4500 - H-B      |
| Fluoride                                 | EPA Method 300.0  |
| Nitrogen, Nitrate (As N)                 | EPA Method 300.0  |
| Cyanide                                  | EPA Method 335.4  |

**Notes:**

DRO - diesel range organics

EPA - United State Environmental Protection Agency

GRO - gasoline range organics

MRO - motor oil range organics

**APPENDIX A**  
**HISTORICAL LABORATORY ANALYTICAL RESULTS**



# Chain of Custody Record — Nonchemical Samples

210 West Sand Bank Road  
P.O. Box 230  
Columbia, IL 62236-0230

(618) 281-7473 Phone 505 326 2862  
(618) 281-5120 FAX 2388

COC Serial No. **G 8630**

|                                             |                |             |             |                                      |                     |
|---------------------------------------------|----------------|-------------|-------------|--------------------------------------|---------------------|
| Project Name <b>GIANT-LANDFARM BASELINE</b> |                |             |             | Lab Name <b>TRACE ANALYSIS, INC.</b> |                     |
| Project Number <b>16958</b> Phase - Task    |                |             |             | Location <b>EL PASO, TX</b>          |                     |
| Samplers <b>D. CESARK</b>                   |                |             |             | (EFH) <sup>TDL</sup> Analysis Type   |                     |
| Sample Number                               | Date           | Time        | Matrix      | 8015/HEAVY METALS                    | 8070 CATIONS/ANIONS |
| <b>BL-1</b>                                 | <b>3/27/98</b> | <b>9:25</b> | <b>SOIL</b> | <b>X</b>                             | <b>X</b>            |
| <b>981171</b>                               |                |             |             | <b>2 4-OZ. JARS</b>                  |                     |
|                                             |                |             |             | <b>* EPA 875 SULFATE</b>             |                     |
|                                             |                |             |             | <b>" 325.2 CHLORIDE</b>              |                     |
|                                             |                |             |             | <b>" 610 CALCIUM,</b>                |                     |
|                                             |                |             |             | <b>MAGNESIUM, SODIUM,</b>            |                     |
|                                             |                |             |             | <b>POTASSIUM,</b>                    |                     |
|                                             |                |             |             | <b>EPA 310.1 CARBONATE,</b>          |                     |
|                                             |                |             |             | <b>BICARBONATE</b>                   |                     |
|                                             |                |             |             | <b>REGULAR (NORMAL</b>               |                     |
|                                             |                |             |             | <b>T/A TIME</b>                      |                     |

Relinquished by:

Received By:

|           |             |              |           |                |              |
|-----------|-------------|--------------|-----------|----------------|--------------|
| Signature | Date        | Time         | Signature | Date           | Time         |
|           | <b>3/27</b> | <b>14:20</b> |           | <b>3/28/98</b> | <b>10:00</b> |
|           | DC          | DC           |           |                |              |

Carrier: **UPS**

Airbill No. **N301 0214 268**

Shipping and Lab Notes:

# TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298  
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944  
E-Mail: lab@traceanalysis.com

**ANALYTICAL RESULTS FOR  
PHILIP ENVIRONMENTAL**  
Attention: Dave Cesark  
4000 Monroe Rd.  
Farmington, NM 87401

April 15, 1998  
Receiving Date: 03/28/98  
Sample Type: Soil  
Project No: 16958  
Project Location: NA  
COC# G 3630

Prep Date: 04/10/98  
Analysis Date: 04/11/98  
Sampling Date: 03/27/98  
Sample Condition: Intact & Cool  
Sample Received by: BW  
Project Name: Giant - Landfarm  
Baseline

| TA#                   | FIELD CODE | DRO<br>(mg/kg) |
|-----------------------|------------|----------------|
| T95949/981171         | BL-1       | <50            |
| METHOD BLANK          |            | <50            |
| REPORTING LIMIT       |            | 50             |
| ICV                   |            | 200            |
| CCV                   |            | 211            |
| RPD                   |            | 8              |
| % Extraction Accuracy |            | 80             |
| % Instrument Accuracy |            | 82             |

METHODS: EPA SW 846-8015 Diesel.  
CHEMIST: MS  
SPIKE: 250 mg/kg.  
CV: 250 mg/L.



Director, Dr. Blair Leftwich

4-15-98

DATE

## ANALYTICAL REPORT

## TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9

Lubbock, Texas 79424

800•378•1296

806•794•1296

FAX 806•794•1298

4725 Rieley Avenue, Suite A

El Paso, Texas 79922

888•588•3443

915•585•3443

FAX 915•585•4944

CLIENT PHILIP SERVICES  
4000 MONROE ROAD  
FARMINGTON, NM 87401

E-Mail: lab@traceanalysis.com

SAMPLE NO.: 981171  
INVOICE NO.: 22101871  
REPORT DATE: 04-10-98  
REVIEWED BY: *WZ*  
PAGE: 1 OF 2

CLIENT SAMPLE ID : BL-1  
SAMPLE TYPE .....: Soil  
SAMPLED BY .....: D Cesark  
SUBMITTED BY .....: D Cesark  
SAMPLE SOURCE ....: Giant-Landfarm Baseline  
ANALYST .....: K. Costa

AUTHORIZED BY : D. CESARK  
CLIENT P.O. : --  
SAMPLE DATE ...: 03-27-98  
SUBMITTAL DATE : 03-28-98  
EXTRACTION DATE: 04-07-98  
ANALYSIS DATE ..: 04-07-98

Petroleum Contaminants by 8020A

## D A T A T A B L E

| Parameter           | Result | Unit  | Detection Limit |
|---------------------|--------|-------|-----------------|
| Benzene .....       | <50.   | ug/Kg | 50.             |
| Toluene .....       | <50.   | ug/Kg | 50.             |
| Ethylbenzene .....  | <50.   | ug/Kg | 50.             |
| Total Xylenes ..... | <50.   | ug/Kg | 50.             |

ANALYTICAL RESULT(S) REPORTED HEREIN APPLY ONLY TO THE SAMPLE(S)  
TESTED. FURTHERMORE, THIS REPORT CAN ONLY BE COPIED IN ITS ENTIRETY.

(1) Copy to Client

*W. Z. Costa*

# TRACE ANALYSIS, INC.

## ANALYTICAL REPORT

CLIENT **PHILIP SERVICES**  
4000 MONROE ROAD  
FARMINGTON, NM 87401

6701 Aberdeen Avenue, Suite 9

4725 Ripley Avenue, Suite A

Lubbock, Texas 79424

El Paso, Texas 79922

800•378•1296

888•588•3443

806•794•1296

915•585•3443

FAX 806•794•1298

FAX 915•585•4944

E-Mail: lab@traceanalysis.com

SAMPLE NO. : 981171

INVOICE NO. : 22101871

REPORT DATE: 04-10-98

REVIEWED BY: *WJ*

PAGE : 2 OF 2

### DATA TABLE

(Cont.)

#### Surrogate Information -

|                        | <u>Percent Recovery</u> | <u>Range</u> |
|------------------------|-------------------------|--------------|
| Trifluorotoluene ..... | 100.5                   | 64-135       |

# TRACE ANALYSIS, INC.

## ANALYTICAL REPORT

CLIENT PHILIP SERVICES  
4000 MONROE ROAD  
FARMINGTON, NM 87401

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298  
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•3444  
E-Mail: lab@traceanalysis.com

SAMPLE NO. : 981171  
INVOICE NO.: 22101871  
REPORT DATE: 04-14-98  
REVIEWED BY: *MC 7*  
PAGE : 1 OF 2

CLIENT SAMPLE ID : BL-1  
SAMPLE TYPE .....: Soil  
SAMPLED BY .....: D Cesark  
SUBMITTED BY .....: D Cesark  
SAMPLE SOURCE ....: Giant-Landfarm Baseline

AUTHORIZED BY : D. CESARK  
CLIENT P.O. : --  
SAMPLE DATE ....: 03-27-98  
SUBMITTAL DATE : 03-28-98  
EXTRACTION DATE: --

### REMARKS -

Detection limit was raised as sample was analyzed diluted to avoid matrix interference for the following parameters: Cr and Se.  
Matrix spike and matrix spike duplicate were out of acceptance criteria range for Arsenic possibly due to matrix interference.

### Inorganic Chemistry-Total Metals

#### DATA TABLE

| Parameter             | Result | Unit  | Detection Limit | Analysis Date | Test Method | Analyst  |
|-----------------------|--------|-------|-----------------|---------------|-------------|----------|
| Total Arsenic .....   | 2.8    | mg/Kg | 1.3             | 03-30-98      | SW 7060A    | N. Munir |
| Total Barium .....    | 180    | mg/Kg | 25.             | 03-31-98      | SW 7080A    | N. Munir |
| Total Cadmium .....   | <1.3   | mg/Kg | 1.3             | 03-31-98      | SW 7130     | N. Munir |
| Total Calcium .....   | 2500   | mg/Kg | 25.             | 03-31-98      | SW 7140     | N. Munir |
| Total Chromium .....  | <5.0   | mg/Kg | 5.0             | 03-31-98      | SW 7190     | N. Munir |
| Total Lead .....      | 6.8    | mg/Kg | 4.0             | 03-31-98      | SW 7420     | N. Munir |
| Total Magnesium ..... | 1300   | mg/Kg | 25.             | 03-31-98      | SW 7450     | N. Munir |
| Total Mercury .....   | <0.50  | mg/Kg | 0.50            | 04-02-98      | SW-7471     | N. Munir |

ANALYTICAL RESULTS REPORTED HEREIN APPLY ONLY TO THE SAMPLE(S) TESTED. FURTHERMORE, THIS REPORT CAN ONLY BE COPIED IN ITS ENTIRETY.

(1) Copy to Client

*M. Z. L. M.*

# TRACE ANALYSIS, INC.

## ANALYTICAL REPORT

CLIENT PHILIP SERVICES  
4000 MONROE ROAD  
FARMINGTON, NM 87401

6701 Aberdeen Avenue, Suite 9  
4725 Ripley Avenue, Suite A

Lubbock, Texas 79424 800•378•1296  
El Paso, Texas 79922 888•588•3443  
E-Mail: lab@traceanalysis.com

806•794•1296 FAX 806•794•1298  
915•585•3443 FAX 915•585•4044

SAMPLE NO. : 981171  
INVOICE NO.: 22101871  
REPORT DATE: 04-14-98  
REVIEWED BY: *mcg*  
PAGE : 2 OF 2

### DATA TABLE (Continue)

| Parameter             | Result | Unit  | Detection Limit | Analysis Date | Test Method | Analyst    |
|-----------------------|--------|-------|-----------------|---------------|-------------|------------|
| Total Potassium ..... | 810    | mg/Kg | 25.             | 03-31-98      | SW 7610     | N. Munir   |
| Total Selenium .....  | <2.5   | mg/Kg | 2.5             | 03-31-98      | SW 7741A    | N. Munir   |
| Total Silver .....    | <1.3   | mg/Kg | 1.3             | 03-31-98      | SW 7760A    | N. Munir   |
| Total Sodium .....    | 90.    | mg/Kg | 25.             | 03-21-98      | SW 7770     | N. Munir   |
| Sulfate .....         | 140    | mg/Kg | 50.             | 04-06-98      | EPA-300.0   | A. Donohue |
| Chloride .....        | <50.   | mg/Kg | 50.             | 04-06-98      | EPA-300.0   | A. Donohue |
| Carbonate .....       | 26.    | mg/Kg | 5.0             | 04-06-98      |             | A. Donohue |
| Bicarbonate .....     | 110    | mg/Kg | 5.0             | 04-06-98      |             | A. Donohue |

(1) Copy to Client



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

October 05, 2015

Brook Herb

Western Refining Southwest, Inc.

#50 CR 4990

Bloomfield, NM 87413

TEL: (505) 632-4135

FAX

RE: Bisti Landfarm

OrderNo.: 1509090

Dear Brook Herb:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/2/2015 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

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 1509090

Date Reported: 10/5/2015

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

**Client Sample ID:** Background

**Project:** Bisti Landfarm

**Collection Date:** 9/1/2015 10:50:00 AM

**Lab ID:** 1509090-001

**Matrix:** SOIL

**Received Date:** 9/2/2015 8:00:00 AM

| Analyses                                         | Result | RL       | Qual | Units | DF | Date Analyzed         | Batch               |
|--------------------------------------------------|--------|----------|------|-------|----|-----------------------|---------------------|
| <b>EPA METHOD 418.1: TPH</b>                     |        |          |      |       |    |                       | Analyst: <b>TOM</b> |
| Petroleum Hydrocarbons, TR                       | ND     | 20       |      | mg/Kg | 1  | 9/8/2015              | 21151               |
| <b>EPA METHOD 300.0: ANIONS</b>                  |        |          |      |       |    |                       | Analyst: <b>LGT</b> |
| Fluoride                                         | 0.84   | 0.30     |      | mg/Kg | 1  | 9/8/2015 3:21:01 PM   | 21182               |
| Nitrogen, Nitrate (As N)                         | ND     | 0.30     |      | mg/Kg | 1  | 9/8/2015 3:21:01 PM   | 21182               |
| <b>EPA METHOD 6010B: SOIL METALS</b>             |        |          |      |       |    |                       | Analyst: <b>JLF</b> |
| Copper                                           | 3.2    | 0.30     |      | mg/Kg | 1  | 9/10/2015 10:39:20 AM | 21211               |
| Iron                                             | 7200   | 120      |      | mg/Kg | 50 | 9/10/2015 11:33:58 AM | 21211               |
| Manganese                                        | 150    | 0.099    |      | mg/Kg | 1  | 9/10/2015 10:39:20 AM | 21211               |
| Uranium                                          | ND     | 4.9      |      | mg/Kg | 1  | 9/10/2015 10:39:20 AM | 21211               |
| Zinc                                             | 14     | 2.5      |      | mg/Kg | 1  | 9/10/2015 10:39:20 AM | 21211               |
| <b>EPA METHOD 8082: PCB'S</b>                    |        |          |      |       |    |                       | Analyst: <b>SCC</b> |
| Aroclor 1016                                     | ND     | 0.020    |      | mg/Kg | 1  | 9/8/2015 2:12:46 PM   | 21124               |
| Aroclor 1221                                     | ND     | 0.020    |      | mg/Kg | 1  | 9/8/2015 2:12:46 PM   | 21124               |
| Aroclor 1232                                     | ND     | 0.020    |      | mg/Kg | 1  | 9/8/2015 2:12:46 PM   | 21124               |
| Aroclor 1242                                     | ND     | 0.020    |      | mg/Kg | 1  | 9/8/2015 2:12:46 PM   | 21124               |
| Aroclor 1248                                     | ND     | 0.020    |      | mg/Kg | 1  | 9/8/2015 2:12:46 PM   | 21124               |
| Aroclor 1254                                     | ND     | 0.020    |      | mg/Kg | 1  | 9/8/2015 2:12:46 PM   | 21124               |
| Aroclor 1260                                     | ND     | 0.020    |      | mg/Kg | 1  | 9/8/2015 2:12:46 PM   | 21124               |
| Surr: Decachlorobiphenyl                         | 87.6   | 25.2-134 |      | %REC  | 1  | 9/8/2015 2:12:46 PM   | 21124               |
| Surr: Tetrachloro-m-xylene                       | 72.8   | 17.4-148 |      | %REC  | 1  | 9/8/2015 2:12:46 PM   | 21124               |
| <b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b> |        |          |      |       |    |                       | Analyst: <b>JME</b> |
| Diesel Range Organics (DRO)                      | ND     | 9.9      |      | mg/Kg | 1  | 9/4/2015 6:18:05 PM   | 21121               |
| Motor Oil Range Organics (MRO)                   | ND     | 50       |      | mg/Kg | 1  | 9/4/2015 6:18:05 PM   | 21121               |
| Surr: DNOP                                       | 153    | 57.9-140 | S    | %REC  | 1  | 9/4/2015 6:18:05 PM   | 21121               |
| <b>EPA METHOD 8015D: GASOLINE RANGE</b>          |        |          |      |       |    |                       | Analyst: <b>RAA</b> |
| Gasoline Range Organics (GRO)                    | ND     | 4.8      |      | mg/Kg | 1  | 9/3/2015 3:50:33 PM   | 21112               |
| Surr: BFB                                        | 89.7   | 75.4-113 |      | %REC  | 1  | 9/3/2015 3:50:33 PM   | 21112               |
| <b>EPA METHOD 8310: PAHS</b>                     |        |          |      |       |    |                       | Analyst: <b>SCC</b> |
| Naphthalene                                      | ND     | 0.25     |      | mg/Kg | 1  | 9/8/2015 2:13:15 PM   | 21125               |
| 1-Methylnaphthalene                              | ND     | 0.25     |      | mg/Kg | 1  | 9/8/2015 2:13:15 PM   | 21125               |
| 2-Methylnaphthalene                              | ND     | 0.25     |      | mg/Kg | 1  | 9/8/2015 2:13:15 PM   | 21125               |
| Benzo(a)pyrene                                   | ND     | 0.0099   |      | mg/Kg | 1  | 9/8/2015 2:13:15 PM   | 21125               |
| <b>EPA METHOD 8260B: VOLATILES</b>               |        |          |      |       |    |                       | Analyst: <b>AG</b>  |
| Benzene                                          | ND     | 0.048    |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM   | 21112               |
| Toluene                                          | ND     | 0.048    |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM   | 21112               |
| Ethylbenzene                                     | ND     | 0.048    |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM   | 21112               |

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

|                    |    |                                                       |    |                                                 |
|--------------------|----|-------------------------------------------------------|----|-------------------------------------------------|
| <b>Qualifiers:</b> | *  | 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                          |
|                    | R  | RPD outside accepted recovery limits                  | RL | Reporting Detection Limit                       |
|                    | S  | % Recovery outside of range due to dilution or matrix |    |                                                 |

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1509090

Date Reported: 10/5/2015

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

**Client Sample ID:** Background

**Project:** Bisti Landfarm

**Collection Date:** 9/1/2015 10:50:00 AM

**Lab ID:** 1509090-001

**Matrix:** SOIL

**Received Date:** 9/2/2015 8:00:00 AM

| Analyses                           | Result | RL    | Qual | Units | DF | Date Analyzed       | Batch       |
|------------------------------------|--------|-------|------|-------|----|---------------------|-------------|
| <b>EPA METHOD 8260B: VOLATILES</b> |        |       |      |       |    |                     | Analyst: AG |
| Methyl tert-butyl ether (MTBE)     | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| 1,2,4-Trimethylbenzene             | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| 1,3,5-Trimethylbenzene             | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| 1,2-Dichloroethane (EDC)           | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| 1,2-Dibromoethane (EDB)            | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| Naphthalene                        | ND     | 0.095 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| 1-Methylnaphthalene                | ND     | 0.19  |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| 2-Methylnaphthalene                | ND     | 0.19  |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| Acetone                            | ND     | 0.72  |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| Bromobenzene                       | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| Bromodichloromethane               | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| Bromoform                          | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| Bromomethane                       | ND     | 0.14  |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| 2-Butanone                         | ND     | 0.48  |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| Carbon disulfide                   | ND     | 0.48  |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| Carbon tetrachloride               | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| Chlorobenzene                      | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| Chloroethane                       | ND     | 0.095 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| Chloroform                         | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| Chloromethane                      | ND     | 0.14  |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| 2-Chlorotoluene                    | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| 4-Chlorotoluene                    | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| cis-1,2-DCE                        | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| cis-1,3-Dichloropropene            | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| 1,2-Dibromo-3-chloropropane        | ND     | 0.095 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| Dibromochloromethane               | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| Dibromomethane                     | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| 1,2-Dichlorobenzene                | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| 1,3-Dichlorobenzene                | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| 1,4-Dichlorobenzene                | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| Dichlorodifluoromethane            | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| 1,1-Dichloroethane                 | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| 1,1-Dichloroethene                 | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| 1,2-Dichloropropane                | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| 1,3-Dichloropropane                | ND     | 0.048 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| 2,2-Dichloropropane                | ND     | 0.095 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| 1,1-Dichloropropene                | ND     | 0.095 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| Hexachlorobutadiene                | ND     | 0.095 |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |
| 2-Hexanone                         | ND     | 0.48  |      | mg/Kg | 1  | 9/3/2015 4:53:30 PM | 21112       |

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

|                    |                                                         |                                                   |
|--------------------|---------------------------------------------------------|---------------------------------------------------|
| <b>Qualifiers:</b> | * 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                          |
|                    | R RPD outside accepted recovery limits                  | RL Reporting Detection Limit                      |
|                    | S % Recovery outside of range due to dilution or matrix |                                                   |

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1509090

Date Reported: 10/5/2015

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

**Client Sample ID:** Background

**Project:** Bisti Landfarm

**Collection Date:** 9/1/2015 10:50:00 AM

**Lab ID:** 1509090-001

**Matrix:** SOIL

**Received Date:** 9/2/2015 8:00:00 AM

| Analyses                           | Result | RL     | Qual | Units    | DF | Date Analyzed        | Batch               |
|------------------------------------|--------|--------|------|----------|----|----------------------|---------------------|
| <b>EPA METHOD 8260B: VOLATILES</b> |        |        |      |          |    |                      | Analyst: <b>AG</b>  |
| Isopropylbenzene                   | ND     | 0.048  |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| 4-Isopropyltoluene                 | ND     | 0.048  |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| 4-Methyl-2-pentanone               | ND     | 0.48   |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| Methylene chloride                 | ND     | 0.14   |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| n-Butylbenzene                     | ND     | 0.14   |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| n-Propylbenzene                    | ND     | 0.048  |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| sec-Butylbenzene                   | ND     | 0.048  |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| Styrene                            | ND     | 0.048  |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| tert-Butylbenzene                  | ND     | 0.048  |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| 1,1,1,2-Tetrachloroethane          | ND     | 0.048  |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| 1,1,2,2-Tetrachloroethane          | ND     | 0.048  |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| Tetrachloroethene (PCE)            | ND     | 0.048  |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| trans-1,2-DCE                      | ND     | 0.048  |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| trans-1,3-Dichloropropene          | ND     | 0.048  |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| 1,2,3-Trichlorobenzene             | ND     | 0.095  |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| 1,2,4-Trichlorobenzene             | ND     | 0.048  |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| 1,1,1-Trichloroethane              | ND     | 0.048  |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| 1,1,2-Trichloroethane              | ND     | 0.048  |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| Trichloroethene (TCE)              | ND     | 0.048  |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| Trichlorofluoromethane             | ND     | 0.048  |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| 1,2,3-Trichloropropane             | ND     | 0.095  |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| Vinyl chloride                     | ND     | 0.048  |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| Xylenes, Total                     | ND     | 0.095  |      | mg/Kg    | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| Surr: Dibromofluoromethane         | 98.5   | 70-130 |      | %REC     | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| Surr: 1,2-Dichloroethane-d4        | 96.8   | 70-130 |      | %REC     | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| Surr: Toluene-d8                   | 89.0   | 70-130 |      | %REC     | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| Surr: 4-Bromofluorobenzene         | 95.3   | 70-130 |      | %REC     | 1  | 9/3/2015 4:53:30 PM  | 21112               |
| <b>SM4500-H+B: PH</b>              |        |        |      |          |    |                      | Analyst: <b>JRR</b> |
| pH                                 | 7.89   | 1.68   |      | pH Units | 1  | 9/3/2015 11:45:00 AM | R28642              |

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

|                    |    |                                                       |    |                                                 |
|--------------------|----|-------------------------------------------------------|----|-------------------------------------------------|
| <b>Qualifiers:</b> | *  | 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                          |
|                    | R  | RPD outside accepted recovery limits                  | RL | Reporting Detection Limit                       |
|                    | S  | % Recovery outside of range due to dilution or matrix |    |                                                 |



Wet Chemistry by Method 9012B

|         | Result | Qualifier | RDL   | Dilution | Analysis         | Batch    |
|---------|--------|-----------|-------|----------|------------------|----------|
| Analyte | mg/kg  |           | mg/kg |          | date / time      |          |
| Cyanide | ND     |           | 0.250 | 1        | 09/09/2015 12:47 | WG814063 |

2Tc

Wet Chemistry by Method 9066

|                      | Result | Qualifier | RDL   | Dilution | Analysis         | Batch    |
|----------------------|--------|-----------|-------|----------|------------------|----------|
| Analyte              | mg/kg  |           | mg/kg |          | date / time      |          |
| Total Phenol by 4AAP | ND     |           | 0.670 | 1        | 09/14/2015 14:05 | WG814790 |

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

{MB} 09/09/15 12:26

|         | MB Result<br>mg/kg | MB Qualifier | MB RDL<br>mg/kg |
|---------|--------------------|--------------|-----------------|
| Analyte | ND                 |              | 0.250           |
| Cyanide |                    |              |                 |

L787320-02 Original Sample (OS) • Duplicate (DUP)

{OS} 09/09/15 12:35 • {DUP} 09/09/15 12:36

|         | Original Result<br>mg/kg | DUP Result<br>mg/kg | Dilution | DUP RPD<br>% | DUP Qualifier | DUP RPD Limits<br>% |
|---------|--------------------------|---------------------|----------|--------------|---------------|---------------------|
| Analyte | ND                       | ND                  | 1        | 0.00         |               | 20                  |
| Cyanide |                          |                     |          |              |               |                     |

L787320-01 Original Sample (OS) • Duplicate (DUP)

{OS} 09/09/15 12:53 • {DUP} 09/09/15 12:54

|         | Original Result<br>mg/kg | DUP Result<br>mg/kg | Dilution | DUP RPD<br>% | DUP Qualifier | DUP RPD Limits<br>% |
|---------|--------------------------|---------------------|----------|--------------|---------------|---------------------|
| Analyte | ND                       | ND                  | 1        | 200          | P1            | 20                  |
| Cyanide |                          |                     |          |              |               |                     |

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

{LCS} 09/09/15 12:28 • {LCSD} 09/09/15 12:29

|         | Spike Amount<br>mg/kg | LCS Result<br>mg/kg | LCSD Result<br>mg/kg | LCS Rec.<br>% | LCSD Rec.<br>% | Rec. Limits<br>% | LCS Qualifier | LCSD Qualifier | RPD<br>% | RPD Limits<br>% |
|---------|-----------------------|---------------------|----------------------|---------------|----------------|------------------|---------------|----------------|----------|-----------------|
| Analyte | 53.9                  | 47.0                | 51.0                 | 87.2          | 94.6           | 50.0-150         |               |                | 8.16     | 20              |
| Cyanide |                       |                     |                      |               |                |                  |               |                |          |                 |

|   |    |
|---|----|
| 2 | Tc |
| 3 | Ss |
| 4 | Cn |
| 5 | Sr |
| 6 | Qc |
| 7 | Gl |
| 8 | Al |
| 9 | Sc |

Method Blank (MB)

(MB) 09/14/15 14:00

| Analyte              | MB Result<br>mg/kg | MB Qualifier | MB RDL<br>mg/kg |
|----------------------|--------------------|--------------|-----------------|
| Total Phenol by 4AAP | ND                 |              | 0.670           |

L786552-01 Original Sample (OS) • Duplicate (DUP)

(OS) 09/14/15 14:04 • (DUP) 09/14/15 14:04

| Analyte              | Original Result<br>mg/kg | DUP Result<br>mg/kg | Dilution | DUP RPD<br>% | DUP Qualifier | DUP RPD Limits<br>% |
|----------------------|--------------------------|---------------------|----------|--------------|---------------|---------------------|
| Total Phenol by 4AAP | ND                       | ND                  | 1        | 0.00         |               | 20                  |

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

(LCS) 09/14/15 14:01 • (LCSD) 09/14/15 14:02

| Analyte              | Spike Amount<br>mg/kg | LCS Result<br>mg/kg | LCSD Result<br>mg/kg | LCS Rec.<br>% | LCSD Rec.<br>% | Rec. Limits<br>% | LCSD Qualifier | LCS Qualifier | RPD<br>% | RPD Limits<br>% |
|----------------------|-----------------------|---------------------|----------------------|---------------|----------------|------------------|----------------|---------------|----------|-----------------|
| Total Phenol by 4AAP | 8.33                  | 8.77                | 8.88                 | 105           | 107            | 90.0-110         |                |               | 125      | 20              |

L787017-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 09/14/15 14:05 • (MS) 09/14/15 14:06 • (MSD) 09/14/15 14:07

| Analyte              | Spike Amount<br>mg/kg | Original Result<br>mg/kg | MS Result<br>mg/kg | MSD Result<br>mg/kg | MS Rec.<br>% | MSD Rec.<br>% | Dilution | Rec. Limits<br>% | MS Qualifier | MSD Qualifier | RPD<br>% | RPD Limits<br>% |
|----------------------|-----------------------|--------------------------|--------------------|---------------------|--------------|---------------|----------|------------------|--------------|---------------|----------|-----------------|
| Total Phenol by 4AAP | 16.7                  | 0.120                    | 15.8               | 15.8                | 94.6         | 94.6          | 1        | 90.0-110         |              |               | 0.000    | 20              |

**ANALYTICAL RESULTS - RADIOCHEMISTRY**

Project: 1509090  
Pace Project No.: 30158412

Sample: 1509090-001C Background Lab ID: 30158412001 Collected: 09/01/15 10:50 Received: 09/03/15 09:30 Matrix: Solid  
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

| Parameters | Method    | Act ± Unc (MDC) Carr Trac          | Units | Analyzed       | CAS No.    | Qual |
|------------|-----------|------------------------------------|-------|----------------|------------|------|
| Radium-226 | EPA 901.1 | 0.737 ± 0.242 (0.171)<br>C:NA T:NA | pCi/g | 10/02/15 11:57 | 13982-63-3 |      |
| Radium-228 | EPA 901.1 | 0.806 ± 0.338 (0.462)<br>C:NA T:NA | pCi/g | 10/02/15 11:57 | 15262-20-1 |      |

**REPORT OF LABORATORY ANALYSIS**

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## QUALITY CONTROL - RADIOCHEMISTRY

Project: 1509090  
Pace Project No.: 30158412

|                         |             |                       |                           |
|-------------------------|-------------|-----------------------|---------------------------|
| QC Batch:               | RADC/26047  | Analysis Method:      | EPA 901.1                 |
| QC Batch Method:        | EPA 901.1   | Analysis Description: | 901.1 Gamma Spec Ingrowth |
| Associated Lab Samples: | 30158412001 |                       |                           |

|                         |             |         |       |
|-------------------------|-------------|---------|-------|
| METHOD BLANK:           | 952582      | Matrix: | Solid |
| Associated Lab Samples: | 30158412001 |         |       |

| Parameter  | Act ± Unc (MDC) Carr Trac       | Units | Analyzed       | Qualifiers |
|------------|---------------------------------|-------|----------------|------------|
| Radium-226 | 0.144 ± 0.175 (0.276) C:NA T:NA | pCi/g | 09/16/15 21:55 |            |
| Radium-228 | 0.169 ± 0.213 (0.330) C:NA T:NA | pCi/g | 09/16/15 21:55 |            |

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1509090

05-Oct-15

Client: Western Refining Southwest, Inc.

Project: Bisti Landfarm

|                          |          |      |                         |             |                                    |          |              |      |          |      |
|--------------------------|----------|------|-------------------------|-------------|------------------------------------|----------|--------------|------|----------|------|
| Sample ID                | MB-21182 |      | SampType: MBLK          |             | TestCode: EPA Method 300.0: Anions |          |              |      |          |      |
| Client ID:               | PBS      |      | Batch ID: 21182         |             | RunNo: 28712                       |          |              |      |          |      |
| Prep Date:               | 9/8/2015 |      | Analysis Date: 9/8/2015 |             | SeqNo: 870259                      |          | Units: mg/Kg |      |          |      |
| Analyte                  | Result   | PQL  | SPK value               | SPK Ref Val | %REC                               | LowLimit | HighLimit    | %RPD | RPDLimit | Qual |
| Fluoride                 | ND       | 0.30 |                         |             |                                    |          |              |      |          |      |
| Nitrogen, Nitrate (As N) | ND       | 0.30 |                         |             |                                    |          |              |      |          |      |

|                          |           |      |                         |             |                                    |          |              |      |          |      |
|--------------------------|-----------|------|-------------------------|-------------|------------------------------------|----------|--------------|------|----------|------|
| Sample ID                | LCS-21182 |      | SampType: LCS           |             | TestCode: EPA Method 300.0: Anions |          |              |      |          |      |
| Client ID:               | LCSS      |      | Batch ID: 21182         |             | RunNo: 28712                       |          |              |      |          |      |
| Prep Date:               | 9/8/2015  |      | Analysis Date: 9/8/2015 |             | SeqNo: 870260                      |          | Units: mg/Kg |      |          |      |
| Analyte                  | Result    | PQL  | SPK value               | SPK Ref Val | %REC                               | LowLimit | HighLimit    | %RPD | RPDLimit | Qual |
| Fluoride                 | 1.5       | 0.30 | 1.500                   | 0           | 99.4                               | 90       | 110          |      |          |      |
| Nitrogen, Nitrate (As N) | 7.5       | 0.30 | 7.500                   | 0           | 99.5                               | 90       | 110          |      |          |      |

|                          |                |      |                         |             |                                    |          |              |      |          |      |
|--------------------------|----------------|------|-------------------------|-------------|------------------------------------|----------|--------------|------|----------|------|
| Sample ID                | 1509090-001AMS |      | SampType: MS            |             | TestCode: EPA Method 300.0: Anions |          |              |      |          |      |
| Client ID:               | Background     |      | Batch ID: 21182         |             | RunNo: 28712                       |          |              |      |          |      |
| Prep Date:               | 9/8/2015       |      | Analysis Date: 9/8/2015 |             | SeqNo: 870270                      |          | Units: mg/Kg |      |          |      |
| Analyte                  | Result         | PQL  | SPK value               | SPK Ref Val | %REC                               | LowLimit | HighLimit    | %RPD | RPDLimit | Qual |
| Fluoride                 | 1.4            | 0.30 | 1.500                   | 0.8431      | 34.8                               | 13.6     | 100          |      |          |      |
| Nitrogen, Nitrate (As N) | 7.6            | 0.30 | 7.500                   | 0           | 101                                | 87.6     | 109          |      |          |      |

|                          |                 |      |                         |             |                                    |          |              |       |          |      |
|--------------------------|-----------------|------|-------------------------|-------------|------------------------------------|----------|--------------|-------|----------|------|
| Sample ID                | 1509090-001AMSD |      | SampType: MSD           |             | TestCode: EPA Method 300.0: Anions |          |              |       |          |      |
| Client ID:               | Background      |      | Batch ID: 21182         |             | RunNo: 28712                       |          |              |       |          |      |
| Prep Date:               | 9/8/2015        |      | Analysis Date: 9/8/2015 |             | SeqNo: 870271                      |          | Units: mg/Kg |       |          |      |
| Analyte                  | Result          | PQL  | SPK value               | SPK Ref Val | %REC                               | LowLimit | HighLimit    | %RPD  | RPDLimit | Qual |
| Fluoride                 | 1.4             | 0.30 | 1.500                   | 0.8431      | 34.1                               | 13.6     | 100          | 0.759 | 20       |      |
| Nitrogen, Nitrate (As N) | 7.6             | 0.30 | 7.500                   | 0           | 102                                | 87.6     | 109          | 0.992 | 20       |      |

### Qualifiers:

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

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1509090

05-Oct-15

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

**Project:** Bisti Landfarm

|                            |          |     |                         |             |                                 |          |              |      |          |      |
|----------------------------|----------|-----|-------------------------|-------------|---------------------------------|----------|--------------|------|----------|------|
| Sample ID                  | MB-21151 |     | SampType: MBLK          |             | TestCode: EPA Method 418.1: TPH |          |              |      |          |      |
| Client ID:                 | PBS      |     | Batch ID: 21151         |             | RunNo: 28697                    |          |              |      |          |      |
| Prep Date:                 | 9/4/2015 |     | Analysis Date: 9/8/2015 |             | SeqNo: 869534                   |          | Units: mg/Kg |      |          |      |
| Analyte                    | Result   | PQL | SPK value               | SPK Ref Val | %REC                            | LowLimit | HighLimit    | %RPD | RPDLimit | Qual |
| Petroleum Hydrocarbons, TR | ND       | 20  |                         |             |                                 |          |              |      |          |      |

|                            |           |     |                         |             |                                 |          |              |      |          |      |
|----------------------------|-----------|-----|-------------------------|-------------|---------------------------------|----------|--------------|------|----------|------|
| Sample ID                  | LCS-21151 |     | SampType: LCS           |             | TestCode: EPA Method 418.1: TPH |          |              |      |          |      |
| Client ID:                 | LCSS      |     | Batch ID: 21151         |             | RunNo: 28697                    |          |              |      |          |      |
| Prep Date:                 | 9/4/2015  |     | Analysis Date: 9/8/2015 |             | SeqNo: 869535                   |          | Units: mg/Kg |      |          |      |
| Analyte                    | Result    | PQL | SPK value               | SPK Ref Val | %REC                            | LowLimit | HighLimit    | %RPD | RPDLimit | Qual |
| Petroleum Hydrocarbons, TR | 110       | 20  | 100.0                   | 0           | 110                             | 83.6     | 116          |      |          |      |

|                            |            |                         |           |             |                                 |          |              |      |          |      |
|----------------------------|------------|-------------------------|-----------|-------------|---------------------------------|----------|--------------|------|----------|------|
| Sample ID                  | LCSD-21151 | SampType: LCSD          |           |             | TestCode: EPA Method 418.1: TPH |          |              |      |          |      |
| Client ID:                 | LCSS02     | Batch ID: 21151         |           |             | RunNo: 28697                    |          |              |      |          |      |
| Prep Date:                 | 9/4/2015   | Analysis Date: 9/8/2015 |           |             | SeqNo: 869536                   |          | Units: mg/Kg |      |          |      |
| Analyte                    | Result     | PQL                     | SPK value | SPK Ref Val | %REC                            | LowLimit | HighLimit    | %RPD | RPDLimit | Qual |
| Petroleum Hydrocarbons, TR | 110        | 20                      | 100.0     | 0           | 113                             | 83.6     | 116          | 2.49 | 20       |      |

### Qualifiers:

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

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1509090

05-Oct-15

Client: Western Refining Southwest, Inc.

Project: Bisti Landfarm

|                                |          |                         |           |             |                                                     |          |              |      |          |      |
|--------------------------------|----------|-------------------------|-----------|-------------|-----------------------------------------------------|----------|--------------|------|----------|------|
| Sample ID                      | MB-21121 | SampType: MBLK          |           |             | TestCode: EPA Method 8015M/D: Diesel Range Organics |          |              |      |          |      |
| Client ID:                     | PBS      | Batch ID: 21121         |           |             | RunNo: 28657                                        |          |              |      |          |      |
| Prep Date:                     | 9/3/2015 | Analysis Date: 9/4/2015 |           |             | SeqNo: 868052                                       |          | 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     |             | 105                                                 | 57.9     | 140          |      |          |      |

|                             |           |     |                         |             |                                                     |          |              |      |          |      |
|-----------------------------|-----------|-----|-------------------------|-------------|-----------------------------------------------------|----------|--------------|------|----------|------|
| Sample ID                   | LCS-21121 |     | SampType: LCS           |             | TestCode: EPA Method 8015M/D: Diesel Range Organics |          |              |      |          |      |
| Client ID:                  | LCSS      |     | Batch ID: 21121         |             | RunNo: 28657                                        |          |              |      |          |      |
| Prep Date:                  | 9/3/2015  |     | Analysis Date: 9/4/2015 |             | SeqNo: 868053                                       |          | Units: mg/Kg |      |          |      |
| Analyte                     | Result    | PQL | SPK value               | SPK Ref Val | %REC                                                | LowLimit | HighLimit    | %RPD | RPDLimit | Qual |
| Diesel Range Organics (DRO) | 42        | 10  | 50.00                   | 0           | 84.9                                                | 57.4     | 139          |      |          |      |
| Surr: DNOP                  | 5.0       |     | 5.000                   |             | 99.7                                                | 57.9     | 140          |      |          |      |

### Qualifiers:

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D Sample Diluted Due to Matrix  
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ND Not Detected at the Reporting Limit  
R RPD outside accepted recovery limits  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1509090

05-Oct-15

Client: Western Refining Southwest, Inc.

Project: Bisti Landfarm

|                               |           |     |                         |             |                                            |          |              |      |          |      |
|-------------------------------|-----------|-----|-------------------------|-------------|--------------------------------------------|----------|--------------|------|----------|------|
| Sample ID                     | LCS-21112 |     | SampType: LCS           |             | TestCode: EPA Method 8015D: Gasoline Range |          |              |      |          |      |
| Client ID:                    | LCSS      |     | Batch ID: 21112         |             | RunNo: 28662                               |          |              |      |          |      |
| Prep Date:                    | 9/2/2015  |     | Analysis Date: 9/3/2015 |             | SeqNo: 868074                              |          | Units: mg/Kg |      |          |      |
| Analyte                       | Result    | PQL | SPK value               | SPK Ref Val | %REC                                       | LowLimit | HighLimit    | %RPD | RPDLimit | Qual |
| Gasoline Range Organics (GRO) | 27        | 5.0 | 25.00                   | 0           | 107                                        | 79.6     | 122          |      |          |      |
| Surr: BFB                     | 1000      |     | 1000                    |             | 99.7                                       | 75.4     | 113          |      |          |      |

|                               |          |     |                         |             |                                            |          |              |      |          |      |
|-------------------------------|----------|-----|-------------------------|-------------|--------------------------------------------|----------|--------------|------|----------|------|
| Sample ID                     | MB-21112 |     | SampType: MBLK          |             | TestCode: EPA Method 8015D: Gasoline Range |          |              |      |          |      |
| Client ID:                    | PBS      |     | Batch ID: 21112         |             | RunNo: 28662                               |          |              |      |          |      |
| Prep Date:                    | 9/2/2015 |     | Analysis Date: 9/3/2015 |             | SeqNo: 868075                              |          | 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                     | 890      |     | 1000                    |             | 88.7                                       | 75.4     | 113          |      |          |      |

### Qualifiers:

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D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
R RPD outside accepted recovery limits  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1509090

05-Oct-15

Client: Western Refining Southwest, Inc.

Project: Bisti Landfarm

|                            |          |       |                         |             |                                  |          |              |      |          |      |
|----------------------------|----------|-------|-------------------------|-------------|----------------------------------|----------|--------------|------|----------|------|
| Sample ID                  | MB-21124 |       | SampType: MBLK          |             | TestCode: EPA Method 8082: PCB's |          |              |      |          |      |
| Client ID:                 | PBS      |       | Batch ID: 21124         |             | RunNo: 28678                     |          |              |      |          |      |
| Prep Date:                 | 9/3/2015 |       | Analysis Date: 9/8/2015 |             | SeqNo: 868658                    |          | Units: mg/Kg |      |          |      |
| Analyte                    | Result   | PQL   | SPK value               | SPK Ref Val | %REC                             | LowLimit | HighLimit    | %RPD | RPDLimit | Qual |
| Aroclor 1016               | ND       | 0.020 |                         |             |                                  |          |              |      |          |      |
| Aroclor 1221               | ND       | 0.020 |                         |             |                                  |          |              |      |          |      |
| Aroclor 1232               | ND       | 0.020 |                         |             |                                  |          |              |      |          |      |
| Aroclor 1242               | ND       | 0.020 |                         |             |                                  |          |              |      |          |      |
| Aroclor 1248               | ND       | 0.020 |                         |             |                                  |          |              |      |          |      |
| Aroclor 1254               | ND       | 0.020 |                         |             |                                  |          |              |      |          |      |
| Aroclor 1260               | ND       | 0.020 |                         |             |                                  |          |              |      |          |      |
| Surr: Decachlorobiphenyl   | 0.040    |       | 0.06250                 |             | 63.6                             | 25.2     | 134          |      |          |      |
| Surr: Tetrachloro-m-xylene | 0.031    |       | 0.06250                 |             | 50.0                             | 17.4     | 148          |      |          |      |

|                            |           |       |                         |             |                                  |          |              |      |          |      |
|----------------------------|-----------|-------|-------------------------|-------------|----------------------------------|----------|--------------|------|----------|------|
| Sample ID                  | LCS-21124 |       | SampType: LCS           |             | TestCode: EPA Method 8082: PCB's |          |              |      |          |      |
| Client ID:                 | LCSS      |       | Batch ID: 21124         |             | RunNo: 28678                     |          |              |      |          |      |
| Prep Date:                 | 9/3/2015  |       | Analysis Date: 9/8/2015 |             | SeqNo: 868659                    |          | Units: mg/Kg |      |          |      |
| Analyte                    | Result    | PQL   | SPK value               | SPK Ref Val | %REC                             | LowLimit | HighLimit    | %RPD | RPDLimit | Qual |
| Aroclor 1016               | 0.070     | 0.020 | 0.1250                  | 0           | 55.7                             | 17.3     | 119          |      |          |      |
| Aroclor 1260               | 0.10      | 0.020 | 0.1250                  | 0           | 80.5                             | 10.7     | 139          |      |          |      |
| Surr: Decachlorobiphenyl   | 0.052     |       | 0.06250                 |             | 82.8                             | 25.2     | 134          |      |          |      |
| Surr: Tetrachloro-m-xylene | 0.039     |       | 0.06250                 |             | 62.0                             | 17.4     | 148          |      |          |      |

### Qualifiers:

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

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1509090

05-Oct-15

Client: Western Refining Southwest, Inc.

Project: Bisti Landfarm

|                             |           |       |                         |             |                                       |          |              |      |          |      |
|-----------------------------|-----------|-------|-------------------------|-------------|---------------------------------------|----------|--------------|------|----------|------|
| Sample ID                   | lcs-21112 |       | SampType: LCS           |             | TestCode: EPA Method 8260B: Volatiles |          |              |      |          |      |
| Client ID:                  | LCSS      |       | Batch ID: 21112         |             | RunNo: 28652                          |          |              |      |          |      |
| Prep Date:                  | 9/2/2015  |       | Analysis Date: 9/3/2015 |             | SeqNo: 867326                         |          | Units: mg/Kg |      |          |      |
| Analyte                     | Result    | PQL   | SPK value               | SPK Ref Val | %REC                                  | LowLimit | HighLimit    | %RPD | RPDLimit | Qual |
| Benzene                     | 0.96      | 0.050 | 1.000                   | 0           | 96.4                                  | 70       | 130          |      |          |      |
| Toluene                     | 0.88      | 0.050 | 1.000                   | 0           | 88.4                                  | 70       | 130          |      |          |      |
| Chlorobenzene               | 0.98      | 0.050 | 1.000                   | 0           | 98.1                                  | 70       | 130          |      |          |      |
| 1,1-Dichloroethene          | 1.1       | 0.050 | 1.000                   | 0           | 109                                   | 70       | 130          |      |          |      |
| Trichloroethene (TCE)       | 0.88      | 0.050 | 1.000                   | 0           | 88.2                                  | 70       | 130          |      |          |      |
| Surr: Dibromofluoromethane  | 0.48      |       | 0.5000                  |             | 96.9                                  | 70       | 130          |      |          |      |
| Surr: 1,2-Dichloroethane-d4 | 0.47      |       | 0.5000                  |             | 94.3                                  | 70       | 130          |      |          |      |
| Surr: Toluene-d8            | 0.45      |       | 0.5000                  |             | 89.3                                  | 70       | 130          |      |          |      |
| Surr: 4-Bromofluorobenzene  | 0.49      |       | 0.5000                  |             | 98.4                                  | 70       | 130          |      |          |      |

|                                |          |       |                         |             |                                       |          |              |      |          |      |
|--------------------------------|----------|-------|-------------------------|-------------|---------------------------------------|----------|--------------|------|----------|------|
| Sample ID                      | mb-21112 |       | SampType: MBLK          |             | TestCode: EPA Method 8260B: Volatiles |          |              |      |          |      |
| Client ID:                     | PBS      |       | Batch ID: 21112         |             | RunNo: 28652                          |          |              |      |          |      |
| Prep Date:                     | 9/2/2015 |       | Analysis Date: 9/3/2015 |             | SeqNo: 867327                         |          | Units: mg/Kg |      |          |      |
| Analyte                        | Result   | PQL   | SPK value               | SPK Ref Val | %REC                                  | LowLimit | HighLimit    | %RPD | RPDLimit | Qual |
| Benzene                        | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| Toluene                        | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| Ethylbenzene                   | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| Methyl tert-butyl ether (MTBE) | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| 1,2,4-Trimethylbenzene         | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| 1,3,5-Trimethylbenzene         | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| 1,2-Dichloroethane (EDC)       | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| 1,2-Dibromoethane (EDB)        | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| Naphthalene                    | ND       | 0.10  |                         |             |                                       |          |              |      |          |      |
| 1-Methylnaphthalene            | ND       | 0.20  |                         |             |                                       |          |              |      |          |      |
| 2-Methylnaphthalene            | ND       | 0.20  |                         |             |                                       |          |              |      |          |      |
| Acetone                        | ND       | 0.75  |                         |             |                                       |          |              |      |          |      |
| Bromobenzene                   | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| Bromodichloromethane           | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| Bromoform                      | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| Bromomethane                   | ND       | 0.15  |                         |             |                                       |          |              |      |          |      |
| 2-Butanone                     | ND       | 0.50  |                         |             |                                       |          |              |      |          |      |
| Carbon disulfide               | ND       | 0.50  |                         |             |                                       |          |              |      |          |      |
| Carbon tetrachloride           | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| Chlorobenzene                  | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| Chloroethane                   | ND       | 0.10  |                         |             |                                       |          |              |      |          |      |
| Chloroform                     | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| Chloromethane                  | ND       | 0.15  |                         |             |                                       |          |              |      |          |      |
| 2-Chlorotoluene                | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |

### Qualifiers:

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E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1509090

05-Oct-15

Client: Western Refining Southwest, Inc.

Project: Bisti Landfarm

|                             |          |       |                         |             |                                       |          |              |      |          |      |
|-----------------------------|----------|-------|-------------------------|-------------|---------------------------------------|----------|--------------|------|----------|------|
| Sample ID                   | mb-21112 |       | SampType: MBLK          |             | TestCode: EPA Method 8260B: Volatiles |          |              |      |          |      |
| Client ID:                  | PBS      |       | Batch ID: 21112         |             | RunNo: 28652                          |          |              |      |          |      |
| Prep Date:                  | 9/2/2015 |       | Analysis Date: 9/3/2015 |             | SeqNo: 867327                         |          | Units: mg/Kg |      |          |      |
| Analyte                     | Result   | PQL   | SPK value               | SPK Ref Val | %REC                                  | LowLimit | HighLimit    | %RPD | RPDLimit | Qual |
| 4-Chlorotoluene             | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| cis-1,2-DCE                 | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| cis-1,3-Dichloropropene     | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| 1,2-Dibromo-3-chloropropane | ND       | 0.10  |                         |             |                                       |          |              |      |          |      |
| Dibromochloromethane        | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| Dibromomethane              | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| 1,2-Dichlorobenzene         | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| 1,3-Dichlorobenzene         | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| 1,4-Dichlorobenzene         | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| Dichlorodifluoromethane     | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| 1,1-Dichloroethane          | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| 1,1-Dichloroethene          | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| 1,2-Dichloropropane         | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| 1,3-Dichloropropane         | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| 2,2-Dichloropropane         | ND       | 0.10  |                         |             |                                       |          |              |      |          |      |
| 1,1-Dichloropropene         | ND       | 0.10  |                         |             |                                       |          |              |      |          |      |
| Hexachlorobutadiene         | ND       | 0.10  |                         |             |                                       |          |              |      |          |      |
| 2-Hexanone                  | ND       | 0.50  |                         |             |                                       |          |              |      |          |      |
| Isopropylbenzene            | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| 4-Isopropyltoluene          | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| 4-Methyl-2-pentanone        | ND       | 0.50  |                         |             |                                       |          |              |      |          |      |
| Methylene chloride          | ND       | 0.15  |                         |             |                                       |          |              |      |          |      |
| n-Butylbenzene              | ND       | 0.15  |                         |             |                                       |          |              |      |          |      |
| n-Propylbenzene             | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| sec-Butylbenzene            | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| Styrene                     | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| tert-Butylbenzene           | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| 1,1,1,2-Tetrachloroethane   | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| 1,1,2,2-Tetrachloroethane   | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| Tetrachloroethene (PCE)     | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| trans-1,2-DCE               | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| trans-1,3-Dichloropropene   | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| 1,2,3-Trichlorobenzene      | ND       | 0.10  |                         |             |                                       |          |              |      |          |      |
| 1,2,4-Trichlorobenzene      | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| 1,1,1-Trichloroethane       | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| 1,1,2-Trichloroethane       | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| Trichloroethene (TCE)       | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| Trichlorofluoromethane      | ND       | 0.050 |                         |             |                                       |          |              |      |          |      |
| 1,2,3-Trichloropropane      | ND       | 0.10  |                         |             |                                       |          |              |      |          |      |

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1509090

05-Oct-15

Client: Western Refining Southwest, Inc.

Project: Bisti Landfarm

|                             |          |       |                |             |      |           |                             |      |              |      |
|-----------------------------|----------|-------|----------------|-------------|------|-----------|-----------------------------|------|--------------|------|
| Sample ID                   | mb-21112 |       | SampType:      | MBLK        |      | TestCode: | EPA Method 8260B: Volatiles |      |              |      |
| Client ID:                  | PBS      |       | Batch ID:      | 21112       |      | RunNo:    | 28652                       |      |              |      |
| Prep Date:                  | 9/2/2015 |       | Analysis Date: | 9/3/2015    |      | SeqNo:    | 867327                      |      | Units: mg/Kg |      |
| Analyte                     | Result   | PQL   | SPK value      | SPK Ref Val | %REC | LowLimit  | HighLimit                   | %RPD | RPDLimit     | Qual |
| Vinyl chloride              | ND       | 0.050 |                |             |      |           |                             |      |              |      |
| Xylenes, Total              | ND       | 0.10  |                |             |      |           |                             |      |              |      |
| Surr: Dibromofluoromethane  | 0.50     |       | 0.5000         |             | 99.2 | 70        | 130                         |      |              |      |
| Surr: 1,2-Dichloroethane-d4 | 0.48     |       | 0.5000         |             | 96.6 | 70        | 130                         |      |              |      |
| Surr: Toluene-d8            | 0.43     |       | 0.5000         |             | 86.6 | 70        | 130                         |      |              |      |
| Surr: 4-Bromofluorobenzene  | 0.49     |       | 0.5000         |             | 97.3 | 70        | 130                         |      |              |      |

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1509090

05-Oct-15

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

**Project:** Bisti Landfarm

|                      |                 |       |                |                 |      |           |                              |      |                     |      |
|----------------------|-----------------|-------|----------------|-----------------|------|-----------|------------------------------|------|---------------------|------|
| Sample ID            | <b>MB-21125</b> |       | SampType:      | <b>MBLK</b>     |      | TestCode: | <b>EPA Method 8310: PAHs</b> |      |                     |      |
| Client ID:           | <b>PBS</b>      |       | Batch ID:      | <b>21125</b>    |      | RunNo:    | <b>28675</b>                 |      |                     |      |
| Prep Date:           | <b>9/3/2015</b> |       | Analysis Date: | <b>9/8/2015</b> |      | SeqNo:    | <b>868603</b>                |      | Units: <b>mg/Kg</b> |      |
| Analyte              | Result          | PQL   | SPK value      | SPK Ref Val     | %REC | LowLimit  | HighLimit                    | %RPD | RPDLimit            | Qual |
| Naphthalene          | ND              | 0.25  |                |                 |      |           |                              |      |                     |      |
| 1-Methylnaphthalene  | ND              | 0.25  |                |                 |      |           |                              |      |                     |      |
| 2-Methylnaphthalene  | ND              | 0.25  |                |                 |      |           |                              |      |                     |      |
| Benzo(a)pyrene       | ND              | 0.010 |                |                 |      |           |                              |      |                     |      |
| Surr: Benzo(e)pyrene | 0.22            |       | 0.5000         |                 | 44.2 | 24.5      | 139                          |      |                     |      |

|                      |                  |       |                |                 |      |           |                              |      |                     |      |
|----------------------|------------------|-------|----------------|-----------------|------|-----------|------------------------------|------|---------------------|------|
| Sample ID            | <b>LCS-21125</b> |       | SampType:      | <b>LCS</b>      |      | TestCode: | <b>EPA Method 8310: PAHs</b> |      |                     |      |
| Client ID:           | <b>LCSS</b>      |       | Batch ID:      | <b>21125</b>    |      | RunNo:    | <b>28675</b>                 |      |                     |      |
| Prep Date:           | <b>9/3/2015</b>  |       | Analysis Date: | <b>9/8/2015</b> |      | SeqNo:    | <b>868605</b>                |      | Units: <b>mg/Kg</b> |      |
| Analyte              | Result           | PQL   | SPK value      | SPK Ref Val     | %REC | LowLimit  | HighLimit                    | %RPD | RPDLimit            | Qual |
| Naphthalene          | 1.7              | 0.25  | 2.000          | 0               | 85.2 | 33.7      | 117                          |      |                     |      |
| 1-Methylnaphthalene  | 1.7              | 0.25  | 2.000          | 0               | 85.9 | 32        | 119                          |      |                     |      |
| 2-Methylnaphthalene  | 1.7              | 0.25  | 2.000          | 0               | 84.7 | 31.8      | 118                          |      |                     |      |
| Benzo(a)pyrene       | 0.010            | 0.010 | 0.01250        | 0               | 80.0 | 40        | 115                          |      |                     |      |
| Surr: Benzo(e)pyrene | 0.28             |       | 0.5000         |                 | 55.0 | 24.5      | 139                          |      |                     |      |

|                      |                       |        |                |                 |      |           |                              |      |                     |      |
|----------------------|-----------------------|--------|----------------|-----------------|------|-----------|------------------------------|------|---------------------|------|
| Sample ID            | <b>1509090-001AMS</b> |        | SampType:      | <b>MS</b>       |      | TestCode: | <b>EPA Method 8310: PAHs</b> |      |                     |      |
| Client ID:           | <b>Background</b>     |        | Batch ID:      | <b>21125</b>    |      | RunNo:    | <b>28675</b>                 |      |                     |      |
| Prep Date:           | <b>9/3/2015</b>       |        | Analysis Date: | <b>9/8/2015</b> |      | SeqNo:    | <b>870360</b>                |      | Units: <b>mg/Kg</b> |      |
| Analyte              | Result                | PQL    | SPK value      | SPK Ref Val     | %REC | LowLimit  | HighLimit                    | %RPD | RPDLimit            | Qual |
| Naphthalene          | 1.4                   | 0.25   | 1.974          | 0               | 68.9 | 14.7      | 128                          |      |                     |      |
| 1-Methylnaphthalene  | 1.4                   | 0.25   | 1.974          | 0               | 71.5 | 31.1      | 125                          |      |                     |      |
| 2-Methylnaphthalene  | 1.4                   | 0.25   | 1.974          | 0               | 69.3 | 24.7      | 119                          |      |                     |      |
| Benzo(a)pyrene       | ND                    | 0.0099 | 0.01234        | 0               | 66.0 | 27.7      | 134                          |      |                     |      |
| Surr: Benzo(e)pyrene | 0.21                  |        | 0.4936         |                 | 42.8 | 24.5      | 139                          |      |                     |      |

|                      |                        |        |                |                 |      |           |                              |      |                     |      |
|----------------------|------------------------|--------|----------------|-----------------|------|-----------|------------------------------|------|---------------------|------|
| Sample ID            | <b>1509090-001AMSD</b> |        | SampType:      | <b>MSD</b>      |      | TestCode: | <b>EPA Method 8310: PAHs</b> |      |                     |      |
| Client ID:           | <b>Background</b>      |        | Batch ID:      | <b>21125</b>    |      | RunNo:    | <b>28675</b>                 |      |                     |      |
| Prep Date:           | <b>9/3/2015</b>        |        | Analysis Date: | <b>9/8/2015</b> |      | SeqNo:    | <b>870361</b>                |      | Units: <b>mg/Kg</b> |      |
| Analyte              | Result                 | PQL    | SPK value      | SPK Ref Val     | %REC | LowLimit  | HighLimit                    | %RPD | RPDLimit            | Qual |
| Naphthalene          | 1.5                    | 0.25   | 1.982          | 0               | 78.2 | 14.7      | 128                          | 12.9 | 29.3                |      |
| 1-Methylnaphthalene  | 1.6                    | 0.25   | 1.982          | 0               | 80.9 | 31.1      | 125                          | 12.6 | 20                  |      |
| 2-Methylnaphthalene  | 1.5                    | 0.25   | 1.982          | 0               | 77.7 | 24.7      | 119                          | 11.8 | 20                  |      |
| Benzo(a)pyrene       | ND                     | 0.0099 | 0.01239        | 0               | 76.0 | 27.7      | 134                          | 0    | 28.3                |      |
| Surr: Benzo(e)pyrene | 0.24                   |        | 0.4955         |                 | 48.1 | 24.5      | 139                          | 0    | 20                  |      |

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1509090

05-Oct-15

Client: Western Refining Southwest, Inc.

Project: Bisti Landfarm

|            |          |                          |           |             |                                         |          |              |      |          |      |
|------------|----------|--------------------------|-----------|-------------|-----------------------------------------|----------|--------------|------|----------|------|
| Sample ID  | MB-21211 | SampType: MBLK           |           |             | TestCode: EPA Method 6010B: Soil Metals |          |              |      |          |      |
| Client ID: | PBS      | Batch ID: 21211          |           |             | RunNo: 28745                            |          |              |      |          |      |
| Prep Date: | 9/9/2015 | Analysis Date: 9/10/2015 |           |             | SeqNo: 871500                           |          | Units: mg/Kg |      |          |      |
| Analyte    | Result   | PQL                      | SPK value | SPK Ref Val | %REC                                    | LowLimit | HighLimit    | %RPD | RPDLimit | Qual |
| Copper     | ND       | 0.30                     |           |             |                                         |          |              |      |          |      |
| Iron       | ND       | 2.5                      |           |             |                                         |          |              |      |          |      |
| Manganese  | ND       | 0.10                     |           |             |                                         |          |              |      |          |      |
| Uranium    | ND       | 5.0                      |           |             |                                         |          |              |      |          |      |
| Zinc       | ND       | 2.5                      |           |             |                                         |          |              |      |          |      |

|            |           |      |                          |             |                                         |          |              |      |          |      |
|------------|-----------|------|--------------------------|-------------|-----------------------------------------|----------|--------------|------|----------|------|
| Sample ID  | LCS-21211 |      | SampType: LCS            |             | TestCode: EPA Method 6010B: Soil Metals |          |              |      |          |      |
| Client ID: | LCSS      |      | Batch ID: 21211          |             | RunNo: 28745                            |          |              |      |          |      |
| Prep Date: | 9/9/2015  |      | Analysis Date: 9/10/2015 |             | SeqNo: 871501                           |          | Units: mg/Kg |      |          |      |
| Analyte    | Result    | PQL  | SPK value                | SPK Ref Val | %REC                                    | LowLimit | HighLimit    | %RPD | RPDLimit | Qual |
| Copper     | 27        | 0.30 | 25.00                    | 0           | 106                                     | 80       | 120          |      |          |      |
| Iron       | 26        | 2.5  | 25.00                    | 0           | 104                                     | 80       | 120          |      |          |      |
| Manganese  | 25        | 0.10 | 25.00                    | 0           | 98.3                                    | 80       | 120          |      |          |      |
| Uranium    | 26        | 5.0  | 25.00                    | 0           | 102                                     | 80       | 120          |      |          |      |
| Zinc       | 24        | 2.5  | 25.00                    | 0           | 95.5                                    | 80       | 120          |      |          |      |

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# Sample Log-In Check List

Client Name: **Western Refining Southw**

Work Order Number: **1509090**

RcptNo: 1

Received by/date:

Logged By: **Lindsay Mangin**

**09/02/15**  
**9/2/2015 8:00:00 AM**

Completed By: **Lindsay Mangin**

**9/2/2015 9:44:23 AM**

Reviewed By:

**09/02/15**

## Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☒
2. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
3. How was the sample delivered? Courier

## Log In

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

# of preserved  
bottles checked  
for pH:  
(<2 or >12 unless noted)  
Adjusted?  
Checked by:

## Special Handling (if applicable)

16. 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:

17. Additional remarks:

## 18. Cooler Information

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|-----------|---------|-----------|-------------|---------|-----------|-----------|
| 1         | 1.4     | Good      | Yes         |         |           |           |

## HALL ENVIRONMENTAL ANALYSIS LABORATORY

[www.hallenvironmental.com](http://www.hallenvironmental.com)

4901 Hawkins NE - Albuquerque, NM 87109

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

## Analysis Request

Air Bubbles (Y or N)

|                                              |                                                    |
|----------------------------------------------|----------------------------------------------------|
| Client:                                      | Kelly Robinson                                     |
|                                              | Western Refining                                   |
| Mailing Address:                             | 111 CR 4490                                        |
|                                              | Bloomfield, NM                                     |
| Phone #:                                     | (505) 632-8013                                     |
| email or Fax#:                               | Kelly.Robinson@WNR.com                             |
| QA/QC Package:                               | <input type="checkbox"/> Level 4 (Full Validation) |
| <input checked="" type="checkbox"/> Standard |                                                    |
| Accreditation                                |                                                    |
| <input type="checkbox"/> NELAP               | <input type="checkbox"/> Other _____               |
| <input type="checkbox"/> EDD (Type)          | _____                                              |

QA/QC Package:

☒ Standard ☐ Level 4 (Full Validation)

## Accreditation

☐ NELAP      :    ☐ Other☐ EDD (Type)

| Date | Time | Matrix | Sample Request ID |
|------|------|--------|-------------------|
| 1-15 | 1650 | Soil   | Background        |

| Date | Time | Matrix | Sample Request ID |
|------|------|--------|-------------------|
|------|------|--------|-------------------|

## Matrix

Container  
Type and #

| Container Type and # | Preservative Type |
|----------------------|-------------------|
|----------------------|-------------------|

# HEAL No.

15900

100-

|          |     |
|----------|-----|
| 7 de Jan | Con |
|----------|-----|

## Background

5-15

Date: \_\_\_\_\_ Time: \_\_\_\_\_

51-1-1 222

Relinquished by:

✓

**Relinquished by:**

10

Received by:

Christ

Date Time

2/1/15 1227

Remarks:

cc: Bherb@LTENV.com  
Ager@LTENV.com  
Mucker@LTENV.com

PO# 12610957

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

**TABLE 2**  
**Proposed Background Analytes and Methods**  
**Bisti Landfarm**  
**Western Refining Southwest, Inc.**

| PROPOSED ANALYTE                         | PROPOSED METHOD   |
|------------------------------------------|-------------------|
| Carbon tetrachloride                     | EPA Method 8260B  |
| 1,2-Dichloroethane (EDC)                 | EPA Method 8260B  |
| 1,1-dichloroethylene (1,1-DCE)           | EPA Method 8260B  |
| 1,1,2,2-Tetrachloroethylene (PCE)        | EPA Method 8260B  |
| 1,1,2-Trichloroethylene (TCE)            | EPA Method 8260B  |
| Methylene chloride                       | EPA Method 8260B  |
| Chloroform                               | EPA Method 8260B  |
| 1,1-Dichloroethane                       | EPA Method 8260B  |
| Ethylene Dibromide (EDB)                 | EPA Method 8260B  |
| 1,1,1-Trichloroethane                    | EPA Method 8260B  |
| 1,1,2-Trichloroethane                    | EPA Method 8260B  |
| 1,1,2,2-Tetrachloroethane                | EPA Method 8260B  |
| Vinyl chloride                           | EPA Method 8260B  |
| Aroclor 1016                             | EPA Method 8082   |
| Aroclor 1221                             | EPA Method 8082   |
| Aroclor 1232                             | EPA Method 8082   |
| Aroclor 1242                             | EPA Method 8082   |
| Aroclor 1248                             | EPA Method 8082   |
| Aroclor 1254                             | EPA Method 8082   |
| Aroclor 1260                             | EPA Method 8082   |
| Radium 226                               | EPA Method 901.1  |
| Radium 228                               | EPA Method 901.1  |
| Phenol                                   | EPA Method 9065   |
| Naphthalene                              | EPA Method 8310   |
| 1-Methylnaphthalene                      | EPA Method 8310   |
| 2-Methylnaphthalene                      | EPA Method 8310   |
| Benzo(a)pyrene                           | EPA Method 8310   |
| GRO (C <sub>6</sub> - C <sub>10</sub> )  | EPA Method 8015M  |
| MRO (C <sub>28</sub> - C <sub>36</sub> ) | EPA Method 8015M  |
| Total Petroleum Hydrocarbons             | EPA Method 418.1  |
| Copper                                   | EPA Method 6010 B |
| Iron                                     | EPA Method 6010 B |
| Manganese                                | EPA Method 6010 B |
| Uranium                                  | EPA Method 6010 B |
| Zinc                                     | EPA Method 6010 B |
| pH                                       | SM4500 - H+B      |
| Fluoride                                 | EPA Method 300.0  |
| Nitrogen, Nitrate (As N)                 | EPA Method 300.0  |
| Cyanide                                  | EPA Method 335.4  |

**Notes:**

DRO - diesel range organics

EPA - United State Environmental Protection Agency

GRO - gasoline range organics

MRO - motor oil range organics