GW - 001

REPORTS

RCRA Group 9 (SWMU12 API Separator, 13 Process Area, 14 Tanks 3-5 & 27 WW Collection System) (2)

February 2015

allowed to rest for a minimum of 5 minutes while the vapors equilibrated. Vapors present within the sample bag's headspace were then measured by inserting the probe of a MiniRae 3000 portable volatile organic constituent (VOC) monitor PGM-7600 in a small opening in the bag. The maximum value and the ambient air temperature were recorded on the field boring log for each sample. The screening results are presented in Table 5. Field screening results and any conditions that were considered to be capable of influencing the results of the field screening were recorded on the field logs.

Decontamination Procedures

The drilling equipment (e.g., hollow-stem augers) was decontaminated between each borehole using a high pressure potable water wash. The sampling equipment coming in direct contact with the samples was decontaminated using a brush, as necessary, to remove larger particulate matter followed by a rinse with potable water, wash with nonphosphate detergent, rinse with potable water, and double rinse with deionized water. In the event that more than one SWMU was investigated during the day a new batch of wash water and rinse water was prepared prior to decontamination.

Monitoring Well Development

Following monitoring well completion activities, the new monitoring wells were developed using a combination of bailing and air-lift techniques. The bailer was raised and lowered in the well, forcing flow in and out of the well screen. The repeated plunging motion drew filter pack fines and loosened sediment into the well casing, improving the water quality within the surrounding formation and filter pack.

The air-lift apparatus was used to remove the loosened sediment and fines from inside the well casing. Using an air compressor and dedicated 1-inch PVC eductor piping, compressed air was injected into the well. The air flow rate was manually adjusted to produce a continuous flow of water/sediment mixture out the top of the well casing via the 1-inch eductor piping. The groundwater/sediment mixture discharged directly into a 55-gallon drum. A glass jar was used to capture a sample of the purge water every 15 minutes to monitor the improving clarity of the purge water. Air lifting ceased once the purge water was relatively clear.

Fluid Level Measurements

The depth to separate-phase hydrocarbon, if present, and groundwater was measured prior to purging the wells of potentially stagnant groundwater. The measurements are presented in Table 11. A Keck KIR Interface Probe was used to measure fluid levels to 0.01 foot.

Purging of Monitoring Wells/Groundwater Sample Collection

The permanent monitoring wells were purged of a minimum of three well volumes prior to sample collection. The purge volumes are calculated as follows:

Volume (gallons) = water column thickness (ft.) x 3.14 x radius of well casing^2 (ft.) x 7.48 (gals/ft.).

The calculated purge volumes and actual volumes removed from each well are presented in Table 10. Field measurements of groundwater stabilization parameters included pH, specific conductance, dissolved oxygen concentrations, oxidation-reduction potential, and temperature. These measurements are also presented in Table 10. A disposable bailer was used to remove groundwater from the well during the purging procedures.

Sample Collection and Handling Procedures

Soil samples were collected using split-spoon samplers or directly from the auger bucket for borings completed with a hand auger. The selected portion of the sample interval was placed in pre-cleaned, laboratory-prepared sample containers for laboratory chemical analysis. Three soil samples were collected for the VOC analyses. An Encore® Sampler was used for collection of soil samples for low-level VOC analysis pursuant to EPA method 5035; the second sample aliquot (approximately 1 gram) was placed in a laboratory-prepared container with a methanol preservative; and the third sample aliquot was placed in an 8-ounce glass jar, which was filled to the top to minimize any head space.

Groundwater samples were collected with disposable bailers and immediately poured directly into clean laboratory supplied sample containers with the exception of samples collected for dissolved analyses. Samples specified for dissolved analyses were filtered in the field using a disposable 0.45 micron filter. A new filter and syringe enclosure were used for each sample. Samples were immediately placed into an ice chest with ice. The samples were maintained in the custody of the sampler until the chain-of-custody form was completed and the ice chest was sealed for shipment to the laboratory.

Vadose Zone Vapor Sampling

Field vapor monitoring of the vadose zone was completed using a multi-gas Eagle Meter manufactured by RKI Instruments, Inc. The vapor monitoring was completed by sealing the top of the well with a cap containing a sample port. Polyethylene tubing was inserted through the sample port and attached to a low-velocity pump and the Eagle Meter.

Equipment Calibration

Soil vapor screening was conducted using a MiniRae 3000 portable VOC monitor PGM-7600. The instrument was calibrated at the beginning of each work day to a concentration of 100 ppm isobutylene.

Management of Investigation Derived Waste

The decontamination water from the drilling equipment was collected in open top 55-gallon drums, which were sealed at the end of each work day. The decontamination water generated from sampling equipment was collected in buckets and placed in open top 55-gallon drums, which were sealed at the end of each work day. Purge water was also collected in a 55-gallon drum. The decon and purge water was disposed in the Refinery's wastewater treatment system up-stream of the API Separator. Soil cuttings and soils generated during hydroexcavation of sampling locations were placed into a temporary stockpile on top of plastic sheeting in a bermed area pending waste characterization and disposal. After characterization, the soils were disposed off-site as non-hazardous TPH containing soils.

Appendix C

Survey Data

Group 9 Survey Data

Bloomfield Refinery, Bloomfield, New Mexico

Location Description	Northing	Easting	Elevation (msl)	Reference Point #
SURFACE 13-25	2073580.234	2681249.272	5527.077	50000
SURFACE 13-26	2073576.754	2681266.785	5527.109	50001
BORE 12-1	2073540.876	2681368.342	5525.733	50002
BORE 12-2	2073585.263	2681400.863	5525.819	50003
BORE 12-3	2073659.628	2681317.828	5526.486	50004
BORE 13-3	2073808.134	2681283.264	5526.211	50005
BORE 13-2	2073842.175	2681206.085	5526.434	50006
BORE 14-1	2073928.835	2681261.47	5521.559	50007
BORE 14-3	2073966.524	2681124.454	5514.019	50008
BORE 14-4	2074065.363	2681090.4	5518.578	50009
BORE 14-2	2073915.037	2681187.009	5521.167	50010
BORE 13-1	2073836.848	2681136.472	5526.641	50011
BORE 14-5	2073857.17	2680939.319	5524.518	50012
GS MW-71	2073764.69	2681027.634	5526.474	50013
CONC MW-71	2073763.368	2681028.28	5527.097	50014
PVC MW-71	2073762.739	2681028.223	5529.08	50015
GS MW-73	2073695.023	2681088.098	5526.794	50016
CONC MW-73	2073692.99	2681088.867	5527.207	50017
PVC MW-73	2073692.249	2681089.1	5528.92	50018
BORE 13-10	2073658.114	2681022.684	5526.353	50019
SURFACE 13-22	2073678.127	2680948.36	5526.765	50020
SURFACE 13-21	2073634.612	2680959.194	5526.699	50021
SURFACE 13-20	2073612.082	2680881.612	5526.172	50022
GS MW-77	2073513.196	2680700.331	5525.958	50023
CONC MW-77	2073511.618	2680700.461	5526.189	50024
PVC MW-77	2073510.987	2680700.516	5527.59	50025
BORE 13-12	2073473.261	2680753.984	5526.654	50026
BORE 13-11	2073520.222	2680898.18	5526.313	50027
GS MW-76	2073384.339	2680899.914	5526.605	50028
CONC MW-76	2073383.797	2680899.928	5526.904	50029
PVC MW-76	2073383.172	2680900.14	5528.61	50030
BORE 13-14	2073392.529	2681013.735	5526.189	50031
SURFACE 13-27	2073427.33	2681131.385	5526.391	50032
SURFACE 13-28	2073400.807	2681155.071	5527.264	50033
SURFACE 13-29	2073403.145	2681165.405	5527.181	50034
BORE 13-6	2073436.696	2681174.494	5526.84	50035
GS MW-75	2073451.342	2681258.44	5526.421	50036
CONC MW-75	2073449.721	2681258.541	5526.656	50037
PVC MW-75	2073448.869	2681258.829	5528.76	50038
SURFACE 13-30	2073457.746	2681315.846	5526.268	50039

Group 9 Survey Data

Bloomfield Refinery, Bloomfield, New Mexico

Location Description	Northing	Easting	Elevation (msl)	Reference Point #
PVC MW-72	2073505.617	2681169.3	5528.54	50040
CONC MW-72	2073506.327	2681169.267	5527.346	50041
GS MW-72	2073506.98	2681168.933	5527.037	50042
BORE 13-7	2073456.057	2681103.744	5526.083	50043
BORE 13-8	2073549.813	2681143.509	5526.639	50044
SURFACE 13-24	2073662.054	2681225.165	5526.607	50045
SURFACE 13-23	2073690.805	2681206.229	5527.607	50046
BORE 13-4	2073717.84	2681208.707	5526.849	50047
GS MW-74	2073659.685	2681198.565	5526.902	50048
CONC MW-74	2073657.649	2681199.281	5527.009	50049
PVC MW-74	2073657.179	2681199.329	5528.55	50050

msl = mean sea level

Appendix D

Boring Logs

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Western Refining SW, Inc.
Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: 8" Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	: 2' Long
Total Depth	: 28'
Ground Water	: 26'
Start Date	: 9/24/2014
Finish Date	: 9/24/2014

BORING NO. SWMU 12-1

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5525.733
Site Coordinates	:
N	: 2073540.876
E	: 2681368.342

Sample Condition
Retained for analysis

Saturation
Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	10.1			ML	100		CLAYEY SILT, low,firm,damp,brown,no odor,
1	17.3						
2					-		NO RECOVERY
3							
4				ML	90		CLAYEY SILT, SIMILAR TO ABOVE (STA), dark brown,hydrocarbon (hc) odor,
5	455						
6				ML	90		CLAYEY SILT,STA,odor,
7	150						
8				ML	90		CLAYEY SILT,STA,odor,
9	151						
10				CL	90		SILTY CLAY, low,firm,damp,dark brown,hc odor,
11	130						
12				ML	100		CLAYEY SILT, low,soft,damp,dark brown,odor,
13	111						
14				CL	90		SILTY CLAY, low,firm to stiff,damp,dark brown,odor,
15	102						
16				SW	90		GRAVELLY SAND,medium to coarse,compact,damp,grey, odor,
17	30			SW	90		GRAVELLY SAND,STA,odor,
18							
19				SW	-		GRAVELLY SAND,STA,NO RECOVERY,
20							
21	30			SW	30		GRAVELLY SAND, STA, no odor,
22							
23	135			SW	30		GRAVELLY SAND,STA,faint odor,
24							
25	325			SW	20		GRAVELLY SAND, STA,faint odor,
26		▼					
27				SW	30		GRAVELLY SAND,STA,saturated,black, odor.
28							
29							
30							

1010 Travis Street
Houston, Texas 77002
713-955-1230

DiSorbo Consulting, LLC

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

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Environmental Consulting Firm

Western Refining SW, Inc.
Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: 8" Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	: 2' Long
Total Depth	: 30'
Ground Water	: 28'
Start Date	: 9/23/2014
Finish Date	: 9/23/2014

BORING NO. SWMU 12-2

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5525.819
Site Coordinates	:
N	: 2073585.263
E	: 2681400.863

Sample Condition: Retained for analysis

Saturation: ▼ Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	177			CL	100		SILTY CLAY, low,firm,damp,brown, hydrocarbon (hc) odor,
1	126						
2				CL	10		SILTY CLAY, SIMILAR TO ABOVE (STA),
3	67						
4				ML	60		CLAYEY SILT, low,soft,damp,brown, hc odor,
5	70						
6				ML	40		CLAYEY SILT, STA,black, hc odor,
7	396						
8				CL	60		SILTY CLAY, low,firm,damp,dark brown to brown,hc odor,
9	88.8						
10				CL	90		SILTY CLAY, STA,brown, hc odor,
11	107						
12				CL	90		SILTY CLAY, STA,hc odor,
13	149						
14				ML	80		CLAYEY SILT,sand-medium,low,firm,damp,brown, hc odor,gravel present,gravelly sand at base,
15	130						
16				SW	20		GRAVELLY SAND,medium to coarse,compact,grey, hc odor,damp,
17	88						
18				SW	10		GRAVELLY SAND,STA,hc odor,
19	92						
20				SW	10		GRAVELLY SAND,STA,hc odor,
21	134						
22				SW	10		GRAVELLY SAND,STA,hc odor,
23	71						
24				SW	-		NO RECOVERY,
25							
26				SW	-		NO RECOVERY,
27							
28		▼		SW	50		GRAVELLY SAND,STA,saturated,black, odor.
29							
30							
31							
32							

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Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: 8" Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	: 2' Long
Total Depth	: 30'
Ground Water	: 28'
Start Date	: 9/23/2014
Finish Date	: 9/23/2014

BORING NO. SWMU 12-3

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5526.486
Site Coordinates	:
N	: 2073659.628
E	: 2681317.828

Sample Condition: Retained for analysis

Saturation: ▼ Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	1420			CL	100		SILTY CLAY, low,firm,dry to damp,brown to black at base,odor,
1	3046						
2				SM	60		SILTY SAND, medium to coarse,loose, dark grey, damp,hydrocarbon (hc) odor,
3	3481						
4				ML	80		SILT,low,soft,damp,grey, hc odor,
5	1934						
6				ML	90		SILT,SIMILAR TO ABOVE (STA),hc odor,
7	1977						
8				ML	90		CLAYEY SILT, low,firm,damp,grey, hc odor,
9	3086						
10				ML	90		CLAYEY SILT, STA,hc odor,
11	2020						
12				ML	80		CLAYEY SILT, STA,hc odor,
13	2771			CL	80		SILTY CLAY, low,firm,damp,grey, hc odor,
14				CL	80		SILTY CLAY, STA,hc odor,gravel/sand at base,
15	1432						
16				SW	50		GRAVELLY SAND,coarse,compact,damp,grey, hc odor,gravel 10 to 50 MM
17	1817						
18				SW	50		GRAVELLY SAND,STA,hc odor,
19	2221						
20				SP	70		SAND, coarse,loose, damp,black & grey, hc odor,
21	1341						
22				SW	40		GRAVELLY SAND,medium to coarse,compact,damp to moist in seams, grey, hc odor,gravel 10 to 50+MM
23	3295						
24				SW	60		GRAVELLY SAND,STA,hc odor,
25	2417						
26				SW	30		GRAVELLY SAND,STA,hc odor,
27	1284						
28		▼		SW	40		GRAVELLY SAND,STA,saturated,hc odor.
29							
30							
31							
32							

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Houston, Texas 77002
713-955-1230

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

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Environmental Consulting Firm

Western Refining SW, Inc.
Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: 8" Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	:
Total Depth	: 30'
Ground Water	: 28'
Start Date	: 9/22/2014
Finish Date	: 9/22/2014

BORING NO. SWMU 13-1

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5526.641
Site Coordinates	:
N	: 2073836.848
E	: 2681136.472

Sample Condition: Retained for analysis

Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	1.8			ML	100		CLAYEY SILT, low,firm,damp,brown, no odor 0-0.5',odor 0.5-2',
1	24.9						
2							
3	119			ML	90		CLAYEY SILT, SIMILAR TO ABOVE (STA),odor,
4							
5	373			ML	80		SILT,low,soft,damp,grey to black,odor,
6							
7	344			ML	80		SILT,STA,odor,
8							
9	369			ML	70		SILT,STA,brown, odor,
10							
11	499			ML	80		SILT,STA,
12				CL	80		SILTY CLAY, low,firm,damp,brown, odor,
13	4390			ML	80		CLAYEY SILT, low,firm,damp,brown, odor,
14							
15	3148			ML	90		SILT,low,soft,damp,brown, odor,
16							
17	4100			SW	30		GRAVELLY SAND,fine to medium,loose, damp,brown, gravel 10 to 50 MM,odor,
18							
19	-				-		NO RECOVERY,
20							
21	3950			SW	50		GRAVELLY SAND,STA,odor,grey,
22							
23	4040			SP	50		SAND, medium to coarse,subangular,loose, grey to black,damp,odor,
24							
25	2632			SW	40		GRAVELLY SAND,coarse,loose, damp,dark grey to black,odor,
26							
27	3130			SW	40		GRAVELLY SAND,STA,odor,damp,
28		▼					
29				SW	50		GRAVELLY SAND,STA,saturated,black, odor.
30							
31							
32							

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Austin, Texas 78759
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Western Refining SW, Inc.
Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: 8" Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	:
Total Depth	: 28'
Ground Water	: 28'
Start Date	: 9/22/2014
Finish Date	: 9/22/2014

BORING NO. SWMU 13-2

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5526.434
Site Coordinates	:
N	: 2073842.175
E	: 2681206.085

Sample Condition: Retained for analysis

Saturation: ▼ Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	16.9			SM	100		SILTY SAND, coarse,loose, brown, damp,no odor,
1	13.7			CL	100		SILTY CLAY, low,firm,damp,brown, no odor,
2–3	23.5			CL	90		SILTY CLAY, SIMILAR TO ABOVE (STA),odor,
4–5	51.5			ML	90		CLAYEY SILT, low,soft,damp,brown to black,odor,
6	35.5			ML	90		SILT,STA,black, odor,
7				SM	90		SILTY SAND, very fine grain,loose, dark grey to brown,odor,
8–9	15.2			SM	90		SILTY SAND, STA,odor,
9–10				ML			SILT,low,soft,damp,black to brown,
10–11	19.7			ML	90		SILT,STA,odor,clayey @ base,
12–13	260			CL	90		SILTY CLAY, low,stiff, damp,dark brown,odor,calcareous,
14–15	262			CL	90		SILTY CLAY/CLAYEY SILT, STA,
16–17	240			CL	90		SILTY CLAY, STA,black, odor,
17				SW			GRAVELLY SAND,coarse,compact,damp,grey, odor,
18–19	256			SW	80		GRAVELLY SAND,STA,odor,
20–21	413			SP	90		SAND, coarse,loose, damp,black and grey,odor,
22–23	1745			SW	60		GRAVELLY SAND,coarse,compact,damp,grey, odor,
24–25	1985			SW	50		GRAVELLY SAND,STA,damp,odor,
26–27	1481	▼		SW	50		GRAVELLY SAND,STA,saturated @ base, phase separate hydrocarbon present.
28–30							

1010 Travis Street
Houston, Texas 77002
713-955-1230

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Austin, Texas 78759
512-693-4190

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Western Refining SW, Inc.
Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: 8" Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	: 2' Long
Total Depth	: 30'
Ground Water	: 28'
Start Date	: 9/23/2014
Finish Date	: 9/23/2014

BORING NO. SWMU 13-3

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5526.211
Site Coordinates	:
N	: 2073808.134
E	: 2681283.264

Sample Condition: Retained for analysis

Saturation: ▼ Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	5.5			ML	80		CLAYEY SILT, low,firm,damp,brown, no odor,
1	7.0						
2				SP	90		SAND, coarse,loose, damp,brown, no odor,occasional gravel,
3	8.9						
4				ML	80		SILT,low,soft,damp,grey, hydrocarbon (hc) odor,
5	5124						
6				ML	80		SILT,SIMILAR TO ABOVE (STA),hc odor,
7	3160						
8				ML	70		SILT,STA,hc odor,
9	3263						
10				ML	60		SILT,STA, becomes clayey @ base,hc odor,
11	3912						
12				CL	100		SILTY CLAY, low,firm,damp,black, strong hc odor,
13	4454						
14				CL	100		SILTY CLAY, STA,hc odor,
15	4107						
16				CL	50		SILTY CLAY, STA,hc odor,gravel @ base,
17	4473						
18				SW	50		GRAVELLY SAND,coarse,compact,damp,grey, hc odor,
19	4890						
20				SW	50		GRAVELLY SAND,STA, hc odor,
21	4029						
22				SW	50		GRAVELLY SAND, STA,hc odor,
23	4615						
24				SW	50		GRAVELLY SAND,STA,hc odor,
25	2938						
26				SW	30		GRAVELLY SAND,STA,hc odor,
27	4054						
28		▼		SW			GRAVELLY SAND,STA,black, hc odor.
29							
30							
31							
32							

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713-955-1230

DiSorbo Consulting, LLC

8501 N. MoPac Expy, Suite 300
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Western Refining SW, Inc.
Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: 8" Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	:
Total Depth	: 35.5'
Ground Water	: 28'
Start Date	: 9/25/2014
Finish Date	: 9/25/2014

BORING NO. SWMU 13-4

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5526.849
Site Coordinates	:
N	: 2073717.84
E	: 2681208.707

Sample Condition: Retained for analysis

Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	15.3			ML	100		CLAYEY SILT, low,soft,damp,brown, no odor,
1	18.2						
2							
3	62			ML	100		CLAYEY SILT, SIMILAR TO ABOVE (STA),black, odor,
4							
5	695			ML	90		CLAYEY SILT/SILT,STA,grades to low, soft,greyish brown silt,odor,
6							
7	1781			ML	70		SILT,STA,odor,grey,
8							
9	1065			ML	70		SILT,STA,odor,
10				ML	80		SILT,STA,odor,
11	646			ML	80		CLAYEY SILT, low,soft to firm,damp,grey, odor,
12							
13	190			CL	80		SILTY CLAY, low,firm to stiff,damp,grey, odor,calcareous,
14							
15	162			CL	80		SILTY CLAY, STA,odor,
16							
17	193			ML	80		CLAYEY SILT, low,soft,damp,brownish grey to grey,odor,
18							
19	217			ML	80		CLAYEY SILT, STA,odor,
20				SW	80		GRAVELLY SAND,medium to coarse,compact,damp,grey, odor,
21	85			SW	40		GRAVELLY SAND,STA,grey, odor,
22							
23	537			SW	40		GRAVELLY SAND,STA,grey, odor,
24							
25	4009			SW	50		GRAVELLY SAND,STA,grey, odor, very moist @ base in seams,
26							
27				SW	40		GRAVELLY SAND,STA,very moist in seams,
28		▼					
29				SW	40		GRAVELLY SAND,STA,saturated,black, odor,
30							
31				SW	40		GRAVELLY SAND,STA,black, odor,
32							
33							WEATHERED SANDSTONE, friable,brown, coarse grain,damp,
34							
35							WEATHERED SANDSTONE,STA.
36							

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Western Refining SW, Inc.
Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: 8" Hollow Stem Auger
Sampling Method	: 2" Diameter Split Spoon
Comments	: 2' Long
Total Depth	: 32'
Ground Water	: 26'
Start Date	: 9/25/2014
Finish Date	: 10/3/2014

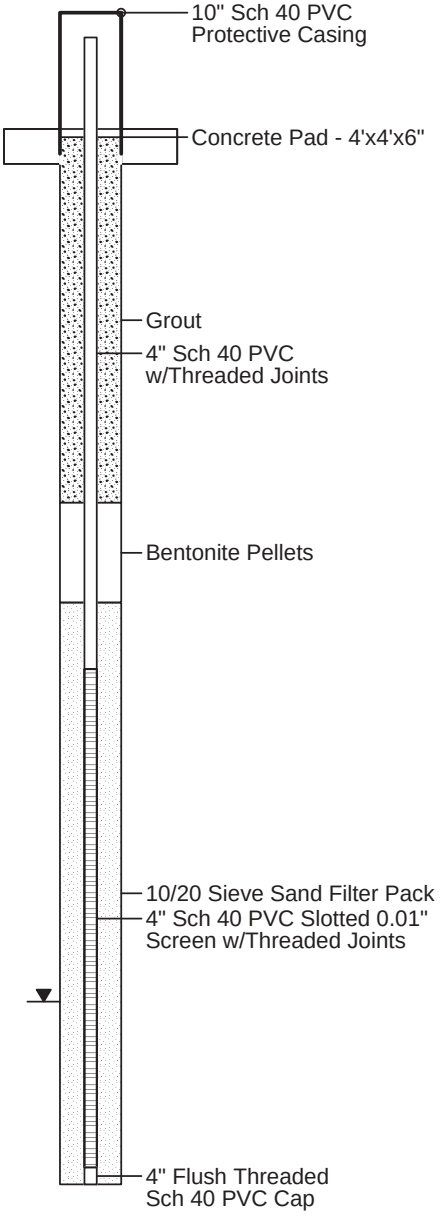
SWMU 13-5 (MW-74)

(Sheet 1 of 1)

Elev., TOC (ft.msl)	: 5528.55
Elev., PAD (ft. msl)	: 5527.009
Elev., GL (ft. msl)	: 5526.902
Site Coordinates	:
N	: 2073657.179
E	: 2681199.329

Sample Condition: Retained for analysis
Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0-1	41			ML	100		CLAYEY SILT, low, firm,dry, brown, odor @ base,
1-2	118						
2-3	821			ML	70		SILT,low,soft,damp,grey, odor,
3-4							
4-5	835			ML	80		CLAYEY SILT, STA,firm,odor,
5-6							
6-7					-		NO RECOVERY,
7-8							
8-9	840			ML	80		CLAYEY SILT, low,firm to soft,damp,grey, odor,
9-10							
10-11	1250			ML/CL	80		CLAYEY SILT/SILTY CLAY, low,soft to firm,damp,grey, hydrocarbon (hc) odor,
11-12							
12-13	761			CL	60		SILTY CLAY, STA,odor,
13-14							
14-15	682			CL	90		SILTY CLAY, STA,hc odor,
15-16							
16-17	831			CL	80		SILTY CLAY, STA,hc odor,
17-18				SW	80		GRAVELLY SAND,medium to coarse,compact,damp,grey, hc odor,
18-19	1177			SP/SW	60		SAND/GRAVELLY SAND,STA,grey, hc odor,
19-20							
20-21	1512			SW	20		GRAVELLY SAND,STA,hc odor,
21-22							
22-23	1575			SW	30		GRAVELLY SAND,STA,hc odor,
23-24							
24-25	1550			SW	40		GRAVELLY SAND,STA,hc odor,
25-26		▼					
26-27				SP	50		SAND, coarse,loose, saturated,grey,phase separated hydrocarbon (psh), present,
27-28							
28-29				SW	70		GRAVELLY SAND,medium to coarse,compact,saturated,psh present,SILTSTONE @ base,dark grey, very dense,dry,
29-30							
30-31				SLTST	60		SILTSTONE, very dense,dry, dark grey.
31-32							
32-33							
33-34							



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Western Refining SW, Inc.
Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	: 2' Long
Total Depth	: 28'
Ground Water	: 26'
Start Date	: 10/3/2014
Finish Date	: 10/3/2014

BORING NO. SWMU 13-6

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5526.84
Site Coordinates	:
N	: 2073436.696
E	: 2681174.494

Sample Condition: Retained for analysis

Saturation: ▼ Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	10.6			ML	100		CLAYEY SILT, low,soft,damp,brown to greyish brown,odor,
1	269						
2				ML	60		SILT,low,soft,damp,grey, odor,
3	157						
4				ML	60		SILT,SIMILAR TO ABOVE (STA),odor,
5	103						
6				ML	80		SILT,STA,odor,
7	128						
8				ML	80		SILT,STA,odor,
9	138						
10				ML	70		CLAYEY SILT, low,soft,damp,grey, odor,
11	179						
12				CL	70		SILTY CLAY, low,firm,damp,grey, odor,
13	170						
14				ML	80		CLAYEY SILT, low,soft,damp,grey, odor,
15	142						
16				ML	90		CLAYEY SILT, STA,odor,
17	153						
18				SW	90		GRAVELLY SAND,medium to coarse,compact,damp,grey, odor,
19	70			SW	60		GRAVELLY SAND,STA,odor,
20				SW	20		GRAVELLY SAND,STA,odor,
21	30.6						
22				SW	10		GRAVELLY SAND,STA,odor,
23	258						
24				SW	10		GRAVELLY SAND,STA,moist, odor,
25	1542	▼					
26				SW	10		GRAVELLY SAND,STA,very moist to saturated,odor.
27	-						
28							
29							
30							

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Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: 8" Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	:
Total Depth	: 26'
Ground Water	: 24'
Start Date	: 10/6/2014
Finish Date	: 10/6/2014

BORING NO. SWMU 13-7

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5526.083
Site Coordinates	:
N	: 2073456.057
E	: 2681103.744

Sample Condition: Retained for analysis

Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	295			ML	100		CLAYEY SILT, low,firm,damp, brown to dark grey,odor,
1	1636						
2				ML	90		SILT,low,soft,damp,grey, odor,
3	1584						
4				ML	70		SILT,SIMILAR TO ABOVE (STA),odor,
5	360						
6				ML	60		SILT,STA,odor,
7	345						
8				ML	70		SILT,STA,odor,
9	392						
10	364			ML	80		SILT,STA,odor,
11				CL	80		SILTY CLAY, low,firm,damp,grey, odor,
12				CL	60		SILTY CLAY, STA,odor,greyish-brown,
13	358						
14				ML	90		CLAYEY SILT/SILT,low,soft,damp,brown to black to grey, odor,trace fine grain sand @ base,
15	226						
16				SW	50		GRAVELLY SAND,coarse,compact,damp,grey, odor,
17	91						
18				SW	60		GRAVELLY SAND,STA,odor,
19	40						
20				SW	30		GRAVELLY SAND,STA,odor,
21	63						
22				SW	10		GRAVELLY SAND,STA,odor,moist/oily @ base,
23	1560	▼					
24				SM	20		SILTY SAND, medium, compact,saturated,black, odor.
25							
26							
27							
28							

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Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: 8" Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	:
Total Depth	: 28'
Ground Water	: 26'
Start Date	: 9/26/2014
Finish Date	: 9/26/2014

BORING NO. SWMU 13-8

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5526.639
Site Coordinates	:
N	: 2073549.813
E	: 2681143.509

Sample Condition: Retained for analysis

Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	184			ML	100		CLAYEY SILT, low,firm,dry, brown, no odor,
1	2245						
2				ML	90		SILT,low,soft,damp,brownish grey,odor,
3	1779						
4				ML	60		SILT,SIMILAR TO ABOVE (STA),odor,
5	218						
6				ML	60		SILT,STA,odor,
7	236						
8				ML	50		SILT,STA,odor,
9	262						
10				CL	60		SILTY CLAY, low,firm to soft,damp,dark brown,odor,
11	167						
12				ML	80		CLAYEY SILT, low,soft,damp,dark brown,odor,
13	328						
14	235			ML	90		CLAYEY SILT, STA,odor,
15				ML	90		SILT,low,soft,damp,dark brown,odor,
16				SP	90		SAND, medium, compact,damp,dark brown,odor,
17	220						
18				SW	90		GRAVELLY SAND,medium to coarse,compact,grey, damp,odor,
19	130			SW	10		GRAVELLY SAND,STA,odor,
20				SW	70		GRAVELLY SAND,STA,odor,
21	116						
22				SW	70		GRAVELLY SAND,STA,odor,
23	3784						
24				SW	30		GRAVELLY SAND,STA,black, odor,
25	3494						
26		▼		SW	50		GRAVELLY SAND,STA,saturated,strong odor,black.
27							
28							
29							
30							

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Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: 8" Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	: 2' in Length
Total Depth	: 30'
Ground Water	: 28'
Start Date	: 9/19/2014
Finish Date	: 9/19/2014

BORING NO. SWMU 13-10

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5526.353
Site Coordinates	:
N	: 2073658.114
E	: 2681022.684

Sample Condition: Retained for analysis

Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	310			ML	100		CLAYEY SILT, low,firm,damp,brown, hydrocarbon (hc) odor,
1	394						
2							
3	27			ML	10		CLAYEY SILT, SIMILAR TO ABOVE (STA),hc odor,
4							
5	105			ML	90		SILT,low,soft,damp,brown, hc odor,
6							
7	99			ML	90		SILT,STA,hc odor,
8							
9	69			ML	90		SILT,STA,hc odor,
10							
11	101			ML	80		SILT,STA,hc odor,
12							
13	110			ML/CL	90		CLAYEY SILT/SILTY CLAY, low,firm,damp,dark brown with black staining,hc odor,
14							
15	123			CL	90		SILTY CLAY, STA,hc odor,
16	135			CL	90		SILTY CLAY, STA,
17				ML	90		SILT,low,soft,damp,black, hc odor,
18							
19	145			SW	30		GRAVELLY SAND,fine to medium, loose, damp,dark grey, hc odor,gravel 10 to 50 MM,
20							
21	492			SW	60		GRAVELLY SAND,STA,hc odor,
22							
23	2350			SW	20		GRAVELLY SAND,STA,hc odor,
24							
25	4588			SW	60		GRAVELLY SAND,STA, moist in sand seams,hc odor,
26							
27	3138			SW	40		GRAVELLY SAND,STA,
28		▼					
29				SW	10		GRAVELLY SAND,STA,saturated,yellow phase separated hydrocarbon (psh),strong hc odor.
30							
31							
32							

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Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	: 2' Long
Total Depth	: 30'
Ground Water	: 28'
Start Date	: 10/2/2014
Finish Date	: 10/2/2014

BORING NO. SWMU 13-11

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5536.313
Site Coordinates	:
N	: 207352.222
E	: 2680898.18

Sample Condition: Retained for analysis

Saturation: ▼ Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	24			SP	100		SAND, medium,compact,dry to damp,brown, no odor,gravel,
1	757			ML	100		CLAYEY SILT, low,firm,damp,brown, odor,
2							
3	335			ML	70		SILT,low,soft,damp,light grey,odor,
4							
5	105			ML	60		SILT,SIMILAR TO ABOVE (STA),odor,
6							
7	248			ML	60		SILT,STA,traces of sand, odor,
8							
9	225			ML	70		SILT,STA,odor,
10							
11	132			ML	100		SILT,STA,odor,
12							
13	121			CL	10		SILTY CLAY, low,soft,damp,light grey,odor,
14							
15	123			ML	100		SILT,low,soft,damp,light grey,odor,
16							
17	68			SM	100		SILTY SAND, fine,loose, damp,grey, odor,gravel present,
18							
19	59			SM	90		SILTY SAND, STA,odor,
20							
21	58			SW	70		GRAVELLY SAND,medium to coarse,compact,grey, odor,gravel 10 to 50 MM,
22							
23	1907			SW	50		GRAVELLY SAND,STA,odor,
24							
25	789			SW	10		GRAVELLY SAND,STA,odor,
26							
27	2650			SW	20		GRAVELLY SAND,STA,odor,very moist in seams,
28		▼					
29	-			SW	20		GRAVELLY SAND,STA,saturated,phase separated hydrocarbon (psh),odor.
30							
31							
32							

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Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	: 2' Long
Total Depth	: 28'
Ground Water	: 26'
Start Date	: 10/2/2014
Finish Date	: 10/2/2014

BORING NO. SWMU 13-12

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5526.654
Site Coordinates	:
N	: 2073473.261
E	: 2680753.984

Sample Condition: Retained for analysis

Saturation: ▼ Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	31			ML	100		CLAYEY SILT, low,firm,damp,brown, no odor,
1	17						
2				ML	60		SILT,low,soft,damp,brown, no odor,
3	13						
4				ML	60		SILT,SIMILAR TO ABOVE (STA),no odor,
5	14						
6				ML	80		SILT,STA,no odor,
7	13.8						
8				ML	90		SILT,STA,no odor,
9	10.9						
10				ML	90		SILT,STA,no odor,
11	12.3						
12				CL	90		SILTY CLAY, low,firm,damp,brown, no odor,
13	15.3						
14				CL	90		SILTY CLAY, STA,no odor,
15	19.1						
16				ML	90		CLAYEY SILT, low,soft,damp,brown, no odor,
17	35						
18				ML	70		CLAYEY SILT, STA,
19	22						
20				SW	70		GRAVELLY SAND,coarse,compact,damp,grey, gravel 10 to 40 MM,
21	21			SW	40		GRAVELLY SAND,STA,faint odor,
22							
23	16.9			SW	10		GRAVELLY SAND,STA,no odor,
24							
25	1340			SW	20		GRAVELLY SAND,STA,odor,
26		▼					
27				SW	20		GRAVELLY SAND,STA, saturated sand seam @ 26',phase separated hydrocarbon (psh).
28							
29							
30							

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Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	: 2' Long
Total Depth	: 32'
Ground Water	: 26'
Start Date	: 10/7/2014
Finish Date	: 10/9/2014

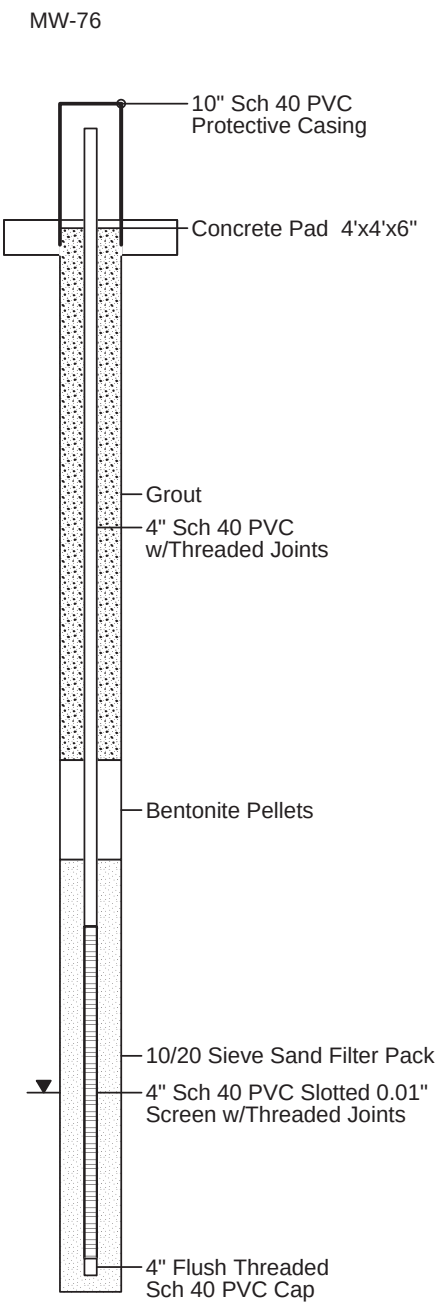
SWMU 13-13 (MW-76)

(Sheet 1 of 1)

Elev., TOC (ft.msl)	: 5528.61
Elev., PAD (ft. msl)	: 5526.904
Elev., GL (ft. msl)	: 5526.605
Site Coordinates	:
N	: 2073383.172
E	: 2680900.14

Sample Condition: Retained for analysis
Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0-1	51			ML	100		CLAYEY SILT, low,firm,dry to damp,brown,
1-2	148						
2-3	32			ML	10		CLAYEY SILT, SIMILAR TO ABOVE (STA),
3-5	220			ML	60		SILT,low,soft,damp,grey, odor,
5-7	-			ML	-		SILT,NO RECOVERY,
7-9	159			ML	10		SILT,STA,odor,
9-11	230			ML	90		SILT,STA,odor,
11-12				CL	90		SILTY CLAY, low,firm,damp,dark grey to black,odor,calcareous,
12-13	145			CL	90		SILTY CLAY, STA,odor,
13-14				ML	90		CLAYEY SILT, low,firm to soft,damp,dark grey, odor,
14-15	158			SM	90		SILTY SAND, very fine grained, loose, dark grey, damp,odor,
15-17	156			SW	80		GRAVELLY SAND,coarse,compact,damp,grey, odor, gravel 10 to 40 MM,
17-19	988			SW	70		GRAVELLY SAND,STA,odor,
19-21	720			SW	60		GRAVELLY SAND,STA,odor,
21-23	4070			SW	50		GRAVELLY SAND,STA,odor,moist,
23-25	4150			SW	60		GRAVELLY SAND,STA,odor,moist,
25-27				SW	50		GRAVELLY SAND,STA,saturated, odor,black,
27-29				SW	40		GRAVELLY SAND,STA,saturated,black, odor,sheen,
29-31				SS	50		WEATHERED SANDSTONE,dense,brown, damp,very fine grained.



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Western Refining SW, Inc.
Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	: 2' Long
Total Depth	: 30'
Ground Water	: 28'
Start Date	: 10/2/2014
Finish Date	: 10/2/2014

BORING NO. SWMU 13-14

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5526.189
Site Coordinates	:
N	: 2073392.529
E	: 2681013.735

Sample Condition: Retained for analysis

Saturation: ▼ Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	10.3			ML	100		CLAYEY SILT, low,soft to firm,damp, brown to grey,odor,
1	2210						
2				ML	90		SILT,low,soft,damp,grey, odor,
3	2012						
4				ML	60		CLAYEY SILT, SIMILAR TO ABOVE (STA),odor,
5	1858						
6				ML	80		SILT,STA,odor,
7	1579						
8				ML	10		SILT,STA,odor,
9	450						
10				ML	10		SILT,STA,odor,
11	315						
12	546			ML	90		SILT,STA,
13				CL	90		SILTY CLAY, low,firm,damp,grey, odor,calcareous,
14				ML	90		SILT,low,soft,damp,dark grey, odor,
15	203						
16				ML	90		CLAYEY SILT, STA,odor,cobble @ base,
17	430						
18				SW	40		GRAVELLY SAND,medium to coarse,compact,damp,grey, odor,
19	625						
20				SW	50		GRAVELLY SAND,STA,
21	1247						
22				SW	50		GRAVELLY SAND,STA,moist, odor,
23	1019						
24				SW	20		GRAVELLY SAND,STA,moist, odor,
25	2596						
26				SW	20		GRAVELLY SAND,STA,moist, odor,
27	2625	▼					
28				SW	20		GRAVELLY SAND,STA,saturated,odor.
29							
30							
31							
32							

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Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	: 2' Long
Total Depth	: 30'
Ground Water	: Not Encountered
Start Date	: 10/6/2014
Finish Date	: 10/9/2014

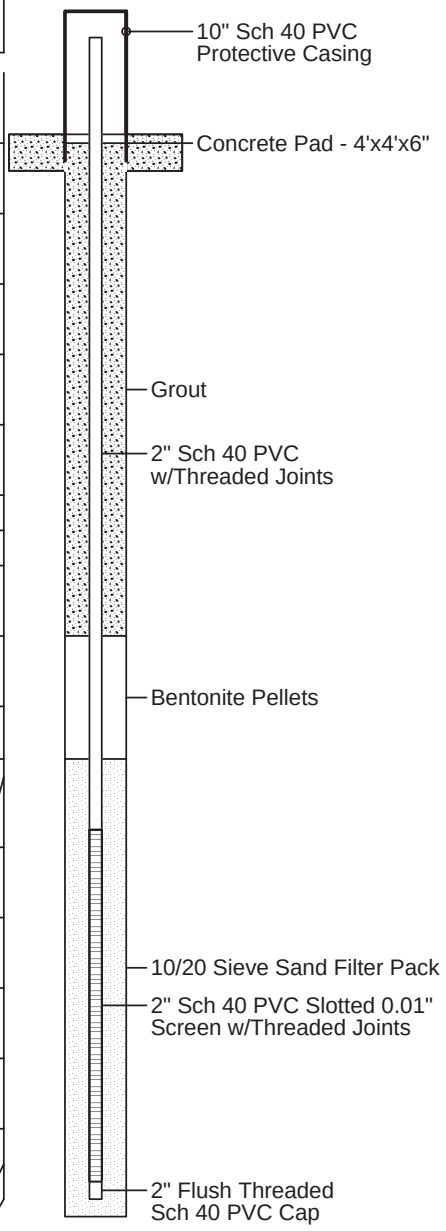
SWMU13-15 (MW-75)

(Sheet 1 of 1)

Elev., TOC (ft.msl)	: 5528.76
Elev., PAD (ft. msl)	: 5526.656
Elev., GL (ft. msl)	: 5526.421
Site Coordinates	:
N	: 2073448.869
E	: 2681258.29

Sample Condition: Retained for analysis
Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	36.1			ML	100		CLAYEY SILT, low,soft,damp,brown, odor,
1	15.6						
2							
3	30			ML	70		CLAYEY SILT, SIMILAR TO ABOVE (STA),odor,
4							
5	111			ML	90		SILT,low,soft,damp,brown, odor,
6							
7	438			ML	40		SILT,STA,odor,
8							
9	2510			ML	90		SILT,STA,odor,
10							
11	4345			ML	80		CLAYEY SILT, low,firm,damp,brown, odor,
12				CL	80		SILTY CLAY, STA,odor,
13	4556			CL	80		SILTY CLAY, STA,odor,
14							
15	4236			ML	80		CLAYEY SILT, low,firm,damp,black, odor,
16							
17	3549			ML	80		CLAYEY SILT, STA,odor,
18				SW	80		GRAVELLY SAND,coarse,compact,damp,black, odor,
19				SW	-		GRAVELLY SAND,NO RECOVERY,
20							
21	701			SW	30		GRAVELLY SAND,STA,grey to black,odor,
22							
23	2939			SW	-		GRAVELLY SAND,NO RECOVERY,
24							
25				SW	10		GRAVELLY SAND,STA,odor,
26							
27				SW	-		GRAVELLY SAND,NO RECOVERY,
28							
29				SS	60		WEATHERED SANDSTONE/SILTSTONE,very fine, friable,greenish grey,faint odor,damp,
30				SS	-		WEATHERED SANDSTONE,STA.
31							
32							



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Group 9 Bloomfield Terminal
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Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: 8" Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	: 2' Long
Total Depth	: 33.5'
Ground Water	: 28'
Start Date	: 9/24/2014
Finish Date	: 10/3/2014

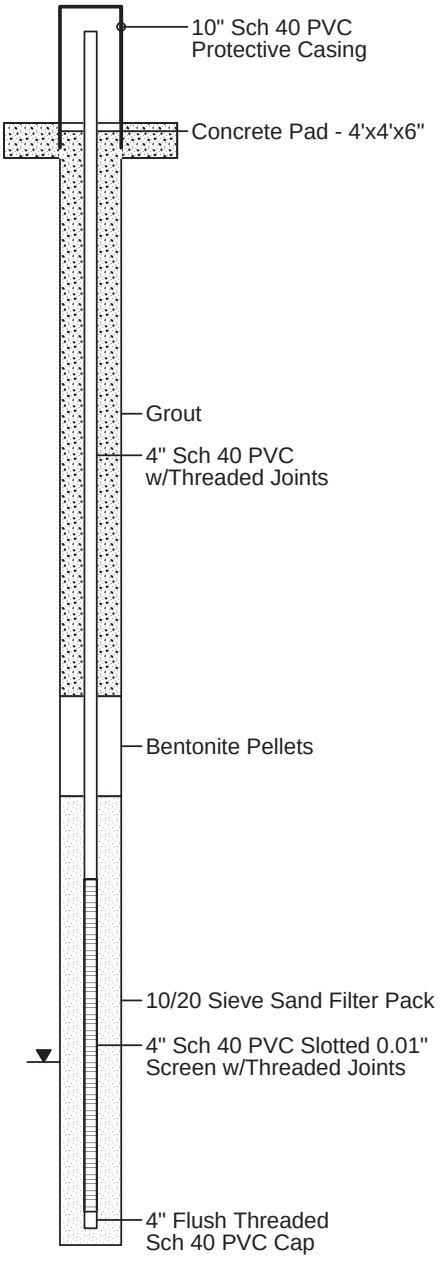
SWMU 13-16 (MW-72)

(Sheet 1 of 1)

Elev., TOC (ft.msl)	: 5527.037
Elev., PAD (ft. msl)	: 5527.346
Elev., GL (ft. msl)	: 5528.54
Site Coordinates	:
N	: 2073506.98
E	: 2681168.933

Sample Condition: Retained for analysis
Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0-1	555 615			CL	100		SILTY CLAY, low,firm,dry to damp,brown, odor,
2-3					-		NO RECOVERY,
4-5	141			ML	90		SILT,low,soft,damp,dark brown,odor,
6-7	151			ML	90		SILT,SIMILAR TO ABOVE (STA),
8-9	90			ML	90		SILT,STA,
10-11	106			ML	80		CLAYEY SILT, low,firm,damp,brown, odor,
12-13	131			ML	80		SILT,low,soft,damp,dark brown,odor,
14-15	201			ML	80		SILT,STA,clayey @ base,odor,
16-17	143			ML	90		SILT,STA,odor,black,
18				ML	60		SILT,STA,
19	329			SW	60		GRAVELLY SAND,coarse,loose, damp,grey, odor,
20-21	270			SW	80		GRAVELLY SAND,STA,black, odor,
22-23	1632			SW	60		GRAVELLY SAND,STA,black and grey,odor,
24-25	2314			SW	20		GRAVELLY SAND,STA,
26-27	2487			SW	40		GRAVELLY SAND,STA,
28-29				SW	50		GRAVELLY SAND,STA,saturated,black, odor,
30-31				SW	60		GRAVELLY SAND,STA,saturated,odor,
32				SLTST	60		SILTSTONE,dense,dry to damp,olive,no odor.
33-34							



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Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	: 2' Long
Total Depth	: 35'
Ground Water	: 27' BGL
Start Date	: 9/30/2014
Finish Date	: 10/3/2014

SWMU 13-17 (MW-73)

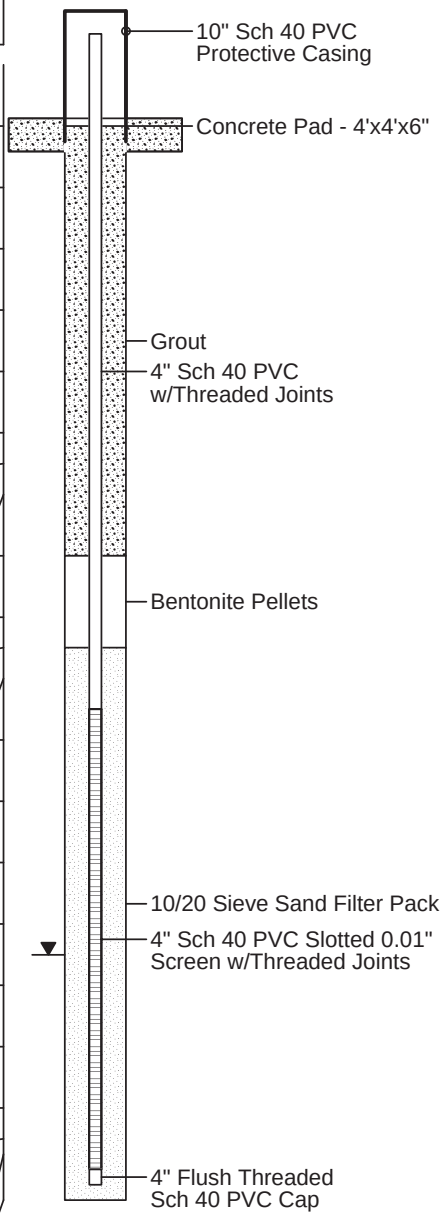
(Sheet 1 of 1)

Elev., TOC (ft.msl)	: 5528.92
Elev., PAD (ft. msl)	: 5527.207
Elev., GL (ft. msl)	: 5526.794
Site Coordinates	:
N	: 2073692.249
E	: 2681089.1

Sample Condition: Retained for analysis

Saturation: ▼ Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	USCS	Recovery (%)	DESCRIPTION
0–1	45.9 218	ML	100	CLAYEY SILT, low,firm,damp,brown, faint odor,
2–3	195	ML	90	CLAYEY SILT, SIMILAR TO ABOVE (STA),greyish brown,odor,
4–5	280	ML	80	CLAYEY SILT, STA,grey, odor,
6–7	424	ML	80	CLAYEY SILT, STA,grey, odor,
8–9	261	ML	90	SILT,low,soft,damp,grey, odor,
10	132	ML	90	SILT,STA,
11		ML/CL	90	CLAYEY SILT/SILTY CLAY, low,firm,damp,grey, odor,
12–13	166	CL	90	SILTY CLAY, STA,odor,
14–15	197	CL	90	SILTY CLAY, STA,black, odor,calcareous,
16–17	108	CL	90	SILTY CLAY, STA,odor,
17–18		SW	90	GRAVELLY SAND,coarse,compact,damp,grey, odor,
19	398	SP	90	SAND, coarse,loose, damp,grey, odor,
20–21	432	SP	70	SAND, STA,odor,traces of gravel,
22–23	457	SW	30	GRAVELLY SAND,coarse,compact,damp,grey, odor,gravel 10 to 30 MM,
24–25	1824	SW	60	GRAVELLY SAND,STA,odor,
26–27		SW	10	GRAVELLY SAND,STA,odor,saturated @ 27', sample recovered was saturated,
28–29		SW	60	GRAVELLY SAND,STA,saturated,odor,black,
30–31		SW	80	GRAVELLY SAND,STA,saturated,odor,black,
32		SW	90	GRAVELLY SAND,STA,saturated,odor,
33		SS	90	WEATHERED SANDSTONE,loose, soft,coarse sand, moist, green,odor,
34–35		SS	-	WEATHERED SANDSTONE,STA.



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Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: 8" Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	: 2' Long
Total Depth	: 35.5'
Ground Water	: 26'
Start Date	: 9/19/2014
Finish Date	: 10/3/2014

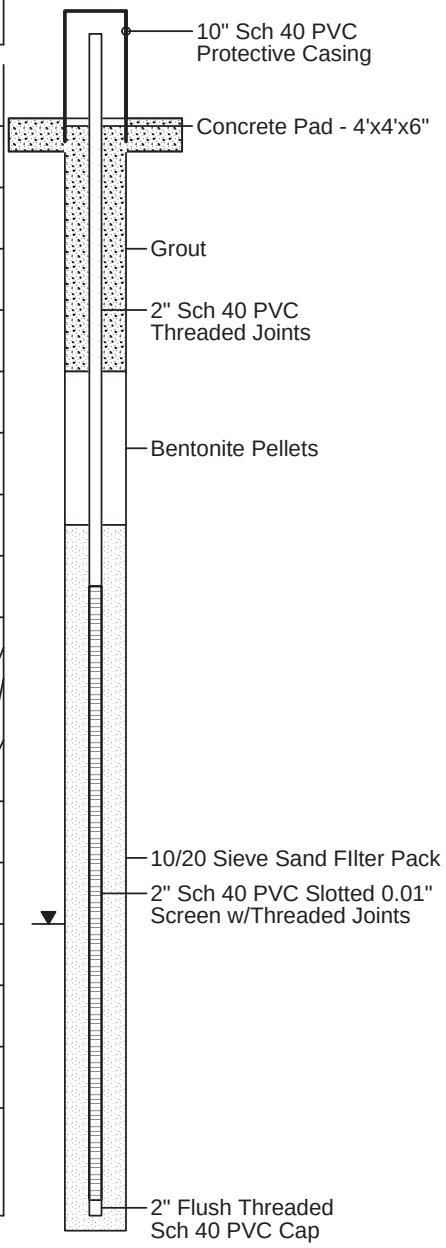
SWMU 13-18 (MW-71)

(Sheet 1 of 1)

Elev., TOC (ft.msl)	: 5529.08
Elev., PAD (ft. msl)	: 5527.097
Elev., GL (ft. msl)	: 5526.474
Site Coordinates	:
N	: 2073762.739
E	: 2681028.223

Sample Condition: Retained for analysis
Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	288			ML	100		CLAYEY SILT, low,firm,damp,brown, hydro carbon (hc) odor,
3	722			ML	100		CLAYEY SILT, SIMILAR TO ABOVE (STA),dark brown,hc odor,
4	173			ML	90		SILT,low,soft,damp,dark brownish grey,hc odor,
7	140			ML	90		SILT,STA,hc odor,
9	124			ML	90		SILT,STA,hc odor,
11	142			ML	90		SILT,STA,hc odor,
13	350			ML	100		CLAYEY SILT, low,firm,damp,dark grey, hc odor,
15	121			ML	100		CLAYEY SILT, STA,clay content decreases with depth,
17	125			SM	100		SILTY SAND, fine to medium, loose, damp,dark grey, hc odor,
18				SW	100		
19	118			SW	30		GRAVELLY SAND,fine to medium, loose, damp,dark grey, hc odor,gravel 10 to 50 MM,
20							GRAVELLY SAND,STA,hc odor,
21	32			SW	30		GRAVELLY SAND,STA,hc odor,
23	1340			SP	90		SAND, medium to coarse,loose, grey, damp,hc odor,
25	3345	▼		SP	90		SAND, STA,damp,hc odor,
26				SP	90		SAND, STA,very moist to saturated,hc odor,phase separated hydrocarbon (psh), present,
29				GW	60		SANDY GRAVEL,medium to coarse grain sand,saturated,black, hc odor,
31				GW			SANDY GRAVEL,STA,saturated,trace greenish grey sand @ base,
35				SS			WEATHERED SANDSTONE,medium grained,firm to soft,damp,tan,odor.



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Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	: 2' Long
Total Depth	: 33'
Ground Water	: 28'
Start Date	: 10/8/2014
Finish Date	: 10/9/2014

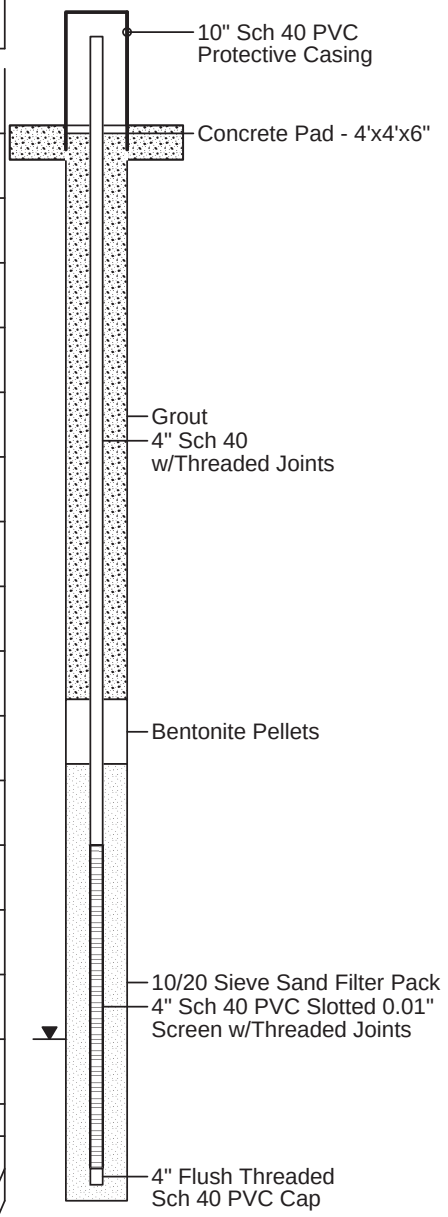
SWMU 13-19 (MW-77)

(Sheet 1 of 1)

Elev., TOC (ft.msl)	: 5527.59
Elev., PAD (ft. msl)	: 5526.189
Elev., GL (ft. msl)	: 5525.958
Site Coordinates	:
N	: 2073510.987
E	: 2680700.516

Sample Condition: Retained for analysis
Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	7.8			ML	100		CLAYEY SILT, low, firm to soft,dry to damp,brown, no odor,gravel present,
1	11.4						
2							
3	8.3			ML	90		CLAYEY SILT, SIMILAR TO ABOVE (STA),no odor,
4							
5	11.2			ML	90		SILT,low,soft,damp,brown, odor,
6							
7	10.1			ML	80		SILT,STA,
8							
9	9.5			ML	10		SILT,STA,
10							
11	36.8			CL	20		SILTY CLAY, low,firm,damp,brown,
12							
13	71.3			CL/ML	80		SILTY CLAY/CLAYEY SILT, low,firm,damp,brown,
14							
15	31.7			ML	80		CLAYEY SILT, STA,soft,
16							
17	27.3			SM	80		SILTY SAND, very fine, compact,damp,brown,
18							
19	14.2			SW	50		GRAVELLY SAND,coarse,compact,grey, damp,
20							
21	16.2			SW	60		GRAVELLY SAND,STA,
22							
23	26.8			SW	50		GRAVELLY SAND,STA,
24							
25	32.2			SW	10		GRAVELLY SAND,STA,
26							
27	2010			SW	10		GRAVELLY SAND,STA,odor,
28							
29				SW	10		GRAVELLY SAND,STA,saturated,black, odor,
30				SW	20		GRAVELLY SAND,STA,saturated,black, odor,
31				SS	2		WEATHERED SANDSTONE/SILTSTONE, dense,damp,brown to yellowish brown,odor,
32				SS	-		
33							WEATHERED SANDSTONE,STA.
34							
35							



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Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: NA
Drilling Rig	: NA
Drilling Method	: Hand Auger
Sampling Method	: Auger Bucket
Comments	:
Total Depth	: 0.5'
Ground Water	: NA
Start Date	: 9/29/2014
Finish Date	: 9/29/2014

BORING NO. SWMU 13-20

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5526.172
Site Coordinates	:
N	: 2073612.082
E	: 2680881.612

Sample Condition: Retained for analysis

Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	3.4			SC	100		CLAYEY SAND, medium, compact,moist, brown, no odor.
1							
2							

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Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: NA
Drilling Rig	: NA
Drilling Method	: Hand Auger
Sampling Method	: Auger Bucket
Comments	:
Total Depth	: 0.5'
Ground Water	: NA
Start Date	: 9/29/2014
Finish Date	: 9/29/2014

BORING NO. SWMU 13-21

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5526.699
Site Coordinates	:
N	: 2073634.612
E	: 2680959.194

Sample Condition: Retained for analysis

Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	1.6			SC	100		CLAYEY SAND, medium to coarse,compact,damp,brown, no odor.
1							
2							

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Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: NA
Drilling Rig	: NA
Drilling Method	: Hand Auger
Sampling Method	: Auger Bucket
Comments	:
Total Depth	: 0.5'
Ground Water	: NA
Start Date	: 9/29/2014
Finish Date	: 9/29/2014

BORING NO. SWMU 13-22

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5526.765
Site Coordinates	:
N	: 2073678.127
E	: 2680948.36

Sample Condition: Retained for analysis

Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	1.1			SM	100		SILTY SAND, coarse,compact,damp,brown.
1							
2							

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Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: NA
Drilling Rig	: NA
Drilling Method	: Hand Auger
Sampling Method	: Auger Bucket
Comments	:
Total Depth	: 0.5'
Ground Water	: NA
Start Date	: 9/29/2014
Finish Date	: 9/29/2014

BORING NO. SWMU 13-23

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5527.607
Site Coordinates	:
N	: 2073690.805
E	: 2681206.229

Sample Condition: Retained for analysis

Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	52.6			ML	100		CLAYEY SILT, low,firm,damp, brown black @ 0.5', odor.
1							
2							

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Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: NA
Drilling Rig	: NA
Drilling Method	: Hand Auger
Sampling Method	: Auger Bucket
Comments	:
Total Depth	: 0.5'
Ground Water	: NA
Start Date	: 9/29/2014
Finish Date	: 9/29/2014

BORING NO. SWMU 13-24

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5526.607
Site Coordinates	:
N	: 2073662.054
E	: 2681225.165

Sample Condition: Retained for analysis

Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	1.1			ML/SC	100		CLAYEY SILT/SAND, medium to coarse,compact,damp,brown, no odor.
1							
2							

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Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: NA
Drilling Rig	: NA
Drilling Method	: Hand Auger
Sampling Method	: Auger Bucket
Comments	:
Total Depth	: 0.5'
Ground Water	: NA
Start Date	: 9/29/2014
Finish Date	: 9/29/2014

BORING NO. SWMU 13-25

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5527.077
Site Coordinates	:
N	: 2073580.234
E	: 2681249.272

Sample Condition: Retained for analysis

Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	3.1			SM	100		SILTY SAND, medium to coarse,compact,damp,brown, no odor.
1							
2							

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Geologist	: Tracy Payne
Driller	: NA
Drilling Rig	: NA
Drilling Method	: Hand Auger
Sampling Method	: Auger Bucket
Comments	:
Total Depth	: 0.5'
Ground Water	: NA
Start Date	: 9/29/2014
Finish Date	: 9/29/2014

BORING NO. SWMU 13-26

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5527.109
Site Coordinates	:
N	: 2073576.754
E	: 2681266.785

Sample Condition: Retained for analysis

Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	1.8			SM	100		SILTY SAND, coarse,compact,damp,brown, no odor,gravel.
1							
2							

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Geologist	: Tracy Payne
Driller	: NA
Drilling Rig	: NA
Drilling Method	: Hand Auger
Sampling Method	: Auger Bucket
Comments	:
Total Depth	: 0.5'
Ground Water	: NA
Start Date	: 9/30/2014
Finish Date	: 9/30/2014

BORING NO. SWMU 13-27

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5526.391
Site Coordinates	:
N	: 2073427.33
E	: 2681131.385

Sample Condition: Retained for analysis

Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	0.7			SM	100		SILTY SAND, medium to coarse,compact,damp,brown, no odor.
1							
2							

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Geologist	: Tracy Payne
Driller	: NA
Drilling Rig	: NA
Drilling Method	: Hand Auger
Sampling Method	: Auger Bucket
Comments	:
Total Depth	: 0.5'
Ground Water	: NA
Start Date	: 9/30/2014
Finish Date	: 9/30/2014

BORING NO. SWMU 13-28

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5527.264
Site Coordinates	:
N	: 2073400.807
E	: 2681155.071

Sample Condition: Retained for analysis

Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	0.9			SM	100		SILTY SAND, medium,compact,damp,brown, no odor.
1							
2							

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Geologist	: Tracy Payne
Driller	: NA
Drilling Rig	: NA
Drilling Method	: Hand Auger
Sampling Method	: Auger Bucket
Comments	:
Total Depth	: 0.5'
Ground Water	: NA
Start Date	: 9/30/2014
Finish Date	: 9/30/2014

BORING NO. SWMU 13-29

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5527.181
Site Coordinates	:
N	: 2073403.145
E	: 2681165.405

Sample Condition: Retained for analysis

Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	1.2			SM	100		SILTY SAND, medium,compact,damp,brown.
1							
2							

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Geologist	: Tracy Payne
Driller	: NA
Drilling Rig	: NA
Drilling Method	: Hand Auger
Sampling Method	: Auger Bucket
Comments	:
Total Depth	: 0.5'
Ground Water	: NA
Start Date	: 9/30/2014
Finish Date	: 9/30/2014

BORING NO. SWMU 13-30

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5526.268
Site Coordinates	:
N	: 2073457.746
E	: 2681315.846

Sample Condition: Retained for analysis

Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	1.3			SC	100		GRAVELLY CLAYEY SAND,medium,compact,damp to moist,brown, no odor.
1							
2							

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Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: 8" Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	: 2' Long
Total Depth	: 22'
Ground Water	: 20'
Start Date	: 9/17/2014
Finish Date	: 9/17/2014

WELL NO. SWMU 14-1

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5521.559
Site Coordinates	:
N	: 2073928.835
E	: 2681261.47

Sample Condition: Retained for analysis

Saturation: ▼ Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	25.5			ML	100		CLAYEY SILT, low,soft,damp,brown, faint odor,
1	24.1						
2				ML	100		CLAYEY SILT, SIMILAR TO ABOVE (STA),
3	24.6						
4				ML	100		CLAYEY SILT, STA,
5	25.1						
6	62			ML	100		CLAYEY SILT, STA,
7				CL	100		SILTY CLAY, low,firm,damp,dark brown to black,hydro carbon (hc) odor,
8				CL	100		SILTY CLAY, STA,hc odor,
9	116						
10	100			CL	100		SILTY CLAY, STA,hc odor,
11				SP	100		SAND, medium,loose, grey, damp,hc odor,
12				SP	80		SAND, STA,hc odor,
13	88						
14				SW	70		GRAVELLY SAND,medium,loose, damp,grey, hc odor,
15	65.5						
16				SW	10		GRAVELLY SAND,STA,
17	45						
18				SW	60		GRAVELLY SAND,STA,slightly moist, hc odor,
19	8581						
20		▼		SW	40		GRAVELLY SAND,STA,hc odor,moist to saturated.
21							
22							
23							
24							

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Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: 8" Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	: 2' Long
Total Depth	: 22'
Ground Water	: 22'
Start Date	: 9/17/2014
Finish Date	: 9/18/2014

WELL NO. SWMU 14-2

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5521.167
Site Coordinates	:
N	: 2073915.037
E	: 2681187.009

Sample Condition: Retained for analysis

Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	120			ML	100		CLAYEY SILT, low,firm,damp,brown, hydro carbon (hc) odor,
1	160						
2				ML	100		CLAYEY SILT, SIMILAR TO ABOVE (STA),hc odor,
3	87						
4				ML	100		CLAYEY SILT, STA,hc odor,
5	35						
6				ML	100		CLAYEY SILT, STA,hc odor,
7	110						
8				ML	100		CLAYEY SILT, STA,hc odor,greyish brown,
9	120						
10	100			ML	100		CLAYEY SILT, STA,hc odor,
11				ML	100		SILT,low,loose, damp,greyish brown,hc odor,
12				ML	100		SILT,STA,grey, hc odor,gravel @ base,
13	130						
14					-		NO RECOVERY,gravel,
15							
16				GW	10		GRAVEL/COBBLES,
17							
18				SW	90		GRAVELLY SAND,medium,loose, grey, hc odor,moist,
19	2047						
20				SW			GRAVELLY SAND,STA,moist to saturated @ base.
21	6434						
22		▼					
23							
24							

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Group 9 Bloomfield Terminal
Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	: 2'
Total Depth	: 20'
Ground Water	: 18'
Start Date	: 9/16/2014
Finish Date	: 9/16/2014

BORING NO. SWMU 14-3

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5514.019
Site Coordinates	:
N	: 2073966.524
E	: 2681124.454

Sample Condition: Retained for analysis

Saturation: Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	1515			ML	90		CLAYEY SILT, low,soft,damp,brown, hydrocarbon (hc),
1	2149						
2					0		NO RECOVERY, cobble in shoe of split spoon,
3							
4				ML	90		CLAYEY SILT, low,soft,damp,black, hc odor,
5	6428						
6				SW	80		GRAVELLY SAND,fine to medium grained, subangular,loose, damp to moist,black, hc odor, gravel 10 to 40 MM,
7	5314						
8				SP	80		SAND, medium,subangular,loose, damp,dark grey, hc odor,gravel @ base,
9	3654						
10				SP	20		SAND, SIMILAR TO ABOVE (STA),hc odor,
11	4300						
12				SW	80		GRAVELLY SAND,medium grained,subangular,loose, damp,dark grey, hc odor,gravel 10 to 50 MM,
13	4377						
14				SW	70		GRAVELLY SAND,STA,hc odor,
15	3722						
16				SW	10		GRAVELLY SAND,STA,hc odor,
17	1260						
18				GW	20		SANDY GRAVEL,STA, very moist to saturated,hc odor.
19							
20							
21							
22							

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Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: 8" Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	: 2' Long
Total Depth	: 22'
Ground Water	: 20'
Start Date	: 9/15/2014
Finish Date	: 9/18/2014

BORING NO. SWMU 14-4

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5518.578
Site Coordinates	:
N	: 2074065.363
E	: 2681090.4

Sample Condition: Retained for analysis

Saturation: ▼ Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	52.6			ML	70		CLAYEY SILT, low,stiff, dry, brown, hydrocarbon (hc),
1	93.8						
2				ML	100		CLAYEY SILT, low,soft,damp,brown, faint odor,
3	65						
4				CL	90		SILTY CLAY, low,firm,damp,brown, faint odor,
5	55						
6				CL	90		SILTY CLAY, SIMILAR TO ABOVE (STA),dark brown,hc odor,
7	108						
8				GW	50		SANDY GRAVEL,medium sand, gravel 10 to 50 MM,loose, damp,grey, hc odor,
9	49						
10				GW	10		SANDY GRAVEL,STA,
11	45						
12				GW	40		SANDY GRAVEL,STA,
13	54						
14				GW	40		SANDY GRAVEL,STA,
15	60						
16							NO RECOVERY,
17							
18				GW	40		SANDY GRAVEL,STA,hc staining and hc odor,
19	867						
20		▼		GW	40		SANDY GRAVEL,STA,very moist to saturated,black, hc odor.
21							
22							
23							
24							

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Job No. WEST14014

Geologist	: Tracy Payne
Driller	: J. Pottroff
Drilling Rig	: CME75
Drilling Method	: 8" Hollow Stem Augers
Sampling Method	: 2" Diameter Split Spoon
Comments	: 2' Long
Total Depth	: 30'
Ground Water	: 28'
Start Date	: 9/17/2014
Finish Date	: 9/17/2014

BORING NO. SWMU 14-5

(Sheet 1 of 1)

Elev., TOC (ft.msl)	:
Elev., PAD (ft. msl)	:
Elev., GL (ft. msl)	: 5524.518
Site Coordinates	:
N	: 2073857.17
E	: 2680939.319

Sample Condition: Retained for analysis

Saturation: ▼ Saturation Encountered

Depth (ft.)	Organic Vapor (ppm)	Saturation	Lithology	USCS	Recovery (%)	Sample	DESCRIPTION
0	23.5			ML	100		CLAYEY SILT, low,soft,damp,brown, odor,
1	22.7						
2				ML	100		CLAYEY SILT, SIMILAR TO ABOVE (STA),odor,
3	23.2						
4				CL	100		SILTY SANDY CLAY,low,firm,damp,brown, odor,
5	33.4			CL	100		SILTY SANDY CLAY,STA,hydro carbon (hc) odor,brown to grey,
6							
7	169			ML	100		CLAYEY SILT, low,firm,damp,grey, hc odor,
8							
9	200			SC	100		CLAYEY SAND, fine,compact,damp,greyish brown,hc odor,
10							
11	190			SC	100		CLAYEY SAND, STA,hc odor,
12				CL	100		SANDY CLAY, low,firm,damp,greyish brown to grey with black staining,hc odor,gravel present,
13	355			CL	90		GRAVELLY SANDY CLAY,STA,gravelly,black staining,hc odor,
14							
15	904			CL	90		GRAVELLY SANDY CLAY,STA,hc odor,oily @ base,
16							
17	1223			SC	50		SANDY CLAY, low,firm,dark grey, damp,hc odor,
18							
19	1117			GW	10		SANDY GRAVEL,loose, grey, damp,hc odor,
20							
21	3015			GW	20		SANDY GRAVEL,STA,hc odor,
22							
23	3825			SW	40		GRAVELLY SAND,medium,compact,grey, damp,hc odor,
24							
25	3082			SW	10		GRAVELLY SAND,STA,hc odor,
26							
27	3150			SW	40		GRAVELLY SAND,STA,strong hc odor,moist @ base,
28				SW	30		GRAVELLY SAND,STA,saturated,hc odor,
29				SS	60		WEATHERED SANDSTONE,hc odor,damp,greenish grey to olive grey.
30							
31							
32							

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Appendix E

Site-Specific Dilution/Attenuation Factor Calculations

Calculation of Site-Specific Dilution/Attenuation Factor (DAF)

The DAF value was calculated using equation 19 from NMED's *Technical Background Document for Development of Soil Screening Levels (Revision 5.0, August 2009).*

$$DAF = 1 + \left(\frac{K * i * D}{I * L} \right) \qquad DAF = 1 + \left(\frac{4{,}893 * 0.0023 * 1}{0.01 * 100} \right) = 11.25$$

Where:

$$D = \left(0.0112 * L^2 \right)^{0.5} + D_a \left(1 - \exp\left[\frac{-L * I}{K * i * D_a} \right] \right)$$

K = Aquifer hydraulic conductivity (m/yr)
i = Hydraulic gradient (m/m)
D = Mixing zone depth (m)
I = Infiltration rate (m/yr)
L= Source length parallel to ground water flow (m)
D_a= Aquifer thickness (m)

Derivation of site-specific values:

K = 4,893 m/yr as determined from pumping test at well RW-22 (lowest of three values determined during 1994 RCRA Facility Investigation)
i = 0.0023 m/m as measured during August 2008 ground water sampling event
D = 1 m (lower of aquifer thickness (1m) or calculated mixing zone depth (10.58m))
I = 0.01 m derivation using EPA's HELP model as described below
L = 100 m – conservative average of SWMU/AOC source area length
D_a= 1 m - average saturated thickness measured during August 2008 ground water sampling event

Calculation of Infiltration Rate

Pursuant to *EPA's Soil Screening Guidance: User's Guide (Second Edition, July 1996)*, infiltration rates can be calculated either of two ways: (1) assume that infiltration rate is equivalent to recharge, or (2) use the EPA HELP model to estimate infiltration. Because the Bloomfield site is located in an area with low annual rainfall rates and high potential evapotranspiration rates, method 1 is not representative of site conditions. That is to say that it is unreasonable to assume that infiltration is equal to recharge.

EPA's HELP model was used to calculate the site-specific infiltration rate. Site-specific meteorological data was obtained from the Western Regional Climate Center and New Mexico State University, which operates a nearby weather station (Bloomfield 3 SE) as part of the NWS Cooperator Climate Stations. The weather station is located 1.7 miles south of Bloomfield on HWY 44 and then two miles east on Industrial Blvd, thus being approximately two miles southeast of the Western Bloomfield Refinery.

Data obtained from the Bloomfield 3 SE station includes mean monthly temperature and average monthly precipitation. The average wind speed (13.5 km/hr) was obtained from

the Western Regional Climate Center, as measured at the Farmington, NM airport. Daily solar radiation and quarterly relative humidity values were based on measurements from Albuquerque, NM. This data was obtained from the National Oceanic and Atmospheric Administration (NOAA) and is included in the HELP model's Weather Generator module. A review of the monthly average weather conditions (temperature and precipitation) at Bloomfield and Albuquerque as shown in the table below indicates very similar conditions such that use of quarterly relative humidity and solar radiation from Albuquerque should be sufficient to estimate conditions at Bloomfield. The quarterly relative humidity values used are 48%, 30%, 45%, and 50% for the first, second, third, and fourth quarters, respectively.

The vadose zone physical properties were based on the predominant lithology as observed during on-site monitoring well installation. The soil type chosen in the model was loamy sand with an average thickness of 5 meters. The land surface was assumed to be bare soil with a slope of 0%. This should be a conservative estimate, as there is a slight slope across most of the refinery with the exception of areas within tank dikes. There are structures (e.g., parking lots, building pads, concrete foundations, etc.) that could limit infiltration but the model assumes only bare soil without any obstructions to infiltration. Based on the selected soil type (loamy sand), the model default value for porosity is 0.437, field capacity is 0.105, wilting point is 0.047, and saturated hydraulic conductivity is 0.0017 cm/day. These model default vales are taken from the US Department of Agriculture.

Using the model's synthetic weather generator and the aforementioned inputs, the model was run for a 40 year period to simulate potential infiltration (percolation or leakage through Layer 1). The model output is enclosed, showing the annual values. Over the modeled 40 year period, the average annual infiltration was 0.01 meters. This average annual infiltration was used in the aforementioned calculation of the site-specific DAF value.

Bloomfield 3 SE, New Mexico Weather Station Data

	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Annual
Average Max Temp (F)	41	48.6	57.4	67.2	77.4	88	92	89	81.8	69.4	54.4	43.4	67.5
Average Min. Temp (F)	16.2	22.4	27.8	35	43.8	52.1	59.6	57.7	49.5	37.7	25.7	18	37.1
Mean Monthly Temp (F)	28.6	35.5	42.6	51.1	60.6	70.1	75.8	73.4	65.7	53.6	40.1	30.7	52.3
Mean Monthly Temp (C)	-1.89	1.94	5.89	10.61	15.89	21.14	24.33	22.97	18.69	11.97	4.47	-0.72	
Average total Prec. (in)	0.55	0.56	0.63	0.6	0.52	0.38	0.99	1.27	0.95	0.95	0.63	0.57	8.60
Average total Prec. (mm)	13.97	14.224	16.002	15.24	13.208	9.652	25.146	32.258	24.13	24.13	16.002	14.478	

Data collected from 1/1/1914 to 12/31/2005 at the Bloomfield 3 SE (#291063) weather monitoring station; obtained from Western Regional Climate Center, National Oceanic & Atmospheric Administration

Albuquerque, New Mexico Weather Station Data

	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Annual
Average Max Temp (F)	49.9	53.6	60.8	72.4	80.1	91.1	93.2	92	84.8	74.4	59.5	49.8	71.8
Average Min. Temp (F)	20.9	23.7	30.2	38.7	46.8	56.3	62	60.5	52.5	40.3	26.4	21.6	40
Mean Monthly Temp (F)	35.4	38.65	45.5	55.55	63.45	73.7	77.6	76.25	68.65	57.35	42.95	35.7	55.9
Mean Monthly Temp (C)	1.89	3.69	7.50	13.08	17.47	23.17	25.33	24.58	20.36	14.08	6.08	2.06	
Average total Prec. (in)	0.32	0.29	0.46	0.61	0.7	0.87	1.3	1.57	1.03	0.63	0.43	0.46	8.67
Average total Prec. (mm)	8.128	7.366	11.684	15.494	17.78	22.098	33.02	39.878	26.162	16.002	10.922	11.684	

Data collected from 1/1/1932 to 1/31/1954 at the Albuquerque (#290222) weather monitoring station; obtained from Western Regional Climate Center, National Oceanic & Atmospheric Administration

F - Fahrenheit
C- Celsius

in - inch
mm- millimeter

Project : Western Refining Bloomfield, New Mexico

Estimation of infiltration at Bloomfield Refinery

Model : HELP

An US EPA model for predicting landfill hydrologic processes and testing of effectiveness of landfill designs

Author : Scott Crouch

Client : Western Refining - Randy Schmaltz

Location : Bloomfield, NM

3/11/2010

Profile 1

Model Settings

[HELP] Case Settings

Parameter	Value	Units
Runoff Method	Model calculated	(-)
Initial Moisture Settings	Model calculated	(-)

[HELP] Surface Water Settings

Parameter	Value	Units
Runoff Area	100	(%%)
Vegetation Class	Bare soil	(-)

Profile Structure

Layer	Top (m)	Bottom (m)	Thickness (m)
Loamy Sand	100.0000	95.0000	5.0000

1.1. Layer. Loamy Sand

Top Slope Length: 0.0000
Bottom Slope Length: 0.0000
Top Slope: 0.0000
Bottom Slope : 0.0000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.437	(vol/vol)
field capacity	0.105	(vol/vol)
wilting point	0.047	(vol/vol)
sat.hydr.conductivity	0.0017	(cm/sec)
subsurface inflow	0	(mm/year)

Annual Totals rate (m)

	Precipitation (m)	Runoff (m)	Evapotranspiration (m)	Percolation or leakance through Layer 1 (m)
Year-1 (m)	1.9660E-01	0.0000E+00	1.8579E-01	5.2109E-05
Year-2 (m)	3.0180E-01	0.0000E+00	2.6922E-01	1.0255E-04
Year-3 (m)	2.3510E-01	0.0000E+00	2.3452E-01	1.9650E-04
Year-4 (m)	2.3000E-01	0.0000E+00	2.1004E-01	2.4626E-04
Year-5 (m)	2.5270E-01	0.0000E+00	2.3977E-01	4.1142E-04
Year-6 (m)	1.5870E-01	0.0000E+00	1.4899E-01	3.6109E-04
Year-7 (m)	1.8420E-01	0.0000E+00	1.7010E-01	5.0670E-04
Year-8 (m)	2.5770E-01	0.0000E+00	2.3978E-01	5.9778E-04
Year-9 (m)	1.9170E-01	0.0000E+00	1.7956E-01	7.2288E-04
Year-10 (m)	2.2820E-01	0.0000E+00	1.9825E-01	9.4104E-04
Year-11 (m)	2.3680E-01	0.0000E+00	2.2456E-01	1.6311E-03
Year-12 (m)	2.5940E-01	0.0000E+00	2.4152E-01	3.7601E-03
Year-13 (m)	1.8440E-01	0.0000E+00	1.7107E-01	5.6153E-03
Year-14 (m)	1.5860E-01	0.0000E+00	1.5145E-01	1.0341E-02
Year-15 (m)	2.4990E-01	0.0000E+00	2.3436E-01	1.4166E-02
Year-16 (m)	1.6700E-01	0.0000E+00	1.5633E-01	1.4482E-02
Year-17 (m)	1.3040E-01	0.0000E+00	1.1372E-01	1.2954E-02
Year-18 (m)	1.5020E-01	0.0000E+00	1.4066E-01	1.3977E-02
Year-19 (m)	2.0530E-01	0.0000E+00	1.9662E-01	1.3219E-02
Year-20 (m)	1.8180E-01	0.0000E+00	1.6946E-01	1.0024E-02
Year-21 (m)	2.3550E-01	0.0000E+00	2.1477E-01	1.0887E-02
Year-22 (m)	1.3750E-01	0.0000E+00	1.3022E-01	1.0618E-02
Year-23 (m)	2.3340E-01	0.0000E+00	2.2529E-01	1.4634E-02
Year-24 (m)	2.2170E-01	0.0000E+00	2.0414E-01	1.0021E-02
Year-25 (m)	1.4510E-01	0.0000E+00	1.3452E-01	1.3558E-02
Year-26 (m)	2.0130E-01	1.2902E-06	1.7333E-01	1.3059E-02
Year-27 (m)	2.3200E-01	0.0000E+00	2.1409E-01	1.5689E-02
Year-28 (m)	1.9260E-01	0.0000E+00	1.8730E-01	9.9471E-03
Year-29 (m)	2.3390E-01	0.0000E+00	2.1475E-01	1.1847E-02
Year-30 (m)	1.8890E-01	0.0000E+00	1.7801E-01	1.8487E-02
Year-31 (m)	2.4520E-01	0.0000E+00	2.2175E-01	1.6094E-02
Year-32 (m)	2.2790E-01	0.0000E+00	2.0877E-01	1.2385E-02
Year-33 (m)	3.1730E-01	4.0020E-04	2.9335E-01	1.3069E-02
Year-34 (m)	2.1170E-01	0.0000E+00	1.8598E-01	1.4984E-02
Year-35 (m)	2.7430E-01	0.0000E+00	2.6796E-01	1.6877E-02
Year-36 (m)	1.5090E-01	0.0000E+00	1.2899E-01	2.4361E-02
Year-37 (m)	2.1680E-01	0.0000E+00	2.1801E-01	1.6731E-02
Year-38 (m)	1.7490E-01	0.0000E+00	1.5227E-01	1.8959E-02
Year-39 (m)	2.1190E-01	0.0000E+00	1.6801E-01	1.5479E-02
Year-40 (m)	1.7540E-01	0.0000E+00	1.8233E-01	1.7584E-02
Total (m)	8.3887E+00	4.0149E-04	7.7796E+00	3.9958E-01

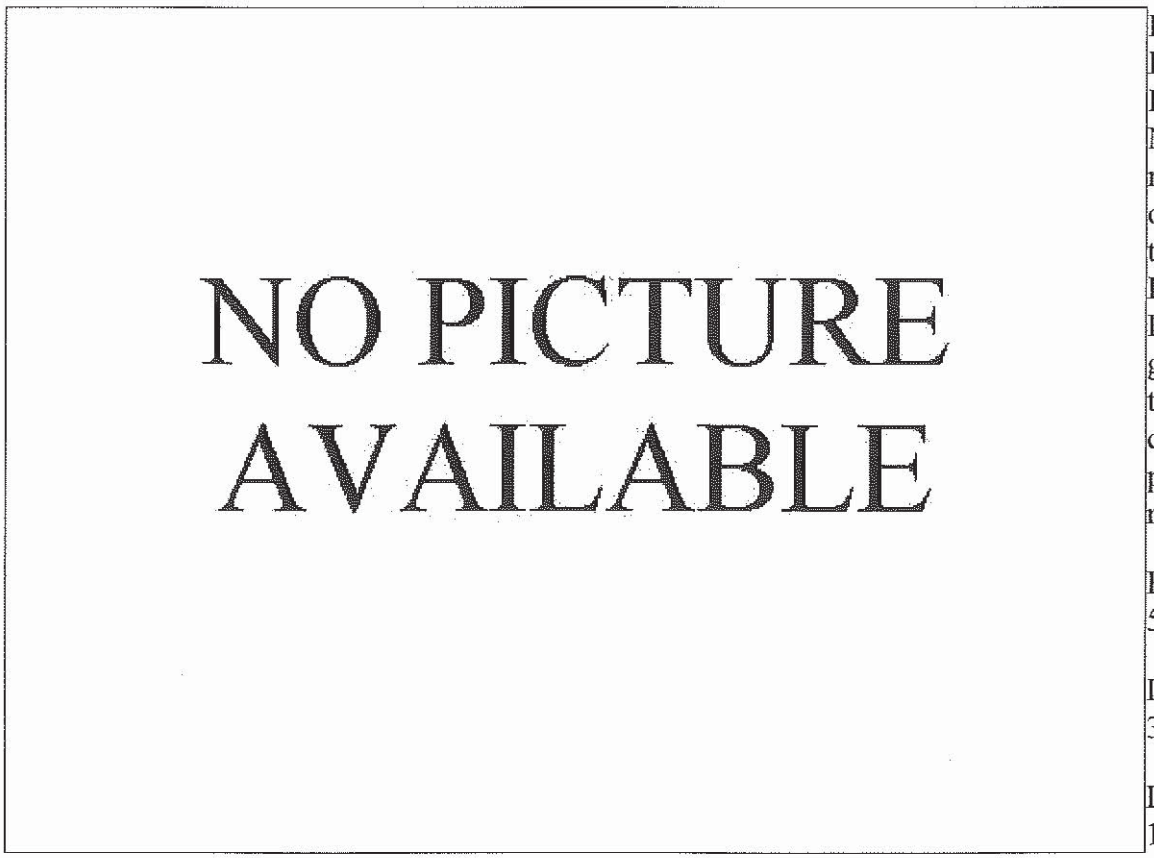
Average
= 0.01 m

NWS Cooperator Climate Stations

Weather Data from Individual Stations Around New Mexico

Bloomfield 3-SE-Bloomfield, NM

Climate Data



Location: From Bloomfield, NM go 1.7 miles south on HWY 44, turn east on Industrial BLVD and go 2.0 miles to gas compressor plant on right.

Elevation: 5806 feet

Latitude: 36°40'

Longitude: 107°58'

Ground Cover: Flat sandy plateau cut by broken terrain of sandstone hills and arroyos.

Cooperator Number: 29-1063-1

Questions or comments about this page can be directed to:

webmaster@weather.nmsu.edu
NMSU Weather BBS
Dept. of Agronomy and Horticulture
BOX 30003, Dept. 3Q
LAS CRUCES, NM 88003-0003

NMSU MONITORED CLIMATE STATIONS
NMSU Weather Homepage

Western Regional Climate Center

About Us

The Regional Climate Centers (RCC) deliver climate services at national, regional and state levels working with NOAA partners in the National Climatic Data Center, National Weather Service, the American Association of State Climatologists, and NOAA Research Institutes. This successful effort resulted in jointly developed products, services, and capabilities that enhance the delivery of climate information to the American public, and builds a solid foundation for a National Climate Service. As NOAA and Congress work to help society adapt to climate change, these collaborative efforts form a framework for the service, data stewardship, and applied research components of the National Climate Service.

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- Roles of the Regional Climate Centers in Climate Sevices
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- DRI Home Page
- Weather Info (DRI ACCESS ONLY)
- WRCC Software Library (restricted access)
- DRI LDM Logs (ldmd, netcheck and syscheck)

Division of Atmospheric Sciences

NEW MEXICO

AVERAGE WIND SPEED - MPH

STATION	ID	Years	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
ALAMOGORDO AIRPORT ASOS	KALM	1996-2006	5.1	6.3	7.1	7.9	7.1	6.9	6.1	5.3	5.2	5.2	5.0	5.0	6.0
ALAMOGORDO-HOLLOMAN AFB	KHMN	1996-2006	8.5	9.7	10.6	11.8	10.8	10.6	9.8	9.1	8.8	8.5	8.1	8.3	9.6
ALBUQUERQUE AP ASOS	KABQ	1996-2006	7.0	8.2	9.3	11.1	10.0	10.0	8.7	8.3	8.0	7.9	7.2	6.9	8.5
ALBUQUERQUE-DBLE EAGLE	KAEG	1999-2006	7.1	7.9	9.0	10.6	9.5	8.6	7.0	6.2	7.0	6.5	6.5	6.1	7.7
ARTESIA AIRPORT ASOS	KATS	1997-2006	7.8	9.1	10.1	10.9	10.2	9.9	7.8	6.9	7.6	7.8	7.6	7.4	8.5
CARLSBAD AIRPORT ASOS	KCNM	1996-2006	9.2	9.8	10.9	11.4	10.4	9.9	8.5	7.7	8.2	8.5	8.4	8.8	9.3
CLAYTON MUNI AP ASOS	KCAO	1996-2006	11.9	12.7	13.4	14.6	13.4	13.0	11.7	10.8	11.8	12.1	12.1	12.0	12.4
CLINES CORNERS	KCQC	1998-2006	16.2	16.1	15.7	16.9	14.6	13.5	10.6	10.1	11.8	13.3	15.0	16.0	14.1
CLOVIS AIRPORT AWOS	KCVN	1996-2006	12.3	12.3	13.4	13.8	12.4	11.9	9.7	8.9	9.7	10.9	11.6	12.2	11.6
CLOVIS-CANNON AFB	KCVS	1996-2006	12.5	12.6	13.6	13.8	12.2	12.5	10.7	10.0	10.2	11.3	11.7	12.4	12.0
DEMING AIRPORT ASOS	KDMN	1996-2006	8.7	9.7	10.9	12.0	10.6	10.1	8.9	8.1	8.4	8.2	8.5	8.1	9.3
FARMINGTON AIRPORT ASOS	KFMN	1996-2006	7.3	8.3	9.0	9.8	9.4	9.4	8.7	8.2	8.0	7.8	7.6	7.3	8.4
GALLUP AIRPORT ASOS	KGUP	1996-2006	5.7	6.9	7.8	10.0	9.0	8.8	6.9	6.0	6.5	6.1	5.6	5.3	7.0
GRANTS-MILAN AP ASOS	KGNT	1997-2006	7.8	8.8	9.6	10.9	10.0	9.8	8.1	7.2	7.9	8.4	8.0	7.6	8.7
HOBBS AIRPORT AWOS	KHOB	1996-2006	11.3	11.9	12.6	13.4	12.5	12.3	11.0	10.0	10.2	10.6	10.7	11.1	11.4
LAS CRUCES AIRPORT AWOS	KLRU	2000-2006	6.4	7.5	8.8	10.1	8.7	8.2	6.8	6.0	6.2	6.1	6.4	6.0	7.3
LAS VEGAS AIRPORT ASOS	KLVS	1996-2006	10.9	12.2	12.5	14.3	12.4	11.8	10.0	9.2	10.9	10.8	11.0	10.9	11.4
LOS ALAMOS AP AWOS	KLAM	2005-2006	3.9	5.7	7.5	8.1	7.1	7.3	5.3	4.8	5.7	5.1	4.4	3.2	5.4
RATON AIRPORT ASOS	KRTN	1998-2006	8.9	9.4	10.4	12.2	10.8	10.2	8.4	8.1	8.6	9.0	8.6	8.5	9.4
ROSWELL AIRPORT ASOS	KROW	1996-2006	7.4	8.9	9.9	11.1	10.3	10.2	8.8	7.9	8.3	8.0	7.5	7.3	8.8
RUIDOSO AIRPORT AWOS	KSRR	1996-2006	8.8	9.6	10.0	11.6	10.0	8.4	5.9	5.3	6.4	7.4	7.9	8.7	8.3
SANTA FE AIRPORT ASOS	KSAF	1996-2006	8.9	9.5	9.9	11.2	10.6	10.5	9.2	8.8	8.8	9.1	8.7	8.5	9.5
SILVER CITY AP AWOS	KSVC	1999-2006	8.1	8.7	9.9	10.8	10.2	9.9	8.5	7.2	6.9	7.6	7.9	7.7	8.5
TAOS AIRPORT AWOS	KSKX	1996-2006	5.8	6.5	7.7	9.1	8.6	8.5	7.1	6.6	6.7	6.6	6.0	5.7	7.0
TRUTH OR CONSEQ AP ASOS	KTCS	1996-2006	7.4	8.7	9.9	11.1	10.4	9.8	8.1	7.4	7.7	8.0	7.7	7.3	8.6
TUCUMCARI AIRPORT ASOS	KTCC	1999-2006	10.0	11.2	11.9	13.6	11.9	11.6	9.9	9.3	10.0	10.0	10.4	10.2	10.8

$8.4 \frac{\text{miles}}{\text{hr}} \times \frac{1\text{kt}}{.62\text{miles}} = 13.5\ \text{kt/hr}$

NEVADA

AVERAGE WIND SPEED - MPH

STATION	ID	Years	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
DESERT ROCK AP-MERCURY	KDRA	1996-2006	8.0	8.8	9.2	10.7	10.5	10.5	9.6	9.1	8.8	8.2	7.7	8.4	9.1
ELKO AIRPORT ASOS	KEKO	1996-2006	4.6	5.3	5.9	6.7	6.4	6.3	5.7	5.3	5.0	4.6	4.6	4.8	5.4
ELY AIRPORT ASOS	KELY	1996-2006	9.0	9.0	9.6	10.3	9.8	10.2	9.8	9.9	9.6	9.5	8.8	9.2	9.5

BLOOMFIELD 3 SE, NEW MEXICO (291063)

Period of Record Monthly Climate Summary

Period of Record : 1/ 1/1914 to 12/31/2005

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	41.0	48.6	57.4	67.2	77.4	88.0	92.0	89.0	81.8	69.4	54.4	43.4	67.5
Average Min. Temperature (F)	16.2	22.4	27.8	35.0	43.8	52.1	59.6	57.7	49.5	37.7	25.7	18.0	37.1
Average Total Precipitation (in.)	0.55	0.56	0.63	0.60	0.52	0.38	0.99	1.27	0.95	0.95	0.63	0.57	8.61
Average Total SnowFall (in.)	3.8	2.2	1.0	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.6	3.4	11.4
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 92.9% Min. Temp.: 93.2% Precipitation: 95.4% Snowfall: 79% Snow Depth: 70.2%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

Back to:
State Map | Western U.S. map | Home Page

NOTE:
To print data frame (right side), click on right frame before printing.

1971 - 2000

- Daily Temp. & Precip.
- Daily Tabular data (~23 KB)
- Monthly Tabular data (~1 KB)
- NCDC 1971-2000 Normals (~3 KB)

1961 - 1990

- Daily Temp. & Precip.
- Daily Tabular data (~23 KB)
- Monthly Tabular data (~1 KB)
- NCDC 1961-1990 Normals (~3 KB)

Period of Record

- Station Metadata
- Station Metadata Graphics

General Climate Summary Tables
- Temperature
- Precipitation
- Heating Degree Days
- Cooling Degree Days
- Growing Degree Days

ALBUQUERQUE, NEW MEXICO (290222)

Period of Record Monthly Climate Summary

Period of Record : 1/ 1/1932 to 1/31/1954

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	49.9	53.6	60.8	72.4	80.1	91.1	93.2	92.0	84.8	74.4	59.5	49.8	71.8
Average Min. Temperature (F)	20.9	23.7	30.2	38.7	46.8	56.3	62.0	60.5	52.5	40.3	26.4	21.6	40.0
Average Total Precipitation (in.)	0.32	0.29	0.46	0.61	0.70	0.87	1.30	1.57	1.03	0.63	0.43	0.46	8.67
Average Total SnowFall (in.)	2.3	1.5	1.0	0.9	0.2	0.0	0.0	0.0	0.0	0.0	1.2	2.0	9.3
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 26.1% Min. Temp.: 26.1% Precipitation: 72.2% Snowfall: 26.1% Snow Depth: 26.1%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

Appendix F

Analytical Data Reports

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.

BLOOMFIELD TERMINAL

Mailing Address: #50 CO RD 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☒ EDD (Type) EXCEL

Turn-Around Time:

☒ Standard ☐ Rush _____

Project Name: GROUP 9

Project #:

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

On Ice: ☒ Yes ☐ No

Sample Temperature: 2.1

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1409875	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE ATTACHED SHEET	Air Bubbles (Y or N)
9.19.14	1515	SOIL	SWMU 13-10(0-0.5')	2V	SOBI	-001										✓			
				2V	METHANOL	-001										✓			
				2J	—	-001			✓							✓	✓	✓	
	1530		SWMU 13-10(0.5-2')	2V	SOBI	-002										✓			
				2V	METHANOL	-002										✓			
				2J	—	-002			✓							✓	✓	✓	
	1540		SWMU 13-10(24-26')	2V	SOBI	-003										✓			
				2V	METHANOL	-003										✓			
				2J	—	-003			✓							✓	✓	✓	
	1550		SWMU 13-10(26-28')	2J	—	-004			✓							✓	✓	✓	

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/23/14	815		Chris Walters	9/23/14	815
9/23/14	1815	Chris Walters		09/24/14	0830

Remarks:

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

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.
BLOOMFIELD TERMINAL
Mailing Address: #50 CORD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 2.1

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1409877 (A 09/24/14)
9.22.14	1225	SOIL	SWMU 13-1 (0.5-2')	2V	8081	-001
				2V	METHANOL	-001
				2J	—	-001
	1240		SWMU 13-1 (12-14')	2V	8081	-002
				2V	METHANOL	-002
				2J	—	-002
	1245		SWMU 13-1 (26-28')	2J	—	-003
	1540	SOIL	SWMU 13-2 (0.5-2')	2V	8081	-004
				2V	METHANOL	-004
				2J	—	-004
	1545		SWMU 13-2 (24-26')	2J	—	-005
	1550		SWMU 13-2 (26-28')	2J	—	-006

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE ATTACHED SHEET			Air Bubbles (Y or N)
									✓					
									✓					
		✓							✓	✓	✓			
									✓					
									✓					
		✓							✓	✓	✓			
		✓							✓	✓	✓			
									✓					
									✓					
		✓							✓	✓	✓			
		✓							✓	✓	✓			
		✓							✓	✓	✓			

Remarks:

Date	Time	Relinquished by:	Received by:	Date	Time
9/23/14	815		Christine Walters	9/23/14	815
9/23/14	1815	Christine Walters		09/24/14	0830

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.

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.
BLOOMFIELD TERMINAL
Mailing Address: #50 CO RD 4990
BLOOMFIELD NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 2.1

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1409379	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE ATTACHED SHEET			Air Bubbles (Y or N)
9-18-14	1610	SOIL	SWMU 14-4 (6-8')	2V	SOBI	-001										✓					
				2V	METHANOL	-001										✓					
				2J	—	-001			✓							✓	✓	✓			
	1615		SWMU 14-4 (18-20')	2V	SOBI	-002										✓					
				2V	METHANOL	-002										✓					
				2J	—	-002			✓							✓	✓	✓			

Remarks:

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/23/14	815		Chris Walters	9/23/14	815
9/23/14	1815	Chris Walters		09/24/14	0830

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.

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.
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QA/QC Package:
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Accreditation
☐ NELAP ☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 2.1

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1409B80 (A 09/24/14)	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE ATTACHED SHEET **				Air Bubbles (Y or N)
9.19.14	1030	SOIL	SWMU 13-18 (0-0.5')	2V	SOBI	-01										✓						
	↓	↓	↓	2V	METHANOL	-01										✓						
	↓	↓	↓	3J	—	-01			✓							✓	✓	✓				
	1040		SWMU 13-18 (0.5-2')	2V	SOBI	-02										✓						
	↓		↓	2V	METHANOL	-02										✓						
	↓		↓	3J	—	-02			✓							✓	✓	✓				
	1050		SWMU 13-18 (12-14')	2V	SOBI	-03										✓						
	↓		↓	2V	METHANOL	-04										✓						
	↓		↓	3J	—	-04			✓							✓	✓	✓				
	1100		SWMU 13-18 (22-24')	2V	SOBI	-05										✓						
	↓		↓	2V	METHANOL	-05										✓						
	↓		↓	3J	—	-05			✓							✓	✓	✓				

Date: 9/23/14 Time: 815 Relinquished by: —
Received by: Christine Walker Date: 9/23/14 Time: 815
Date: 9/23/14 Time: 1815 Relinquished by: Christine Walker
Received by: 09/24/14 0830

Remarks:
** RUN CHROMIUM VI** ON ALL SAMPLES

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.

Chain-of-Custody Record

Client: WESTERN REFINING
BLOOMFIELD TERMINAL
Mailing Address: # 50 CO. RD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 2.1

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. (09/24/14) 1409880	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE ATTACHED SHEET	**		Air Bubbles (Y or N)
9-19-14	1110	SOIL	SWMU 13-18 (24-26')	2V	90B1	-005										✓					
↓	↓	↓	↓	2V	METHANOL	-006										✓					
				3J	—	-005			✓							✓	✓	✓			

Date: 9/23/14 Time: 815 Relinquished by: [signature]
Date: Time: Relinquished by: [signature]

Received by: [signature] Date: 9/23/14 Time: 815
Received by: [signature] Date: 09/24/14 Time: 0830

Remarks:
** RUN CHROMIUM VI ON THIS SAMPLE

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.

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.

BLOOMFIELD TERMINAL

Mailing Address: #50 CO. RD 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☒ EDD (Type) EXCEL

Turn-Around Time:

☒ Standard ☐ Rush _____

Project Name: GROUP 9

Project #:

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.5

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1409C40	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE ATTACHED SHEET				Air Bubbles (Y or N)
9.23.14	1325	SOIL	SWMU 12-3 (0-0.5')	2V	SOBI	-001										✓						
				2V	METHANOL											✓						
				2J	—				✓							✓	✓	✓				
	1335		SWMU 12-3 (0.5-2')	2V	SOBI	-002										✓						
				2V	METHANOL											✓						
				2J	—				✓							✓	✓	✓				
	1350		SWMU 12-3 (2-4')	2J	—	-003			✓							✓	✓	✓				
	1400		SWMU 12-3 (22-24')	2V	SOBI	-004										✓						
				2V	METHANOL											✓						
				2J	—				✓							✓	✓	✓				
	1405		SWMU 12-3 (26-28')	2J	—	-005			✓							✓	✓	✓				

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/24/14	925		Christine Walters	9/24/14	925
9/24/14	1915	Christine Walters		09/25/14	0700

Remarks:

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

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.

BLOOMFIELD. TERMINAL

Mailing Address: #50 Co. RD 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other

☒ EDD (Type) EXCEL

Turn-Around Time:

☒ Standard ☐ Rush

Project Name: GROUP 9

Project #:

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.5

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1409C40	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS-SEE ATTACHED SHEET				Air Bubbles (Y or N)
1.23.14	1640	SOIL	SWMU 12-2 (0-0.5')	2V	SOBI	-006										✓						
↓	↓	↓	↓	2V	METHANOL											✓						
↓	↓	↓	↓	2J	—				✓							✓	✓	✓				
↓	1650	↓	SWMU 12-2 (0.5-2')	2V	SOBI	-007										✓						
↓	↓	↓	↓	2V	METHANOL											✓						
↓	↓	↓	↓	2J	—				✓							✓	✓	✓				
↓	1700	↓	SWMU 12-2 (6-8')	2V	SOBI	-008										✓						
↓	↓	↓	↓	2V	METHANOL											✓						
↓	↓	↓	↓	2J	—				✓							✓	✓	✓				
↓	1800	↓	SWMU 12-2 (22-24')	2J	—	-009			✓							✓	✓	✓				

Date:	Time:	Relinquished by:	Received by:	Date	Time
24/14	925	[signature]	Christa Waeter [signature]	9/24/14	925
1/24/14	1975	Christa Waeter [signature]	[signature]	09/25/14	0700

Remarks:

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Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.
BLOOMFIELD TERMINAL
Mailing Address: #50 CO. RD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package: ☐ Standard ☒ Level 4 (Full Validation)
Accreditation: ☐ NELAP ☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time: ☒ Standard ☐ Rush
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.5

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
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Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1209210
1.23.14	—	SOIL	SWMU 12 DUP01	2V	SOBI	-010
↓	—	↓	↓	2V	METHANOL	
↓	—	↓	↓	2J	—	

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE ATTACHED SHEET			Air Bubbles (Y or N)
									✓					
									✓					
		✓							✓	✓	✓			

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/24/14	925			9/24/14	925
9/24/14	1915			09/25/14	0700

Remarks:

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Client: WESTERN REFINING SW, INC.

BLOOMFIELD TERMINAL

Mailing Address: #50 CO RD 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

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

Accreditation
☐ NELAP ☐ Other _____

☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name: GROUP 9

Project #:

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.5

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1409C41	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE ATTACHED SHEET			Air Bubbles (Y or N)
9.23.14	1020	SOIL	SWMU 13-3(0.5-2)	2V	SOBI	-001										✓					
				2V	METHANOL											✓					
				2J	—				✓							✓	✓	✓			
	1030		SWMU 13-3(4-6)	2V	SOBI	-002										✓					
				2V	METHANOL											✓					
				2J	—				✓							✓	✓	✓			
	1040		SWMU 13-3(26-28')	2J	—	-003			✓							✓	✓	✓			

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/24/14	925		Christine Walters	9/24/14	925
9/24/14	1915	Christine Walters		09/25/14	0700

Remarks:

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Accreditation
☐ NELAP ☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.5

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Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1409042	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	~~TPH (Method 418.1)~~ DIESEL	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	~~RCRA 8 Metals~~ CYANIDE	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS TOTAL/DISSOLVED	(SEE ATTACHED SHEET)	GEN CHEM (SEE ATTACHED SHEET)	Air Bubbles (Y or N)
9-23-14	1730	WATER	SWMU 12 EB01	40ML VOA-5	HCL	-001			✓							✓					
				1 LITER AMBER-2	NEAT	-001											✓				
				200ML AMBER-1	NEAT	-001				✓											
				200ML PLASTIC-1	HNO_3	-001												✓		✓	
				200ML PLASTIC-1	H_2SO_4	-001														✓	
				500ML PLASTIC-1	HNO_3	-001												✓			
				500ML PLASTIC-1	NEAT	-001														✓	
				200ML PLASTIC-1	NAOH	-001							✓								

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/24/14	925		Christin Walters	9/24/14	925
9/24/14	1915	Christin Walters		09/25/14	0700

Remarks:

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Chain-of-Custody Record

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BLOOMFIELD TERMINAL

Mailing Address: #50 Co. Rd 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☒ EDD (Type) EXCEL

☒ Standard ☐ Rush _____

Project Name: GROUP 9

Project #:

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.5

HEAL No. 1409412

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	~~TPH (Method 418.1)~~ DIESEL	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	~~RCRA 8 Metals~~ CYANIDE	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE ATTACHED SHEET TOTAL & DISSOLVED	GEN CHEM (SEE ATTACHED SHEET)	Air Bubbles (Y or N)
1.23.14	1715	WATER	SWMU 12 FB01	40 ML VOA-5	HCL			✓							✓				
				1 LITER AMBER-2	NEAT											✓			
				200 ML AMBER-1	NEAT				✓										
				200 ML PLASTIC-1	HNO_3												✓	✓	
				200 ML PLASTIC-1	H_2SO_4													✓	
				500 ML PLASTIC-1	HNO_3												✓		
				500 ML PLASTIC-1	NEAT													✓	
				200 ML PLASTIC-1	NaOH							✓							

Date	Time	Relinquished by:	Received by:	Date	Time
9/24/14	925		Christine Walters	9/24/14	925
9/24/14	1925	Christine Walters		09/25/14	0700

Remarks:

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Chain-of-Custody Record

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email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 2.1

HALL ENVIRONMENTAL ANALYSIS LABORATORY
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Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1409E14	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE ATTACHED SHEET				Air Bubbles (Y or N)
9-26-14	0945	SOIL	SWMU 13-8(0-05)	2V	80B1	-001										✓						
				2V	METHANOL											✓						
	↓		↓ (0.5-2')	2J	—				✓							✓	✓	✓				
	0955		SWMU 13-8(0.5-2')	2V	80B1	-002										✓						
				2V	METHANOL											✓						
	↓		↓	2J	—				✓							✓	✓	✓				
	1010		SWMU 13-8 (22-24')	2V	80B1	-003										✓						
				2V	METHANOL											✓						
	↓		↓	2J	—				✓							✓	✓	✓				
	1020		SWMU 13-8(24-26')	2J	—	-004			✓							✓	✓	✓				

Date	Time	Relinquished by:	Received by:	Date	Time
9/26/14	1420			9/26/14	1420
9/26/14	1610			09/27/14	0545

Remarks: Verified sample ID with Tracy Payne for -002. mg 09/29/14

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.

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.

BLOOMFIELD TERMINAL

Mailing Address: #50 CO. RD 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☒ EDD (Type) EXCEL

Turn-Around Time:

☒ Standard ☐ Rush _____

Project Name: GROUP 9

Project #:

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

On Ice: ☒ Yes ☐ No

Sample Temperature: 2.1

HEAL No: 1409E15

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	~~TPH (Method 418.1)~~ DIESEL	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	~~RCRA 8 Metals~~ CYANIDE	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS TOTAL & DISSOLVED (SEE ATTACHED SHEET)	GEN CHEM (SEE ATTACHED SHEET)	Air Bubbles (Y or N)
7-25-14	1350	WATER	SWMU 13 EB01	40 ML VOA-5	HCL	-001			✓							✓				
				1 LITER AMBER-2	NEAT												✓			
				200 ML AMBER-1	NEAT					✓										
				200 ML PLASTIC-1	HNO_3													✓	✓	
				200 ML PLASTIC-1	H_2SO_4														✓	
				500 ML PLASTIC-1	HNO_3													✓		
				500 ML PLASTIC-1	NEAT														✓	
				200 ML PLASTIC-1	NaOH								✓							

Date	Time	Relinquished by:	Received by:	Date	Time
9/26/14	1420		Christine Walters	9/26/14	1420
9/26/14	1610	Christine Walters		09/27/14	0815

Remarks:

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

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.

BLOOMFIELD TERMINAL

Mailing Address: #50 Co. Rd. 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☒ EDD (Type) EXCEL

Turn-Around Time:

☒ Standard ☐ Rush _____

Project Name: GROUP 9

Project #:

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

On Ice: ☒ Yes ☐ No

Sample Temperature: 21

HEAL No. 1409E15

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	~~TPH (Method 418.1)~~ DIESEL	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	~~RCRA 8 Metals~~ CYANIDE	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS TOTAL & DISSOLVED	(SEE ATTACHED SHEET)	GEN CHEM (SEE	(ATTACHED SHEET)	Air Bubbles (Y or N)
9.25.14	1410	WATER	SWMU 13 FB01	40 ML VOA-5	HCL	-002			✓							✓						
				1 LITER AMBER-2	NEAT												✓						
				200 ML AMBER-1	NEAT					✓								✓					
				200 ML PLASTIC-1	HNO_3													✓		✓			
				200 ML PLASTIC-1	H_2SO_4															✓			
				500 ML PLASTIC-1	HNO_3													✓					
				500 ML PLASTIC-1	NEAT															✓			
				200 ML PLASTIC-1	NaOH								✓										

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/26/14	1420			9/26/14	1420
9/26/14	1610			09/27/14	0546

Remarks:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.
BLOOMFIELD TERMINAL
Mailing Address: # 50 CO. RD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 2.1

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 41 1409E44
9-26-14	—	SOIL	SWMU 13 DUP01	2V	5081	-0081
↓	—	↓	↓	2V	METHANOL	
↓	—	↓	↓	2J	—	
9-26-14	—	—	MEOH BLANK 01	2V	METHANOL	-0062

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE ATTACHED SHEET			Air Bubbles (Y or N)
									✓					
									✓					
		✓							✓	✓	✓			
									✓					

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/26/14	1420		Christine Walters	9/26/14	1420
9/26/14	1610	Christine Walters		09/27/14	0845

Remarks:

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

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC
BLOOMFIELD TERMINAL
Mailing Address: #50 Co. RD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 2.1

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1409E42
9.24.14	1600	SOIL	SWMU 13-16(0-0.5')	2V	SOBI	-001
				2V	METHANOL	
				2J	—	
	1610		SWMU 13-16(0.5-2')	2V	SOBI	-002
				2V	METHANOL	
				2J	—	
	1620		SWMU 13-16(18-20')	2J	—	-003
	1650		SWMU 13-16(26-28')	2J	—	-004

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE ATTACHED SHEET			Air Bubbles (Y or N)
		✓							✓					
									✓					
		✓							✓	✓	✓			
									✓					
									✓					
		✓							✓	✓	✓			
		✓							✓	✓	✓			
		✓							✓	✓	✓			

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/26/14	1420		Christine Walters	9/26/14	1420
Date:	Time:	Relinquished by:	Received by:	Date	Time
9/26/14	1610	Christine Walters		09/27/14	0545

Remarks:

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

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.
BLOOMFIELD TERMINAL
Mailing Address: #50 Co. Rd 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 2.1

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1409E43	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE ATTACHED SHEET	Air Bubbles (Y or N)
9.25.14	1015	SOIL	SWMU 13-4 (0.5-2')	2V	SOBI	-001										✓			
				2V	METHANOL											✓			
				2J	—				✓							✓	✓	✓	
	1025		SWMU 13-4 (6-8')	2V	SOBI	-002										✓			
				2V	METHANOL											✓			
				2J	—				✓							✓	✓	✓	
	1115		SWMU 13-4 (24-26')	2V	SOBI	-003										✓			
				2V	METHANOL											✓			
				2J	—				✓							✓	✓	✓	

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/26/14	1420		Mustie Walters	9/26/14	1420
Date:	Time:	Relinquished by:	Received by:	Date	Time
9/26/14	1610	Mustie Walters		09/27/14	0545

Remarks:

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

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.
BLOOMFIELD TERMINAL
Mailing Address: #50 CO. RD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.com
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other _____
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush _____
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 2.1

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1409E43
25.14	1635	SOIL	SWMU 13-5 (0-0.5')	2V	SOBI	-004
				2V	METHANOL	
				2J	—	
	1645		SWMU 13-5 (0.5-2')	2V	SOBI	-005
				2V	METHANOL	
				2J	—	
	1700		SWMU 13-5 (10-12')	2V	SOBI	-006
				2V	METHANOL	
				2J	—	
	1710		SWMU 13-5 (24-26')	2J	—	-007

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE ATTACHED SHEET	Air Bubbles (Y or N)
									✓			
									✓			
		✓							✓	✓	✓	
									✓			
									✓			
		✓							✓	✓	✓	
									✓			
									✓			
									✓			
		✓							✓	✓	✓	
		✓							✓	✓	✓	

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/26/14	1420			9/26/14	1420
9/26/14	1610			09/27/14	0815

Remarks:

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

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.
BLOOMFIELD TERMINAL
Mailing Address: #50 Co. RD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM

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

Accreditation: ☐ NELAP ☐ Other ______

☒ EDD (Type) EXCEL

Turn-Around Time: ☒ Standard ☐ Rush

Project Name: GROUP 9

Project #:

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

On Ice: ☒ Yes ☐ No

Sample Temperature: 2.1

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1409E44	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE ATTACHED SHEET			Air Bubbles (Y or N)
9.24.14	1040	SOIL	SWMU 12-1 (0.5-2')	2V	SOBI	-001										✓					
↓	↓	↓	↓	2V	METHANOL											✓					
				2J	—				✓							✓	✓	✓			
	1050		SWMU 12-1 (4-6')	2V	SOBI	-002										✓					
	↓		↓	2V	METHANOL											✓					
				2J	—				✓							✓	✓	✓			
	1350		SWMU 12-1 (24-26')	2V	SOBI	-003										✓					
	↓		↓	2V	METHANOL											✓					
↓				2J	—				✓							✓	✓	✓			

Date	Time	Relinquished by	Received by	Date	Time
9/26/14	1420	[signature]	Christine Walters	9/26/14	1420
9/26/14	1610	Christine Walters	[signature]	09/27/14	0815

Remarks:

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Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.

BLOOMFIELD TERMINAL

Mailing Address: #50 CO RD 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☒ EDD (Type) EXCEL

Turn-Around Time:

☒ Standard ☐ Rush _____

Project Name: GROUP 9

Project #:

Project Manager: KELLY ROBINSON

Sampler: MK

On Ice: ☑ Yes ☐ No

Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1410E28	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	~~TPH (Method 418.1)~~ DIESEL	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	~~RCRA 8 Metals~~ CYANIDE	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS TOTAL & DISSOLVED	(SEE ATTACHED SHEET)	GENERAL CHEMISTRY	(SEE ATTACHED SHEET)	Air Bubbles (Y or N)
10/30/14	1:00pm	WATER	MW-77	40 ML VOA-5	HCL	-002			✓							✓						
				1 LITER AMBER-2	NEAT												✓					
				200 ML AMBER-1	NEAT					✓												
				200 ML PLASTIC-1	HNO_3													✓		✓		
				200 ML PLASTIC-1	H_2SO_4															✓		
				500 ML PLASTIC-1	HNO_3													✓				
				500 ML PLASTIC-1	NEAT															✓		
				200 ML PLASTIC-1	NAOH								✓									
↓	↓			50 ML PLASTIC-1	$NH_4 2SO_4$	↓												✓				

Date	Time	Relinquished by:	Received by:	Date	Time
10/30/14	1547			10/30/14	1547
10/30/14	1810			10/31/14	0845

Remarks: well contains PSH

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.

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.

BLOOMFIELD TERMINAL

Mailing Address: #50 CO RD 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☒ EDD (Type) EXCEL

Turn-Around Time:

☒ Standard ☐ Rush _____

Project Name: GROUP 9

Project #:

Project Manager: KELLY ROBINSON

Sampler: MK

On Ice: ☑ Yes ☐ No

Sample Temperature: 1.0°

HEAL No. 1410E28

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
10/30/14	2:00pm	WATER	MW-71	40 ML VOA-5	HCL	-001
				1 LITER AMBER-2	NEAT	
				200 ML AMBER-1	NEAT	
				200 ML PLASTIC-1	HNO_3	
				200 ML PLASTIC-1	H_2SO_4	
				500 ML PLASTIC-1	HNO_3	
				500 ML PLASTIC-1	NEAT	
				200 ML PLASTIC-1	NAOH	
				50 ML PLASTIC	$NH_4 2SO_4$	

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	~~TPH (Method 418.1)~~ DIESEL	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	~~RCRA 8 Metals~~ CYANIDE	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS TOTAL & DISSOLVED	(SEE ATTACHED SHEET)	GENERAL CHEMISTRY	(SEE ATTACHED SHEET)	Air Bubbles (Y or N)
		✓							✓						
										✓					
			✓												
											✓		✓		
													✓		
											✓				
													✓		
						✓									
											✓				

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/30/14	1548		Christine Walker	10/30/14	1548
Date:	Time:	Relinquished by:	Received by:	Date	Time
10/30/14	1810	Christine Walker		10/31/14	0845

Remarks:

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

Chain-of-Custody Record

Client: WESTERN REFINING BLOOMFIELD TERMINAL

Mailing Address: #50 CO. RD 4990 BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

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

Accreditation
☐ NELAP ☐ Other _____

☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name: GROUP 9

Project #:

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

On Ice: ☒ Yes ☐ No

Sample Temperature: 2.9

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1409812	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE SHEET			
9.15.14	1530	SOIL	SWMU 14-4 0-0.5'	2V	SOB1	-001										✓					
↓	↓	↓	↓	2V	METHANOL	-001										✓					
↓	↓	↓	↓	2J	—	-001			✓							✓	✓	✓			
9.15.14	1600	SOIL	SWMU 14-4 0.5-2.0'	2V	SOB1	-002										✓					
↓	↓	↓	↓	2V	METHANOL	-002										✓					
↓	↓	↓	↓	2J	—	-002			✓							✓	✓	✓			
9.16.14	0955	SOIL	SWMU 14-30-0.5'	2V	SOB1	-003										✓					
↓	↓	↓	↓	2V	METHANOL	-003										✓					
↓	↓	↓	↓	2J	—	-003			✓							✓	✓	✓			
9.16.14	1015	SOIL	SWMU 14-3 0.5-2.0'	2V	SOB1	-004										✓					
↓	↓	↓	↓	2V	METHANOL	-004										✓					
↓	↓	↓	↓	2J	—	-004			✓							✓	✓	✓			

Remarks:

Date	Time	Relinquished by:	Received by:	Date	Time
9.16.14	1215	[signature]	Christine Walters	9/16/14	1215
9/16/14	1824	Christine Walters	[signature]	09/17/14	0715

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.

Chain-of-Custody Record

Client: WESTERN REFINING
BLOOMFIELD TERMINAL

Mailing Address: #50 CO. RD 4990
BLOOMFIELD, NM 87413

Phone #: 505 632 4166

email or Fax#: KELLY.ROBINSON@WNR.COM

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

Accreditation
☐ NELAP ☐ Other _____

☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name: GROUP 9

Project #:

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

On Ice: ☒ Yes ☐ No

Sample Temperature: 2.9

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1409812	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS-SEE SHE			
9.16.14	1040	SOIL	SWMU 14-3 4-6'	2V	SOBI	-005										✓					
↓	↓	↓	↓	2V	METHANOL	-005										✓					
↓	↓	↓	↓	2J	—	-005			✓							✓	✓	✓			
9.16.14	1050	SOIL	SWMU 14-3 14-16'	2V	SOBI	-006										✓					
↓	↓	↓	↓	2V	METHANOL	-006										✓					
↓	↓	↓	↓	2J	—	-006			✓							✓	✓	✓			
9.16.14	—	SOIL	SWMU 14-3 DUP01	2V	SOBI	-007										✓					
↓	↓	↓	↓	2V	METHANOL	-007										✓					
↓	↓	↓	↓	2J	—	-007			✓							✓	✓	✓			

Date	Time	Relinquished by:	Received by:	Date	Time
9.16.14	1215	[signature]	Christine Walters	9/16/14	1215
9/16/14	1824	Christine Walters	[signature]	09/17/14	0715

Remarks:

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Chain-of-Custody Record

Client: WESTERN REFINING
BLOOMFIELD TERMINAL
Mailing Address: #50 CO.RD.4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other _____
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush _____
Project Name: GROUP 9
Project #: ~~KEL~~
Project Manager: KELLY ROBINSON
Sampler: ~~TRACY~~ PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.9

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1409955	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS (SEE ATTACHED SHEET)			Air Bubbles (Y or N)
1-17-14	1000	SOIL	SWMU 14-5 (0-0.5')	2V	40B1	-001										✓					
	↓	↓	↓	2V	METHANOL	-001										✓					
	↓	↓	↓	2J	—	-001			✓							✓	✓	✓			
	1015	SOIL	SWMU 14-5 (0.5-20')	2V	40B1	-002										✓					
	↓	↓	↓	2V	METHANOL	-002										✓					
	↓	↓	↓	2J	—	-002			✓							✓	✓	✓			
	1025	SOIL	SWMU 14-5 (16-18')	2V	40B1	-003										✓					
	↓	↓	↓	2V	METHANOL	-003										✓					
	↓	↓	↓	2J	—	-003			✓							✓	✓	✓			
	1030	SOIL	SWMU 14-5 (26-28')	2V	40B1	-004										✓					
	↓	↓	↓	2V	METHANOL	-004										✓					
	↓	↓	↓	2J	—	-004			✓							✓	✓	✓			

Date	Time	Relinquished by	Received by	Date	Time
9/18/14	1415		Christine Walters	9/18/14	1415
9/18/14	1857	Christine Walters		09/19/14	0708

Remarks:

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Chain-of-Custody Record

Client: WESTERN REFINING
BLOOMFIELD TERMINAL
Mailing Address: #50 Co. Rd. 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.9

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4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1409955	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS (SEE ATTACHED SHEET)			Air Bubbles (Y or N)
9.17.14	1310	SOIL	SWMU 14-1 (0-0.5')	2V	5OB1	-005										✓					
				2V	METHANOL	-005										✓					
				2J	—	-005			✓							✓	✓	✓			
	1315	SOIL	SWMU 14-1 (0.5-20')	2V	5OB1	-006										✓					
				2V	METHANOL	-006										✓					
				2J	—	-006			✓							✓	✓	✓			
	1320	SOIL	SWMU 14-1 (8-10')	2V	5OB1	-007										✓					
				2V	METHANOL	-007										✓					
				2J	—	-007			✓							✓	✓	✓			
	1330	SOIL	SWMU 14-1 (18-20')	2V	5OB1	-008										✓					
				2V	METHANOL	-008										✓					
				2J	—	-008			✓							✓	✓	✓			

Date	Time	Relinquished by	Received by	Date	Time
9/18/14	1415			9/18/14	1415
9/18/14	1857	Christian Walker		09/19/14	0700

Remarks:

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

Chain-of-Custody Record

Client: WESTERN REFINING
BLOOMFIELD TERMINAL
Mailing Address: #50 CO. RD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other _____
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush _____
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.9

HALL ENVIRONMENTAL ANALYSIS LABORATORY
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Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1409955	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS (SEE ATTACHED SHEET)			Air Bubbles (Y or N)
1.17.14	1540	SOIL	SWMU 14-2(0-0.5')	2V	SOBI	009										✓					
				2V	METHANOL	009										✓					
				2J	—	009			✓							✓	✓	✓			
1.17.14	1550	SOIL	SWMU 14-2(0.5-2')	2V	SOBI	010										✓					
				2V	METHANOL	010										✓					
				2J	—	010			✓							✓	✓	✓			
9.18.14	1040	SOIL	SWMU 14-2(18-20')	2V	SOBI	011										✓					
				2V	METHANOL	011										✓					
				2J	—	011			✓							✓	✓	✓			
9.18.14	1050	SOIL	SWMU 14-2(20-22')	2V	SOBI	012										✓					
				2V	METHANOL	012										✓					
				2J	—	012			✓							✓	✓	✓			

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/18/14	1415			9/18/14	1415
9/18/14	1857			09/19/14	0700

Remarks:

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

Chain-of-Custody Record

Client: WESTERN REFINING
BLOOMFIELD TERMINAL
Mailing Address: #50 Co. RD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 3.3

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Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1409961
1-18-14	1110	WATER	SWMU 14 EB01	40 mL VOA-5	HCL	-001
				1 LAMBER-2	NEAT	-001
				200 mL AMBER-1	NEAT	-001
				200 mL PLASTIC-1	HNO_3	-001
				↓	H_2SO_4	-001
				PLASTIC 500 ML-1	HNO_3	-001
				500 mL PLASTIC-1	NEAT	-001

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1) DIESEL	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS (SEE ATTACHED SHEET) TOTAL & DISSOLVED	GEN CHEM (SEE ATTACHED SHEET)	Air Bubbles (Y or N)
		✓							✓				
										✓			
			✓										
											✓	✓	
												✓	
											✓		
											WAIT	✓	

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/18/14	1415		Christy Walters	9/18/14	1415
1-1-14	1857	Christy Walters		09/18/14	0700

Remarks:

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Chain-of-Custody Record

Client: WESTERN REFINING
BLOOMFIELD TERMINAL
Mailing Address: #50 Co. RD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 3.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY
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Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1409961
9.18.14	1125	WATER	SWMU14 FB01	40 mL VOA-5	HCL	-002
				1 LITER AMBER-2	NEAT	-002
				200 mL AMBER-1	NEAT	-002
				200 mL PLASTIC-1	HNO_3	-002
				200mL PLASTIC-1	H_2SO_4	-002
				500 mL PLASTIC-1	HNO_3	-002
				500 mL PLASTIC-1	NEAT	-002

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	~~TPH (Method 418.1)~~ DIESEL	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS TOTAL & DISSOLVED	(SEE ATTACHED SHEET)	GEN CHEM (SEE ATTACHED SHEET)	Air Bubbles (Y or N)
		✓							✓					
										✓				
			✓											
											✓		✓	
													✓	
											✓			
													✓	

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/18/14	1415		Christine Walters	9/18/14	1415
9/18/14	1857	Christine Walters		09/18/14	0700

Remarks:

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Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.
BLOOMFIELD TERMINAL
Mailing Address: #50 CO RD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other _____
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush _____
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY
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Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1410011	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS (SEE ATTACHED SHEET)				Air Bubbles (Y or N)
7.29.14	1345	SOIL	SWMU 13-23(0-0.5')	2V	SOBI	-001										✓						
				2V	MEOH	-001										✓						
	↓		↓	2J	—	-001			✓							✓	✓	✓				
	1410		SWMU 13-24(0-0.5')	2V	SOBI	-002										✓						
				2V	MEOH	-002										✓						
	↓		↓	2J	—	-002			✓							✓	✓	✓				
	1500		SWMU 13-25(0-0.5')	2V	SOBI	-003										✓						
				2V	MEOH	-003										✓						
	↓		↓	2J	—	-003			✓							✓	✓	✓				
	1525		SWMU 13-26(0-0.5')	2V	SOBI	-004										✓						
				2V	MEOH	-004										✓						
	↓		↓	2J	—	-004			✓							✓	✓	✓				

Date: 9/30/14 Time: 821 Relinquished by: [signature]
Received by: Christine Walters Date 9/30/14 Time 821
Date: 9/30/14 Time: 1700 Relinquished by: Christine Walters
Received by: [signature] Date 10/01/14 Time 0730

Remarks:

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

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.
BLOOMFIELD TERMINAL
Mailing Address: #50 CO RD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other _____
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush _____
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.3

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1410011	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS (SEE ATTACHED SHEET)	Air Bubbles (Y or N)
9.29.14	1600	SOIL	SWMU 13-20(0-0.5')	2V	SOBI	-005										✓			
				2V	MEOH	-005										✓			
				2J	—	-005			✓							✓	✓	✓	
	1630		SWMU 13-21(0-0.5')	2V	SOBI	-006										✓			
				2V	MEOH	-006										✓			
				2J	—	-006			✓							✓	✓	✓	
	1700		SWMU 13-22(0-0.5')	2V	SOBI	-007										✓			
				2V	MEOH	-007										✓			
				2J	—	-007			✓							✓	✓	✓	

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/30/14	821		Mustafa Waeles	9/30/14	821
9/30/14	1700	Mustafa Waeles		10/01/14	0735

Remarks:

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

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.
BLOOMFIELD TERMINAL
Mailing Address: #50 CO RD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other _____
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush _____
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.3

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Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1410080
30-14	0840	SOIL	SWMU 13-27(0-0.5')	2V	8081	-001
				2V	MeOH	-001
				2J	—	-001
	0915		SWMU 13-28(0-0.5')	2V	8081	-002
				2V	MeOH	-002
				2J	—	-002
	0940		SWMU 13-29(0-0.5')	2V	8081	-003
				2V	MeOH	-003
				2J	—	-003
	—		SWMU 13 DUP02	2V	8081	-004
	—			2V	MeOH	-004
	—			2J	—	-004

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS (SEE ATTACHED SHEET)	Air Bubbles (Y or N)
									✓			
									✓			
		✓							✓	✓	✓	
									✓			
									✓			
		✓							✓	✓	✓	
									✓			
									✓			
		✓							✓	✓	✓	
									✓			
									✓			
		✓							✓	✓	✓	

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/1/14	1421		Mistie Walker	10/1/14	1421
10/1/14	1815	Mistie Walker		10/02/14	0650

Remarks:

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

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.

BLOOMFIELD TERMINAL

Mailing Address: #50 CO. RD 4990

BLOOMFIELD NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☒ EDD (Type) EXCEL

Turn-Around Time:

☒ Standard ☐ Rush _____

Project Name: GROUP 9

Project #:

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

On Ice: ☑ Yes ☐ No

Sample Temperature: 1.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1410080	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS (SEE ATTACHED SHEET)			Air Bubbles (Y or N)
9.30.14	1640	SOIL	SWMU 13-17(0-0.5')	2V	SOBI	-005										✓					
				2V	MEOH	-005										✓					
				2J	—	-005			✓							✓	✓	✓			
	1650		SWMU 13-17 (0.5-2')	2V	SOBI	-006										✓					
				2V	MEOH	-006										✓					
				2J	—	-006			✓							✓	✓	✓			
	1705		SWMU 13-17(6-8')	2V	SOBI	-007										✓					
				2V	MEOH	-007										✓					
				2J	—	-007			✓							✓	✓	✓			
	1710		SWMU 13-17(24-26')	2V	SOBI	-008										✓					
				2V	MEOH	-008										✓					
				2J	—	-008			✓							✓	✓	✓			

Date: 10/1/14 Time: 1421 Relinquished by: _____

Received by: _____ Date 10/1/14 Time 1421

Date: 10/1/14 Time: 1815 Relinquished by: _____

Received by: _____ 10/02/14 0850

Remarks:

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

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.

BLOOMFIELD TERMINAL

Mailing Address: #50 CO RD 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☒ EDD (Type) EXCEL

Turn-Around Time:

☒ Standard ☐ Rush _____

Project Name: GROUP 9

Project #:

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.3

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Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1410091
10.30.14	1030	SOIL	SWMU 13-30(0-0.5')	2V	SOBI	-001
↓	↓	↓	↓	2V	MeOH	-001
↓	↓	↓	↓	3J	-	-001

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS (SEE ATTACHED SHEET)				Air Bubbles (Y or N)
									✓						
									✓						
		✓							✓	✓	✓				

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/1/14	1421		Christine Walters	10/1/14	1421
Date:	Time:	Relinquished by:	Received by:	Date	Time
10/1/14	1815	Christine Walters		10/02/14	0650

Remarks: **ANALYZE FOR TETRAETHYL LEAD**

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Chain-of-Custody Record

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BLOOMFIELD TERMINAL

Mailing Address: #50 CO. RD 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other

☒ EDD (Type) EXCEL

Turn Around Time:

☒ Standard ☐ Rush

Project Name: GROUP 9

Project #:

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.3

HEAL No. 1410217-2

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Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE ATTACHED SHEET	Air Bubbles (Y or N)
10-3-14	1000	SOIL	SWMU 13-6(0.5-2')	2V	SOBI	-001										✓			
				2V	MEOH											✓			
				2J	—				✓							✓	✓	✓	
	1115		SWMU 13-6(10-12)	2V	SOBI	-002										✓			
				2V	MEOH											✓			
				2J	—				✓							✓	✓	✓	
	1120		SWMU 13-6(24-26')	2J	—	-003			✓							✓	✓	✓	

Date	Time	Relinquished by:	Received by:	Date	Time
10/3/14	1608		Misty Walker	10/3/14	1608
10/3/14	1745	Misty Walker		10/4/14	0720

Remarks:

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Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.
BLOOMFIELD, TERMINAL
Mailing Address: #50 CO. RD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package: ☐ Standard ☒ Level 4 (Full Validation)
Accreditation: ☐ NELAP ☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time: ☒ Standard ☐ Rush
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.3

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Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1410213	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE ATTACHED SHEET	Air Bubbles (Y or N)
10.2.14	1345	SOIL	SWMU 13-12(0-0.5')	2V	SOBI	-001										✓			
				2V	MEOH											✓			
				3J	—				✓							✓	✓	✓	
	1355		SWMU 13-12(0.5-2')	2V	SOBI	-002										✓			
				2V	MEOH											✓			
				3J	—				✓							✓	✓	✓	
	1405		SWMU 13-12(16-18')	2V	SOBI	-003										✓			
				2V	MEOH											✓			
				3J	—				✓							✓	✓	✓	
↓	1435	↓	SWMU 13-12(24-26')	2J	—	-004			✓							✓	✓	✓	

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/3/14	1608		Christine Walker	10/3/14	1608
10/3/14	1745	Christine Walker		10/4/14	0700

Remarks: ** ANALYZE FOR CHROMIUM VI **

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.
BLOOMFIELD TERMINAL
Mailing Address: #50 CO. RD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.3

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Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1410212	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE ATTACHED SHEET	Air Bubbles (Y or N)
10-2-14	1650	SOIL	SWMU 13-14 (0.5-2')	2V	SOBI	-001										✓	•		
				2V	MEOH											✓			
				2J	—				✓							✓	✓	✓	
	1700		SWMU 13-14 (2-4')	2V	SOBI	-002										✓			
				2V	MEOH											✓			
				2J	—				✓							✓	✓	✓	
	1705		SWMU 13-14 (26-28')	2V	SOBI	-003										✓			
				2V	MEOH											✓			
				2J	—				✓							✓	✓	✓	

Date	Time	Relinquished by	Received by	Date	Time
10/3/14	1608		Christine Walters	10/3/14	1608
10/3/14	1745	Christine Walters		10/4/14	0700

Remarks:

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Chain-of-Custody Record

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BLOOMFIELD TERMINAL
Mailing Address: #50 CO. RD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.3

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Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1410215	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS (SEE ATTACHED SHEET)			Air Bubbles (Y or N)
10.2.14	0915	SOIL	SWMU 13-11(0-0.5')	2 V	SOBI	-001										✓					
				2 V	MeOH											✓					
	↓		↓	2J	—				✓							✓	✓	✓			
	0925		SWMU 13-11(0.5-2')	2 V	SOBI	-002										✓					
				2 V	MeOH											✓					
	↓		↓	2J	—				✓							✓	✓	✓			
	0930	↓	SWMU 13-11(26-28')	2J	—	-003			✓							✓	✓	✓			
10.2.14	—	—	MeOH BLANK	2 V	SOBI	-004			✓							✓					

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/3/14	1608		Mat Walta	10/3/14	1608
10/3/14	1745	Matthew Walker		10/4/14	0700

Remarks:

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Mailing Address: #50 CO. RD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other ____
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush ____
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.7

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Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1410359	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE ATTACHED	SHEET			Air Bubbles (Y or N)
-6-14	1210	SOIL	SWMU 13-7(0-0.5')	2 VIALS	SOBI	-001										✓						
↓	↓	↓	↓	2 VIALS	MEOH											✓						
↓	↓	↓	↓	2 JARS	—				✓							✓	✓	✓				
↓	1215	↓	SWMU 13-7(0.5-2')	2 VIALS	SOBI	-002										✓						
↓	↓	↓	↓	2 VIALS	MEOH											✓						
↓	↓	↓	↓	2 JARS	—				✓							✓	✓	✓				
↓	1220	↓	SWMU 13-7(2-4')	2 VIALS	SOBI	-003										✓						
↓	↓	↓	↓	2 VIALS	MEOH											✓						
↓	↓	↓	↓	2 JARS	—				✓							✓	✓	✓				
↓	1225	↓	SWMU 13-7(14-16')	2 VIALS	SOBI	-004										✓						
↓	↓	↓	↓	2 VIALS	MEOH											✓						
↓	↓	↓	↓	2 JARS	—				✓							✓	✓	✓				

Date:	Time:	Relinquished by:	Received by:	Date	Time
/7/14	903	[signature]	Christine Walters	10/7/14	903
/7/14	1945	Christine Walters	[signature]	10/08/14	0650

Remarks:

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Chain-of-Custody Record

Client: WESTERN REFINING SW, INC

BLOOMFIELD TERMINAL

Mailing Address: #50 CO. RD 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☒ EDD (Type) EXCEL

Turn-Around Time:

☒ Standard ☐ Rush _____

Project Name: GROUP 9

Project #:

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.7

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1410359	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE ATTACHED SHEET			Air Bubbles (Y or N)
10.6.14	1230	SOIL	SWMU 13-7(22-24')	1 JAR	—	-005			✓							✓	✓	✓			

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/7/14	903		Christine Walters	10/7/14	903
10/7/14	1945	Christine Walters		10/08/14	0650

Remarks:

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BLOOMFIELD, NM 87413

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email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☒ EDD (Type) EXCEL

Turn-Around Time:

☒ Standard ☐ Rush _____

Project Name: GROUP 9

Project #:

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.7

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Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1410360	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS- SEE ATTACHED SHEET **			Air Bubbles (Y or N)
10-6-14	1520	SOIL	SWMU 13-15 (0-0.5')	2 VIALS	SOBI	-001										✓					
				2 VIALS	MEOH											✓					
				3 JARS	—				✓							✓	✓	✓			
	1525		SWMU 13-15 (0.5-2')	2 VIALS	SOBI	-002										✓					
				2 VIALS	MEOH											✓					
				3 JARS	—				✓							✓	✓	✓			
	1530		SWMU 13-15 (12-14')	2 VIALS	SOBI	-003										✓					
				2 VIALS	MEOH											✓					
				3 JARS	—				✓							✓	✓	✓			
	1540		SWMU 13-15 (14-16')	2 VIALS	SOBI	-004										✓					
				2 VIALS	MEOH											✓					
				3 JARS	—				✓							✓	✓	✓			

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/7/14	903		Christine White	10/7/14	903
10/7/14	1945	Christine Walker		10/8/14	0650

Remarks: ** ANALYZE FOR TETRAETHYL LEAD **

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.
BLOOMFIELD TERMINAL
Mailing Address: #50 CO RD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.7

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Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1410360	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS - SEE ATTACHED LIST **			Air Bubbles (Y or N)
10.6.14	1700	SOIL	SWMU 13-15 (24-26')	1 JAR	—	-005			✓						MRK	✓	✓	✓			

Remarks:
** ANALYZE FOR TETRA ETHYL LEAD **

Date	Time	Relinquished by:	Received by:	Date	Time
10/7/14	903		Christine Walters	10/7/14	903
10/7/14	1945	Christine Walters		10/08/14	0650

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Chain-of-Custody Record

Client: WESTERN REFINING SW INC
BLOOMFIELD TERMINAL
Mailing Address: #50 CO RD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☐ Yes ☐ No
Sample Temperature:

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Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1410522
10.8.14	1005	SOIL	SWMU 13-19 (0.5-2')	2 VIALS	5081	-601
				2 VIALS	MeOH	
				3 JARS	—	
	1015		SWMU 13-19 (12-14)	2 VIALS	5081	-602
				2 VIALS	MeOH	
				3 JARS	—	
	1050		SWMU 13-19 (26-28')	2 JARS	—	-603
10.8.14	—	MeOH	MeOH BLANK	1 VIAL		-604

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS (SEE ATTACHED SHEET) ***			Air Bubbles (Y or N)
									✓					
									✓					
		✓							✓	✓	✓			
									✓					
									✓					
		✓							✓	✓	✓			
		✓							✓	✓	✓			
									✓					

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/9/14	820		Christine Walker	10/9/14	820
10/9/14	1600	Christine Walker		10/10/14	0700

Remarks: *** ANALYZE FOR CR VI ***

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.

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.
BLOOMFIELD TERMINAL
Mailing Address: #50 CO RD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☒ NELAP ☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: GROUP 9
Project #:
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: ☐ Yes ☐ No
Sample Temperature:

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1410523
10-7-14	1220	SOIL	SWMU 13-13(0-0.5')	2 VIALS	SOBI	-001
				2 VIALS	MeOH	
				2 JARS	—	
	1240		SWMU 13-13(0.5-2')	2 VIALS	SOBI	-002
				2 VIALS	MeOH	
				2 JARS	—	
	1250		SWMU 13-13(10-12')	2 VIALS	SOBI	-003
				2 VIALS	MeOH	
				2 JARS	—	
	1300		SWMU 13-13(24-26')	2 VIALS	SOBI	-004
				2 VIALS	MeOH	
				2 JARS	—	

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS (SEE ATTACHED SHEET)	Air Bubbles (Y or N)
									✓			
									✓			
		✓							✓	✓	✓	
									✓			
									✓			
		✓							✓	✓	✓	
									✓			
									✓			
		✓							✓	✓	✓	
									✓			
									✓			
		✓							✓	✓	✓	

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/9/14	820		Christine Walters	10/9/14	820
Date:	Time:	Relinquished by:	Received by:	Date	Time
	1600	Christ Walters		10/10/14	0700

Remarks:

Chain-of-Custody Record

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

Client: WESTERN REFINING SW, INC.

BLOOMFIELD TERMINAL

Mailing Address: #50 CO RD 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☒ EDD (Type) EXCEL

Turn-Around Time:

☒ Standard ☐ Rush _____

Project Name: GROUP 9 11-6-14

Project #:

Project Manager: KELLY ROBINSON

Sampler: MATT & BOB

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.3

HEAL No. 1411205

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
11-6-14	10:00	WATER	MW-72	40 ML VOA-5	HCL	-007
				1 LITER AMBER-2	NEAT	
				200 ML AMBER-1	NEAT	
				200 ML PLASTIC-1	HNO_3	
				200 ML PLASTIC-1	H_2SO_4	
				500 ML PLASTIC-1	HNO_3	
				500 ML PLASTIC-1	NEAT	
				200 ML PLASTIC-1	NAOH	

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	~~TPH (Method 418.1)~~ DIESEL	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	~~RCRA 8 Metals~~ CYANIDE	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS TOTAL & DISSOLVED	(SEE ATTACHED SHEET)	GENERAL CHEMISTRY	(SEE ATTACHED SHEET)	Air Bubbles (Y or N)
		✓							✓	✓					
			✓								✓		✓		
						✓									

Date	Time	Relinquished by:	Received by:	Date	Time
11-6-14	1445	Robert Krakow	Matt Hall	11/6/14	1445
11/6/14	1700	Christie Walters		11/07/14	0700

Remarks:

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Chain-of-Custody Record

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BLOOMFIELD TERMINAL

Mailing Address: #50 CO. RD 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☒ EDD (Type) EXCEL

Turn-Around Time:

☒ Standard ☐ Rush _____

Project Name: GROUP 9 11-6-14

Project #:

Project Manager: KELLY ROBINSON

Sampler: MATT & BOB

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1411207	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	~~TPH (Method 418.1)~~ DIESEL	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	~~RCRA 8 Metals~~ CYANIDE	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS TOTAL & DISSOLVED	(SEE ATTACHED SHEET)	GENERAL CHEMISTRY	(SEE ATTACHED SHEET)	Air Bubbles (Y or N)
11-6-14	1030	WATER	MW-73	40 ML VOA-5	HCL	-001			✓							✓						
				1 LITER AMBER-2	NEAT												✓					
				200ML AMBER-1	NEAT					✓												
				200 ML PLASTIC-1	HNO_3													✓		✓		
				200 ML PLASTIC-1	H_2SO_4															✓		
				500 ML PLASTIC-1	HNO_3													✓				
				500 ML PLASTIC-1	NEAT															✓		
				200 ML PLASTIC-1	NaOH								✓									

Date	Time	Relinquished by	Received by	Date	Time
11-6-14	1445	Robert Krakow	Christine Walker	11/6/14	1445
11/6/14	1700	Christine Walker		11/07/14	0700

Remarks: TRIP BLANK -002

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.

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.

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Mailing Address: #50 CO. RD 4990

BLOOMFIELD, NM 87413

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email or Fax#: KELLY. ROBINSON@ WNR. COM

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other ______

☒ EDD (Type) EXCEL

Turn-Around Time:

☒ Standard ☐ Rush ______

Project Name: GROUP 9 11-6-14

Project #:

Project Manager: KELLY ROBINSON

Sampler: ~~Bob~~ & MATT

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1411268	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	~~TPH (Method 418.1)~~ DIESEL	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	~~RCRA 8 Metals~~ CYANIDE	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS TOTAL & DISSOLVED	(SEE ATTACHED SHEET)	GENERAL CHEMISTRY	(SEE ATTACHED SHEET)	Air Bubbles (Y or N)
-6-14	11:15	WATER	EB01	40 ML VOA-5	HCL	-001			✓	WM						✓						
				1 LITER AMBER-2	NEAT												✓					
				200 ML AMBER-1	NEAT					✓												
				200 ML PLASTIC-1	HNO_3													✓		✓		
				200 ML PLASTIC-1	H_2SO_4															✓		
				500 ML PLASTIC-1	HNO_3													✓				
				500 ML PLASTIC-1	NEAT															✓		
				200 ML PLASTIC-1	NAOH							✓										

Date	Time	Relinquished by	Received by	Date	Time
-6-14	1448	Robert Krakow	Christa West	11/6/14	1445
11/6/14	1700	Christa Walker	[signature]	11/07/14	0700

Remarks:

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Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.

BLOOMFIELD TERMINAL

Mailing Address: #50 CR 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☒ EDD (Type) EXCEL

Turn-Around Time:

☒ Standard ☐ Rush _____

Project Name: GROUP 9 11-6-14

Project #:

Project Manager: KELLY ROBINSON

Sampler: Bob & MATT

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1411269	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	~~TPH (Method 418.1)~~ DIESEL	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	~~RCRA 8 Metals~~ CYANIDE	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS TOTAL & DISSOLVED	(SEE ATTACHED SHEET)	GENERAL CHEMISTRY	(SEE ATTACHED SHEET)	Air Bubbles (Y or N)
11-6-14	1045	WATER	FB01	40 ML VOA - 5	HCL				✓							✓						
				1 LITER AMBER-2	NEAT												✓					
				200 ML AMBER-1	NEAT					✓												
				200 ML PLASTIC-1	HNO_3													✓		✓		
				200 ML PLASTIC-1	H_2SO_4															✓		
				500 ML PLASTIC-1	HNO_3													✓				
				500 ML PLASTIC-1	NEAT															✓		
				200 ML PLASTIC-1	NAOH								✓									

Date:	Time:	Relinquished by:	Received by:	Date	Time
11-6-14	1445	Robert Krakow	Christy Walker	11/6/14	1445
11/6/14	1700	Christy Walker		11/07/14	0700

Remarks: TRIP BLANK -002

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BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☒ EDD (Type) EXCEL

Turn-Around Time:

☒ Standard ☐ Rush _____

Project Name: GROUP 9 11-6-14

Project #:

Project Manager: KELLY ROBINSON

Sampler: Bob & MATT

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1411269	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	~~TPH (Method 418.1)~~ DIESEL	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	~~RCRA 8 Metals~~ CYANIDE	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS TOTAL & DISSOLVED	(SEE ATTACHED SHEET)	GENERAL CHEMISTRY	(SEE ATTACHED SHEET)	Air Bubbles (Y or N)
11-6-14	1045	WATER	FB01	40 ML VOA - 5	HCL				✓							✓						
				1 LITER AMBER-2	NEAT												✓					
				200 ML AMBER-1	NEAT					✓												
				200 ML PLASTIC-1	HNO_3													✓		✓		
				200 ML PLASTIC-1	H_2SO_4															✓		
				500 ML PLASTIC-1	HNO_3													✓				
				500 ML PLASTIC-1	NEAT															✓		
				200 ML PLASTIC-1	NAOH								✓									

Date:	Time:	Relinquished by:	Received by:	Date	Time
11-6-14	1445	Robert Krakow	Christy Walker	11/6/14	1445
11/6/14	1700	Christy Walker		11/07/14	0700

Remarks: TRIP BLANK -002

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Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.
BLOOMFIELD TERMINAL
Mailing Address: #50 CO. RD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: GROUP 9 11-6-14
Project #:
Project Manager: KELLY ROBINSON
Sampler: Bob & Matt
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.3

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4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1411270
11-6-14	9:30	WATER	GW DUP 01	40 ML VOA-5	HCL	-001
				1 LITER AMBER-2	NEAT	
				200 ML AMBER-1	NEAT	
				200 ML PLASTIC-1	HNO_3	
				200 ML PLASTIC-1	H_2SO_4	
				500 ML PLASTIC-1	HNO_3	
				500 ML PLASTIC-1	NEAT	
				200 ML PLASTIC-1	NaOH	

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	~~TPH (Method 418.1)~~ DIESEL	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	~~RCRA 8 Metals~~ CYANIDE	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS TOTAL & DISSOLVED	(SEE ATTACHED SHEET)	GENERAL CHEMISTRY	(SEE ATTACHED SHEET)	Air Bubbles (Y or N)
		✓							✓						
										✓					
			✓												
											✓		✓		
													✓		
											✓				
													✓		
						✓									

Date:	Time:	Relinquished by:	Received by:	Date	Time
11-6-14	1445	Robert Krakow	Christa Waelta	11/6/14	1445
11/6/14	1700	Christa Waelta		11/07/14	0700

Remarks:

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

MW-74

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.

BLOOMFIELD TERMINAL

Mailing Address: #50 CO. RD 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☒ EDD (Type) EXCEL

Turn-Around Time:

☒ Standard ☐ Rush _____

Project Name: GROUP 9 11-6-14

Project #:

Project Manager: KELLY ROBINSON

Sampler: MATT & BOB

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1411271	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	~~TPH (Method 418.1)~~ DIESEL	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	~~RCRA 8 Metals~~ CYANIDE	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS TOTAL & DISSOLVED	(SEE ATTACHED SHEET)	GENERAL CHEMISTRY	(SEE ATTACHED SHEET)	Air Bubbles (Y or N)
1-6-14	9:30	WATER	MW-74	40 ML VOA-5	HCL	-001			✓							✓						
				1 LITER AMBER-2	NEAT												✓						
				200 ML AMBER-1	NEAT					✓													
				200 ML PLASTIC-1	HNO_3													✓		✓			
				200 ML PLASTIC-1	H_2SO_4															✓			
				500 ML PLASTIC-1	HNO_3													✓					
				500 ML PLASTIC-1	NEAT															✓			
				200 ML PLASTIC-1	NaOH								✓										

Date	Time	Relinquished by:	Received by:	Date	Time
1-6-14	1445	Robert Krakow	Christie Waeters	11/6/14	1445
11/6/14	1706	Christie Waeters		11/07/14	0700

Remarks: TRIP BLANK -002

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.

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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BLOOMFIELD TERMINAL

Mailing Address: #50 CR 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other

☒ EDD (Type) EXCEL

☒ Standard ☐ Rush

Project Name: GROUP 9 11-6-14

Project #:

Project Manager: KELLY ROBINSON

Sampler: MAT 6806

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.3

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1411272	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	~~TPH (Method 418.1)~~ DIESEL	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	~~RCRA 8 Metals~~ CYANIDE	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS TOTAL & DISSOLVED	(SEE ATTACHED SHEET)	GENERAL CHEMISTRY	(SEE ATTACHED SHEET)	Air Bubbles (Y or N)
11-6-14	9:00	WATER	MW-75	40 ML VOA-5	HCL	-001			✓							✓						
				1 LITER AMBER-2	NEAT												✓					
				200 ML AMBER-1	NEAT					✓												
				200 ML PLASTIC-1	HNO_3													✓		✓		
				200 ML PLASTIC-1	H_2SO_4															✓		
				500 ML PLASTIC-1	HNO_3													✓				
				500 ML PLASTIC-1	NEAT															✓		
				200 ML PLASTIC-1	NAOH								✓									

Date:	Time:	Relinquished by:	Received by:	Date	Time
11-6-14	1445	Robert Krakow	Christine Walker	11/6/14	1445
11/6/14	1700	Christine Walker		11/07/14	0700

Remarks: TRIP BLANK -002

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.

Chain-of-Custody Record

Client: WESTERN REFINING SW, INC.
BLOOMFIELD TERMINAL
Mailing Address: #50 CO RD 4990
BLOOMFIELD TERMINAL
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☒ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other _____
☒ EDD (Type) EXCEL

Turn-Around Time:
☒ Standard ☐ Rush _____
Project Name:
GROUP 9 11-6-14
Project #:
Project Manager:
KELLY ROBINSON
Sampler: BOB & MATT
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.3

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1411273
11-6-14	0940	WATER	MW-76	40 ML VOA-5	HCL	-001
				1 LITER AMBER-2	NEAT	
				200 ML AMBER-1	NEAT	
				200 ML PLASTIC-1	HNO_3	
				200 ML PLASTIC-1	H_2SO_4	
				500 ML PLASTIC-1	HNO_3	
				500 ML PLASTIC-1	NEAT	
				200 ML PLASTIC-1	NAOH	

Analysis Request

	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	~~TPH (Method 418.1)~~ DIESEL	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	~~RCRA 8 Metals~~ CYANIDE	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS TOTAL & DISSOLVED	(SEE ATTACHED SHEET)	GENERAL CHEMISTRY	(SEE ATTACHED SHEET)
11-6-14			✓							✓					
											✓				
				✓											
												✓		✓	
														✓	
												✓			
														✓	
							✓								

Date:	Time:	Relinquished by:	Received by:	Date	Time
11-6-14	1445	Robert Knakow	Christine Walker	11/6/14	1445
11/6/14	1700	Christine Walker		11/07/14	0700

Remarks:

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Chain-of-Custody Record

Client: Kelly Robinson
Western Refining
Mailing Address: 111 CR 4990
Bloomfield NM 87413
Phone #:
email or Fax#: Ashley Ager
QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____
Project Name: GBR Annual sampling
Project #: WR1009
Project Manager: Ashley Ager
Sampler: Daniel Neuman & Dain Hencmann
On Ice: ☒ Yes ☐ No
Sample Temperature: .5

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1411545	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	see Attached				Air Bubbles (Y or N)
11/12/14	1255	GW	SHS-8	Various	Various	-001												X				
11/12/14	1427		GBR-51			-002																
11/12/14	1545		GBR-52			-003																
11/13/14	939		GBR-48			-004																
11/13/14	1035		GBR-50			-005																
11/13/14	1155		GBR-32			-006																
11/13/14	1245		GBR-49			-007																
11/13/14	345		GBR-17			-008																

Date	Time	Relinquished by:	Received by:	Date	Time
11/13/14	1620		Chris Walters	11/13/14	1620
11/13/14	1825	Christine Walters		11/14/14	0710

Remarks:

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Chain-of-Custody Record

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4901 Hawkins NE - Albuquerque, NM 87109

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

Client: Western Refining

Mailing Address: # 50 CR4990

Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

QA/QC Package:

☐ Standard ☒ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other

☒ EDD (Type) Excel

☒ Standard ☐ Rush

Project Name: Group 9 wells 12-16-14

Project #:

Project Manager:

Sampler: Bob & Matt

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.5

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1412839
12-16-14	7:45	H_2O	MW-72	5-VOA	HCl	-001
				2-1-liter	amber	
				1-500ml	amber	
				1-125ml	HNO_3	
				1-125ml	H_2SO_4	
				1-500ml	HNO_3	
				1-500ml	—	
				1-500ml	NaOH	

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	~~TPH (Method 418.1)~~ EXT. 8015	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	~~RCRA 8 Metals~~ CYANIDE	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS TOTAL & Dissolved	GEN. CHEM.		
		X							X					
										X				
			X											
											X	X		
												X		
											X			
												X		
						X								

Remarks:

Date	Time	Relinquished by:	Received by:	Date	Time
12-16-14	1434	Robert Krakow	Christa Walden	12/16/14	1434
12/16/14	1900	Christa Walden		12/17/14	0720

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.

Chain-of-Custody Record

Client: Western Refining

Mailing Address: ~~#~~ 50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

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

Accreditation
☐ NELAP ☐ Other

☒ EDD (Type) Excel

☒ Standard ☐ Rush

Project Name: Group 9 Wells 12-16-14

Project #:

Project Manager:

Sampler: Bob + MATT

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.5

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
12-16-14	8:00	H_2O	MW-73	5-VOA	HCl	1412839 -002
				2-1-Liter	amber	
				1-500ml	amber	
				1-125ml	HNO_3	
				1-125ml	H_2SO_4	
				1-500ml	HNO_3	
				1-500ml	—	
				1-500ml	NaOH	

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	~~TPH (Method 418.1)~~ EXT. 8015B	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	~~RCRA 8 Metals~~ CYANIDE	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS TOTAL + Dissolved	Gen. Chem.
		X							X			
										X		
			X								[redacted]	
											X	X
											X	X
												X
						X						

Remarks:

Date	Time	Relinquished by	Received by	Date	Time
12-16-14	1434	Robert Krakow	Matt Wade	12/16/14	1434
12/16/14	1900	Matt Wade		12/17/14	0720

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Chain of Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Client: Western Refining	☒ Standard ☐ Rush
Mailing Address: #50 CR 4990 Bloomfield, NM 87413	Project Name: Group 9 wells 12-16-14
Phone #: 505-632-4135	Project #:
email or Fax#:	Project Manager:
QA/QC Package: ☐ Standard ☒ Level 4 (Full Validation)	
Accreditation ☐ NELAP ☐ Other	Sampler: Bob + MATT
☒ EDD (Type) Excel	On Ice: ☒ Yes ☐ No
	Sample Temperature: 3.5

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1412839
12-16-14	8:30	H2O	MW-75	5-VOA	HCl	-003
				2-1-liter	amber	
				1-500ml	amber	
				1-125ml	HNO_3	
				1-125ml	H_2SO_4	
				1-500ml	HNO_3	
				1-500ml		
				1-500ml	NaOH	

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / ~~DRO~~ / MRO)	~~TPH (Method 418.1)~~ DRO Ext. 8015B	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	~~RCRA 8 Metals~~ CYANIDE	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS TOTAL & Dissolved	GEN. Chem.			
		X							X						
										X					
			X												
											X	X			
												X			
											X				
						X						X			

Date:	Time:	Relinquished by:	Received by:	Date	Time
12-16-14	1434	Robert Krakow	Chad Walls	12/16/14	1434
12/16/14	1900	Chad Walls		12/17/14	0720

Remarks:

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Chain-of-Custody Record

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

Client: Western Refining	☒ Standard ☐ Rush
Mailing Address: #50 CR4990 Bloomfield, NM 87413	Project Name: Group 9 Wells 12-16-14
Phone #: 505-632-4135	Project #:
email or Fax#:	Project Manager:
QA/QC Package: ☐ Standard ☒ Level 4 (Full Validation)	Sampler: Bob + Matt
Accreditation ☐ NELAP ☐ Other	On Ice: ☒ Yes ☐ No
☒ EDD (Type) Excel	Sample Temperature: 3.5

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1412839	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / ~~DRO~~ / MRO)	TPH (Method 418.1) DRO Ext. 8015B	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	~~RCRA 8 Metals~~ CYANIDE	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals Total + Dissolved	Gen. Chem.		
12-16-14	7:30	H_2O	MW-76	5-VOA	HCl	-004			X							X					
				2-1-liter	amber												X				
				1-500ml	amber					X											
				1-125ml	HNO_3													X	X		
				1-125ml	H_2SO_4														X		
				1-500ml	HNO_3													X			
				1-500ml															X		
				1-500ml	NaOH								X								

Date	Time	Relinquished by	Received by	Date	Time
12-16-14	1434	Robert Krakow	Matt Walter	12/16/14	1434
12/16/14	1950	Matt Walter		12/17/14	0720

Remarks:

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Chain-of-Custody Record

Client: Western Refining

Mailing Address: #50 CR4990
Bloomfield, NM 87413

Phone #: 505-632-4135

email or Fax#:

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

Accreditation
☐ NELAP ☐ Other

☒ EDD (Type) Excel

Turn-Around Time:
☒ Standard ☐ Rush

Project Name:
Group 9 wells 12-16-14

Project #:

Project Manager:

Sampler: Bob & MATT
On Ice: ☒ Yes ☐ No
Sample Temperature: 3.5

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1412839
12-16-14	7:30	H_2O	MW-76D	5-VOA	HCl	-005
				2-1-liter	amber	
				1-500ml	amber	
				1-125ml	HNO_3	
				1-125ml	H_2SO_4	
				1-500ml	HNO_3	
				1-500ml	—	
				1-500ml	NaOH	

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / ~~DRO~~ / MRO)	~~TPH (Method 418.1)~~ DRO Ext. 8015B	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	~~RCRA 8 Metals~~ CYANIDE	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	METALS TOTAL + Dissolved	Gen. Chem.		
		X							X					
										X				
			X											
											X	X		
												X		
											X			
												X		
						X								

Date:	Time:	Relinquished by:	Received by:	Date	Time
12-16-14	1434	Robert Krakow	Christie Walters	12/16/14	1434
12/16/14	1900	Christie Walters		12/17/14	0720

Remarks:

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Appendix G

Quality Assurance/Quality Control Review

DATA VALIDATION INTRODUCTION

This summary presents data verification results for soil and groundwater samples collected from soil boring and monitoring wells installed at the Bloomfield Refinery in accordance with the approved Investigation Work Plan – Group 9. The data review was performed in accordance with the procedures specified in the Order issued by NMED (NMED, 2007), USEPA Functional Guidelines for Organic and Inorganic Data Review, and quality assurance and control parameters set by the project laboratory Hall Environmental Analysis Laboratory, Inc.

A total of 110 soil samples and 11 groundwater samples (excluding QA samples) were collected from September 15, 2014 through December 16, 2014 in accordance with the Group 9 Investigation Work Plan. Soil and groundwater samples were submitted to Hall Environmental Analysis Laboratory for the following parameters in accordance with the approved Work Plan:

- volatile organic compounds (VOCs) by USEPA Method 8260B;
- semi-volatile organic compounds (SVOCs) by USEPA Method 8270;
- Gasoline, diesel, and motor oil range organics by SW-846 Method 8015B;
- Total recoverable and dissolved metals (Antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, nickel, selenium, silver, vanadium, and zinc) by SW846 Method 6010/6020;
- Chromium VI by SW-846 method 3060A;
- Tetraethyl lead by SW-846 method 3546;
- Cyanide by SW-846 method 9012; and
- Mercury by EPA Method 7470.

The groundwater samples were analyzed for water quality parameters including, nitrate, nitrite, total dissolved solids, sulfate, chloride, bicarbonate, carbonate, and total alkalinity.

Additionally, 10 quality assurance samples consisting of trip blanks, field blanks, equipment rinsate blanks, and field duplicates were collected and analyzed as part of the investigation activities. Table A-1 presents a summary of the field sample identifications, laboratory sample identifications, and sample collection dates.

1.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level II data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody;
- Sample Preservation and Temperature Upon Laboratory Receipt
- Holding Times;
- Blank Contamination (method blanks, trip blanks, field blanks, and equipment rinsate blanks);
- Surrogate Recovery (for organic parameters);
- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD);
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recovery and RPD;
- Duplicates (field duplicate, laboratory duplicate); and
- Other Applicable QC Parameters.

The data qualifiers used to qualify the analytical results associated with QC parameters outside of the established data quality objectives are defined below:

J+	The analyte was positively identified; however, the result should be considered an estimated value with a potential high bias.
J-	The analyte was positively identified; however, the result should be considered an estimated value with a potential low bias.
UJ	The reporting limit for a constituent that was not detected is considered an estimated value.
R	Quality control indicates that the data is not usable.

Results qualified as “J+”, “J-“, or “UJ” are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per EPA guidelines.

Results for the performance monitoring events that required qualification based on the data verification are summarized in Table A-2.

1.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

1.2 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples collected were received preserved and intact by Hall Environmental Laboratories, Inc. Samples were received by the laboratory at a temperature of 6.0 degrees Celsius or lower. Data qualification on lower temperature samples was not required.

1.3 HOLDING TIMES

All samples were extracted and analyzed within method-specified holding time limits. Data qualification for exceeding holding times was not required.

1.4 BLANK CONTAMINATION

1.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency. Target compounds were not detected in the method blanks, with the exception of the following:

- Bis(2-ethylhexyl)phthalate was detected in the method blank for analytical batch 16261. It was also detected at similar concentrations in samples MW-71 and MW-77, and the field sample results are qualified with a J+.
- Methylene chloride was detected in the method blank for analytical batch 15395. It was not detected in any of the associated samples and qualification was not required.

1.4.2 Trip Blank

Trip blanks were analyzed at the appropriate frequency as specified in the Order. Target compounds were not detected in the trip blanks.

1.4.3 Field Blanks/Equipment Rinsate Blank

Field and equipment rinsate blanks were collected as specified in the Group 9 Investigation Work Plan.

1.4.4 Common Laboratory Contaminants

Per USEPA guidelines, common laboratory contaminants for VOC analysis are acetone, 2-butanone (MEK), cyclohexane, chloromethane, and methylene chloride. Common laboratory contaminants for SVOC analysis include phthalates. Data qualification was not required

since field analytical results were not detected in the method blank or were detected at concentrations greater than 10 times the blank concentration.

1.4.5 Methanol Blanks

Methanol Blanks provided by the laboratory were analyzed for VOCs. There were no analytes detected in the methanol blanks above the respective laboratory reporting limits.

1.5 SURROGATE RECOVERY

Surrogate recoveries for the organic and inorganic analyses were performed at the required frequency and were within laboratory acceptance limits, with the following exceptions:

Lab Report 1409B75

- Surrogate recovery for bromofluorobenzene (BFB) was above the upper acceptance limit for field sample SWMU 13-10 (0-0.5'), SWMU 13-10 (0.5-2'), SWMU 13-10 (24-26') SWMU 13-10 (26-28'). The associated field sample results for gasoline range organics (GRO) are qualified J+ due to a potential high bias.
- Surrogate recoveries for di-n-octyl phthalate (DNOP) was below the lower acceptance limit for field sample SWMU 13-10 (0-0.5'). Low surrogate recovery was due to required sample dilution for analytical analysis and/or matrix interference; therefore data qualification was not required.

Lab Report 1409B77

- Surrogate recovery for bromofluorobenzene (BFB) was above the upper acceptance limit for field sample SWMU 13-1 (12-14'), SWMU 13-1 (26-28'), SWMU 13-2 (24-26'), and SWMU 13-2 (26-28'). The associated field sample results for GRO are qualified J+ due to a potential high bias.
- Surrogate recovery for nitrobenzene-d5 was below the lower acceptance limit for field sample SWMU 13-1 (12-14'). As this was the only surrogate out of six performed for semi-volatiles that was out of limits, the results are not qualified.

Lab Report 1409B79

- Surrogate recovery for bromofluorobenzene (BFB) was above the upper acceptance limit for field sample SWMU 14-4 (18-20'). The associated field sample result for GRO is qualified with J+ due to a potential high bias.

Lab Report 1409B80

- Surrogate recovery for bromofluorobenzene (BFB) was above the upper acceptance limit for field sample SWMU 13-18 (0-0.5') and SWMU 13-18 (24-26'). The associated field sample results for GRO are qualified J+ due to a potential high bias.

Lab Report 1409C40

- Surrogate recovery for bromofluorobenzene (BFB) was above the upper acceptance limit for field sample SWMU 12-3 (0.5-2'), SWMU 12-3 (2-4'), SWMU 12-3 (22-24'), SWMU 12-3 (26-28'), SWMU 12-2 (0-0.5'), and SWMU 12 DUP01. The associated field sample results for gasoline range organics (GRO) are qualified J+ due to a potential high bias. Non-detect results are not qualified.
- Surrogate recoveries for di-n-octyl phthalate (DNOP) was below the lower acceptance limit for field sample SWMU 12-3 (0.5-2') SWMU 12-3 (2-4'), SWMU 12-2 (0-0.5'), SWMU 12-2 (0.5-2'), SWMU 12-2 (6-8'), and SWMU 12 DUP01. Low surrogate recovery was due to required sample dilution for analytical analysis and/or matrix interference; therefore data qualification was not required.
- The surrogate recoveries were below the limits for the semi-volatile organic analyses performed for samples SWMU 12-3 (0.5-2'), SWMU 12-2 (0-0.5'), SWMU 12-2 (0.5-2'), SWMU 12-2 (6-8'), and SWMU 12 DUP01. The same surrogate recoveries are within limits for the associated method blank and laboratory control sample, indicating the problem is with matrix interference. The MS/MSD recoveries were within limits. The associated semi-volatile results are not qualified.

Lab Report 1409C41

- Surrogate recovery for bromofluorobenzene (BFB) was above the upper acceptance limit for field sample SWMU 13-3 (4-6') and SWMU 13-3 (26-28'), The associated field sample results for gasoline range organics (GRO) are qualified J+ due to a potential high bias. Non-detect results are not qualified.
- Surrogate recoveries for di-n-octyl phthalate (DNOP) was below the lower acceptance limit for field sample SWMU 13-3 (26-28'). Low surrogate recovery was due to required sample dilution for analytical analysis and/or matrix interference; therefore data qualification was not required.

Lab Report 1409C42

- One surrogate recovery for volatiles (Phenol-d5) was slightly above the control limit (67.8 vs. 65.8); however, all other surrogates recoveries are within range and the associated result is non-detect, thus no qualification is required.

Lab Report 1409E14

- Surrogate recovery for bromofluorobenzene (BFB) was above the upper acceptance limit for field sample SWMU 13-8 (2-4'), SWMU 13-8 (22-24'), and SWMU 13-8 (24-26'). The associated field sample results for gasoline range organics (GRO) are qualified J+ due to a potential high bias. Non-detect results are not qualified.
- Surrogate recoveries for di-n-octyl phthalate (DNOP) was below the lower acceptance limit for field sample SWMU 13-8 (2-4'), SWMU 13-8 (22-24'), and SWMU 13-8 (24-26'). Low surrogate recovery was due to required sample

dilution for analytical analysis and/or matrix interference; therefore data qualification was not required.

Lab Report 1409E42

- Surrogate recovery for bromofluorobenzene (BFB) was above the upper acceptance limit for field sample SWMU 13-16 (0-0.5') and SWMU 13-16 (26-28'). The associated field sample results for gasoline range organics (GRO) are qualified J+ due to a potential high bias.
- Surrogate recoveries for di-n-octyl phthalate (DNOP) was below the lower acceptance limit for field sample SWMU 13-16 (0.5-2'). Low surrogate recovery was due to required sample dilution; however, the LCS recovery data is within range and therefore data qualification for DRO and MRO was not required.
- All of the surrogate recoveries for the SVOC analyses of sample SWMU 13-16 (0.5-2'), were below the recovery limits and this is attributed to required sample dilutions. The associated method blank and LCS QC results are within limits and the data are not qualified.

Lab Report 1409E43

- Surrogate recovery for bromofluorobenzene (BFB) was above the upper acceptance limit for field sample SWMU 13-4 (6-8') and SWMU 13-5 (24-26'), SWMU 13.5 (10-12'), and SWMU 13-5 (24-26'). The associated field sample results for gasoline range organics (GRO) are qualified J+ due to a potential high bias. Non-detect results are not qualified.
- Surrogate recoveries for di-n-octyl phthalate (DNOP) was below the lower acceptance limit for field sample SWMU 13-4 (6-8') and SWMU 13-5 (24-26'). Low surrogate recovery was affected by required sample dilution; however, the LCS recovery data is within range. The associated MS/MSD recoveries were also below limits and therefore the data are qualified for DRO and MRO.
- One of the surrogate recoveries for VOCs was over the limit for sample SWMU 13-5 (24-26')

Lab Report 1409E44

- Surrogate recovery for bromofluorobenzene (BFB) was above the upper acceptance limit for field sample SWMU 12-1 (4-6'). The associated field sample result for gasoline range organics (GRO) was qualified J+ due to a potential high bias.

Lab Report 1410E28

- Surrogate recoveries for di-n-octyl phthalate (DNOP) was below the lower acceptance limit for field sample MW-71 and MW-77. Low surrogate recovery was affected by required sample dilution; however, the LCS recovery data is within range. The data are not qualified for DRO and MRO.

- All of the surrogate recoveries except one were below limits for the SVOC analyses performed on sample MW-71. Three of the six surrogates for the SVOC analysis on sample MW-77 were below limits. All of the LCS samples are within limits and none of the data is qualified.

Lab Report 1409812

- Surrogate recovery for bromofluorobenzene (BFB) was above the upper acceptance limit for field sample SWMU 14-3 (0.5-2') and SWMU 14-3 (14-16'). The associated field sample result for gasoline range organics (GRO) was qualified J+ due to a potential high bias.

Lab Report 1409995

- Surrogate recovery for bromofluorobenzene (BFB) was above the upper acceptance limit for field sample SWMU 14-5 (26-28'), SWMU 14-1 (18-20'), SWMU 14-2 (18-20'), and SWMU 14-2 (20-22'). The associated field sample results for gasoline range organics (GRO) are qualified J+ due to a potential high bias. Non-detect results are not qualified.
- Surrogate recovery for bromofluorobenzene (BFB) was below the lower acceptance limit for field sample SWMU 14-5 (0.5-2'). The associated field sample results for gasoline range organics (GRO) are qualified UJ due to a potential low bias.
- Surrogate recoveries for di-n-octyl phthalate (DNOP) was below the lower acceptance limit for field sample SWMU 14-5 (16-18'), SWMU 14-5 (26-28'), and SWMU 14-2 (20-22'). Low surrogate recovery was affected by required sample dilution; however, the LCS recovery data is within range and the data are not qualified for DRO and MRO.
- One of the surrogate recovery percentages for SVOCs (2,4,6-tribromophenol) was slightly below the limit at 22% vs. 22.7%; however, all the other surrogates for SVOCs were within limits and the associated sample result for SWMU 14-5 (16-18') is not qualified.
- All of the surrogate recovery percentages for the SVOC analysis on sample SWMU 14-5 (26-28') were below limits but LCS recoveries were within limits and thus the result is not qualified. Sample dilution was required and this caused the low recovery percentages for the surrogates.

Lab Report 1410011

- One of the surrogate recovery percentages for SVOCs (2,4,6-tribromophenol) was below the limit at 8.69% vs. 22.7%; however, all the other surrogates for SVOCs were within limits and the associated sample result for SWMU 13-26 (0-0.5') was not qualified. The same situation occurred for sample SWMU 13-20 (0-0.5') with a 20.6% recovery for 2,4,6-tribromophenol and the result is not qualified.
- All of the surrogate recovery percentages for the SVOC analysis on sample SWMU 13-25 (0-0.5') were below limits but LCS recoveries were within limits and thus the

result is not qualified. All of the associated MS/MSD recoveries were within limits except for pentachlorophenol.

Lab Report 1410080

- One of the surrogate recovery percentages for SVOCs (2,4,6-tribromophenol) was below the limit at 20.4% vs. 22.7%; however, all the other surrogates for SVOCs were within limits and the associated sample result for SWMU 13-28 (0-0.5') was not qualified. The same situation occurred for samples SWMU 13-29 (0-0.5') and SWMU 13-17 (0-0.5') with recoveries of 8.91% and 20.0%, respectively, for 2,4,6-tribromophenol and the results are not qualified.
- All of the surrogate recovery percentages for the SVOC analyses on samples SWMU 13-27 (0-0.5') and SMWU 13 DUP 02 were below limits but LCS recoveries were within limits and thus the results are not qualified. All of the associated MS/MSD recoveries were within limits except for pentachlorophenol
- Surrogate recovery for bromofluorobenzene (BFB) was above the upper acceptance limit for field sample SWMU 13-17 (6-8') and SWMU 13-17 (24-26'). The associated field sample results for gasoline range organics (GRO) are qualified J+ due to a potential high bias. Non-detect results are not qualified.

Lab Report 1410212

- Surrogate recoveries for di-n-octyl phthalate (DNOP) was below the lower acceptance limit for field sample SWMU 13-6 (24-26'). Low surrogate recovery was affected by required sample dilution; however, the LCS recovery data is within range and therefore the data are not qualified.
- Surrogate recovery for bromofluorobenzene (BFB) was above the upper acceptance limit for field sample SWMU 13-6 (0.5-2') and SWMU 13-6 (24-26'). The associated field sample results for gasoline range organics (GRO) are qualified J+ due to a potential high bias. Non-detect results are not qualified.

Lab Report 1410213

- Three of the six surrogate recovery percentages for SVOCs (2-fluorophenol, 2-fluorobiphenol, and 4-terphenol-d14) in sample SWMU 13-12 (0-0.5') were above the upper limit; however, all the other surrogates for SVOCs were within limits and the associated sample result for SWMU 13-12 (0-0.5') was not qualified. The associated LCS recoveries are within limits.
- Surrogate recoveries for di-n-octyl phthalate (DNOP) was below the lower acceptance limit for field sample SWMU 13-12 (24-26'). Low surrogate recovery was affected by required sample dilution; however, the LCS recovery data is within range. The associated MS/MSD recoveries in batch 15713 are also within limits and therefore the data are not qualified for DRO and MRO.

Lab Report 1410214

- Surrogate recovery for bromofluorobenzene (BFB) was above the upper acceptance limit for field sample SWMU 13-14 (0.5-2'), SWMU 13-14 (2-4'), and

SWMU 13-14 (26-28'). The associated field sample results for gasoline range organics (GRO) are qualified J+ due to a potential high bias.

- Surrogate recoveries for di-n-octyl phthalate (DNOP) was below the lower acceptance limit for field sample SWMU 13-14 (0.5-2') and SWMU 13-14 (26-28'). Low surrogate recovery was affected by required sample dilution; however, the LCS recovery data is within range and the data are not qualified.
- Four of the six surrogate recovery percentages for SVOCs (2-fluorophenol, phenol-d5, 2-fluorobiphenol, and 4-terphenol-d14) in sample SWMU 13-14 (0.5-2') were above the upper limit; however, all the other surrogates for SVOCs were within limits and the associated sample result for SWMU 13-14 (0.5-2') was not qualified. Three of the same surrogates were above the limit for sample SWMU 13-14 (2-4'), but the results are no qualified. The associated LCS recoveries are within limits.

Lab Report 1410359

- One of the surrogate recovery percentages for SVOCs (nitrobenzene-d5) was below the limit at 0.0% vs. 24.5%; however, all the other surrogates for SVOCs were within limits and the associated sample result for SWMU 13-7 (2-4') was not qualified. The same situation occurred for sample SWMU 13-7 (22-24') with a recovery of 8.37% for 2,4,6-tribromophenol vs. lower limit of 22.7% and the results are not qualified. The LCS percent recoveries for SVOCs are within limits.
- All of the surrogate recovery percentages for the SVOC analyses on samples SWMU 13-7 (0-0.5') and SMWU 13-7 (0.5-2') were below limits but LCS recoveries were within limits and thus the results are not qualified. All of the associated MS/MSD recoveries were within limits except for pentachlorophenol
- Surrogate recovery for bromofluorobenzene (BFB) was above the upper acceptance limit for field sample SWMU 13-7 (0.5-2'), SWMU 13-7 (2-4'), and SWMU 13-7 (22-24'). The associated field sample results for gasoline range organics (GRO) are qualified J+ due to a potential high bias.
- Surrogate recoveries for di-n-octyl phthalate (DNOP) was below the lower acceptance limit for field sample SWMU 13-7 (0.5-2'), SWMU 13-7 (2-4'), and SWMU 13-7 (22-24'). Low surrogate recovery was affected by required sample dilution; however, the LCS recovery data is within range and the data are not qualified.

Lab Report 1410360

- Surrogate recovery for bromofluorobenzene (BFB) was above the upper acceptance limit for field sample SWMU 13-15 (12-14'), SWMU 13-15 (14-16'), and SWMU 13-15 (24-26'). The associated field sample results for gasoline range organics (GRO) are qualified J+ due to a potential high bias.

Lab Report 1410522

- Surrogate recovery for bromofluorobenzene (BFB) was above the upper acceptance limit for field sample SWMU 13-19 (26-28'). The associated field

sample results for gasoline range organics (GRO) are qualified J+ due to a potential high bias.

- Surrogate recoveries for di-n-octyl phthalate (DNOP) was below the lower acceptance limit for field sample SWMU 13-19 (26-28'). Low surrogate recovery was affected by required sample dilution; however, the LCS recovery data is within range and the data are not qualified.

Lab Report 1410523

- Surrogate recovery for bromofluorobenzene (BFB) was above the upper acceptance limit for field sample SWMU 13-13 (24-26'). The associated field sample results for gasoline range organics (GRO) are qualified J+ due to a potential high bias.
- Surrogate recoveries for di-n-octyl phthalate (DNOP) was below the lower acceptance limit for field sample SWMU 13-13 (24-26'). Low surrogate recovery was affected by required sample dilution; however, the LCS recovery data is within range and the data are not qualified.

Lab Report 1410523

- One of the surrogate recovery compounds (2,4,6-tribomophenol) for the SVOC analysis of sample MW-76 for was below the lower acceptance limit (13.5% vs. 16.3%) for field sample MW-76. All of the other surrogate recovery percentages were within the limits and the LCS recoveries were within limits. The sample results for SVOCs are not qualified.
- Surrogate recovery for bromofluorobenzene (BFB) was above the upper acceptance limit for field sample MW-76. The associated field sample results for gasoline range organics (GRO) are qualified J+ due to a potential high bias.

Lab Report 1412839

- One of the surrogate recovery compounds (4-Terphenol-d14) percentage recoveries for the SVOC analyses of samples MW-75 and MW-76 were below the lower acceptance limit (45% and 38.6%, respectively, vs. 47.6%). All of the other surrogate recovery percentages were within the limits and the LCS recoveries were within limits. The sample results for SVOCs are not qualified.

1.6 LCS RECOVERY AND RELATIVE PERCENT DIFFERENCE

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate, but the analyte was not detected in the associated batch, then data qualification was not required.

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J+" to account for a potential high bias.
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J-" for detected results) to account for a potential low bias.

LCS/LCSD percent recoveries and relative percent differences (RPDs) were within acceptance limits and no qualification was required.

1.7 MS/MSD RECOVERY AND RELATIVE PERCENT DIFFERENCE

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If the MS or MSD recovery for an analyte was above acceptance limits but the analyte was not detected in the associated analytical batch, then data qualification was not required.
- If the MS or MSD recovery for an analyte was above acceptance limits and the analyte was detected in the associated analytical batch, then analyte results were qualified "J+" to account for a potential high bias.
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch with a "J-".
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

Some lab reports do not report MS/MSD results if none of the samples included under that report were used for the MS/MSD; however, in many instances the sample used for the MS/MSD was a sample of similar matrix materials submitted by Western in a different data set and its MS/MSD results were included in other lab reports, which are included in this data validation review. MS/MSD percent recoveries and RPDs were within acceptance limits except for the following:

- The MS/MSD percent recoveries for mercury (49.51% / 52.2%) was below the lower acceptance limit of 75% for analytical batch 15805. For the associated field sample results that are non-detect, data qualification "UJ" was required to indicate a potential low bias for the associated samples. For the samples with detected results, the data qualifier "J-" was used to show a potential low bias.
- The MS/MSD percent recoveries for antimony (54.5% / 57.8%) and barium (72.3% / 42.1%) were below the lower acceptance limit of 75% for analytical batch 15559. For the associated field sample results that are non-detect, data qualification "UJ" was required to indicate a potential low bias for the associated

samples. For the samples with detected results, the data qualifier "J-" was used to show a potential low bias.

- The MS percent recoveries for mercury (1591%) was above the upper acceptance limit of 125% for analytical batch 15734; however, the MSD and LCS recoveries are both within limits and the results are not qualified.
- The MS/MSD percent recoveries for antimony (38.1% / 35.9%) were below the lower acceptance limit of 75% for analytical batch 15639. For the associated field sample results that are non-detect, data qualification "UJ" was required to indicate a potential low bias for the associated samples.
- The MS percent recovery for N-Nitrosodi-n-propylamine was slightly low (55.6 vs. 58.6) in batch 15576; however, the MSD recovery was within range and all associated LCS sample recoveries are within limits. The results are not qualified.
- The MS/MSD percent recoveries for antimony (35.9% / 36%) were below the lower acceptance limit of 75% for analytical batch 15704. For the associated field sample results that are non-detect, data qualification "UJ" was required to indicate a potential low bias for the associated samples.
- The MS/MSD percent recoveries for barium (72.6% / -45.4%) were below the lower acceptance limit of 75% for analytical batch 15704. The associated field sample results that have detected values are estimated with the data qualification "J-" to indicate a potential low bias for the associated samples.
- The MS/MSD percent recoveries for chromium (67.5% / 69.9%) were below the lower acceptance limit of 75% for analytical batch 15704. The associated field sample results that have detected values are estimated with the data qualification "J-" to indicate a potential low bias for the associated samples.
- The MS percent recoveries for selenium (74.1%) was slightly below the lower acceptance limit of 75% for analytical batch 15704. The MSD percent recovery was within the limits and LCS recovery was within limits, thus the associated field sample results are not qualified.
- The MSD percent recoveries for zinc (65.6%) was below the lower acceptance limit of 75% for analytical batch 15704. The MS percent recovery was within the limits and LCS recovery was within limits, thus the associated field sample results are not qualified.
- The MS/MSD percent recoveries for DRO were below the lower acceptance limit of 40.1% for analytical batch 15574. The LCS recovery was within limits, thus the associated field sample results are not all qualified. As discussed under the surrogate section, some of the associated samples [SWMU 13-4 (6-8') and SWMU 13-5 (24-26')] had additional issues and were qualified accordingly
- The MS percent recovery for sulfate (112%) was slightly above the upper limit of 111 in batch 22290; however, the MSD recovery was in limits and the LCS is in limits and the data are not qualified.

- The MS/MSD percent recoveries were above range for benzene and toluene in batch 22448; however, the sample results for the associated samples exceed the calibration range. The sample results are qualified as "J+" for a high bias.
- The MS percent recoveries for three SVOCs and one associated surrogate in batch 16261 were outside the limits. The MSD percent recoveries for one SVOC and two associated surrogates were outside limits. All associated LCS recoveries were within limits and the variances are attributed to matrix interference and/or sample dilution; none of the associated results are qualified.
- The MS percent recovery for 1,1-dichloroethene (69.8%) in batch 15395 was slightly below the lower limit of 70%; however, the MSD percent recovery was within limits and the LCS recovery was within limits. The results are not qualified.
- The MS percent recovery for N-nitrosodi-n-propylamine (53.8%) in batch 15370 was slightly below the lower limit of 58.6%; however, the MSD percent recovery was within limits and the LCS recovery was within limits. The results are not qualified.
- The MS/MSD percent recoveries for antimony (45.6% / 46.3%) and barium (-128% / -26.7%) are all below the lower limit of 75% in batch 15466. However, the associated LCSs are all within limits and the lower MS/MSD recoveries are attributed to matrix interference and/or dilution; no results are qualified.
- The MS/MSD percent recoveries for N-nitrosodi-n-propylamine (50.7% / 52.9%) in batch 15483 were slightly below the lower limit of 58.6%; however, the LCS recovery was within limits. The results are not qualified.
- The MS/MSD percent recoveries for antimony (42.1% / 44.1%) are below the lower limit of 75% in batch 15701. The LCS recovery was within limits; however, the associated laboratory results are qualified as UJ (low bias) as the results are all none detect.
- The MSD percent recovery for barium (181%) was above the upper limit of 125% in batch 15701, but the MS and LCS recoveries were within limits, thus no associated results were qualified.
- The MS/MSD percent recoveries for benzene (69.5% / 59.2%) were below the lower limit of 70% in batch 15799 but the LCS recovery was within the limits. All other constituents in batch 15799 were within limits and the data are not qualified.
- The MS/MSD percent recoveries for mercury (-87.5% / -60.6%) were below the lower limit of 75% in batch 15939 but the LCS recovery was within the limits. The low recovery is thought to be the result of matrix interference, but all associated results are qualified.
- In laboratory batch 15884, the MS and MSD percent recoveries for antimony, barium, chromium, cobalt, selenium, and silver are below their limits and the results are qualified. The MS is below the limit for lead, but the MSD is within limits and the lead results are not qualified. The MS and MSD are both above the limit for zinc and the results are qualified. The MSD for vanadium is above the

limit, but the MS is within limits; the vanadium results are not qualified. The associated LCS percent recoveries are all within their limits.

- One of the surrogates (4-bromfluorobenzene) for the MS/MSD analyses in batch 15847 (VOCs) had a recovery percentage above the upper limit, but all other surrogates and analytes recovered within the limits and the data are not qualified.

1.8 DUPLICATES

1.8.1 Field Duplicates

Field duplicates were collected at a rate as stated in the approved Group 9 Investigation work Plan. The RPDs between the field duplicate and its associated sample were calculated and are presented in Table A-3. The field duplicates were evaluated by the following criteria:

- If an analyte was detected at a concentration greater than five times the method reporting limit, the RPD should be less than 35 percent for soil and 25 percent for ground water samples.
- If an analyte was detected at a concentration that is less than five times the method reporting limit, then the difference between the sample and the field duplicate should not exceed the method reporting limit.
- Duplicate RPDs are calculated by dividing the difference of the concentrations by the average of the concentrations.

Field duplicate RPDs were within acceptance limits except for the following:

- GRO and DRO for field sample SWMU 12-3 (0.5-2');
- DRO, MRO, beryllium, lead, and nickel for field sample SWMU 13-8 (0.5-2');
- DRO and mercury for field sample SWMU 13-27 (0.5-2');
- 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, 1-Methylnaphthalene, 2-Methylnaphthalene, Ethylbenzene, Isopropylbenzene, Naphthalene, sec-Butylbenzene, Zinc, and Mercury for field sample SWMU 14-3 (0.5-2');
- DRO, barium (total), calcium (total), and zinc (total) for field sample MW-76 (collection date 12/16/2014); and
- 1-Methylnaphthalene, 2-Methylnaphthalene, 2-Methylphenol, Sulfate, and Zinc for field sample MW-74(collection date 11/6/2014).

2.0 COMPLETENESS SUMMARY

The following equation was used to calculate the technical completeness:

$$\%\ \text{Technical Completeness} = \left(\frac{\text{Number of usable results}}{\text{Number of reported results}}\right) \times 100$$

The technical completeness attained for Group 9 RCRA Investigation activities was 100 percent. The completeness results are provided in Table A-4. The analytical results for the required analytes per the approved Group 9 Work Plan were considered usable for the intended purposes and the project DQOs have been met.

Table A-1
Sample Identification
Group 9 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

Sample ID	Lab ID	Date Collected	Sample Type
SWMU 14-4 0-0.5'	1409812-001	9/15/2014	N
SWMU 14-4 0.5-2.0'	1409812-002	9/15/2014	N
SWMU 14-3 0-0.5'	1409812-003	9/16/2014	N
SWMU 14-3 0.5-2.0'	1409812-004	9/16/2014	N
SWMU 14-3 4-6'	1409812-005	9/15/2014	N
SWMU 14-3 14-16'	1409812-006	9/16/2014	N
SWMU 14-3 DUP01	1409812-007	9/17/2014	FD
SWMU 14-5 (0-0.5')	1409955-001	9/17/2014	N
SWMU 14-5 (0.5-2.0')	1409955-002	9/17/2014	N
SWMU 14-5 (16-18')	1409955-003	9/17/2014	N
SWMU 14-5 (26-28')	1409955-004	9/17/2014	N
SWMU 14-1 (0-0.5')	1409955-005	9/17/2014	N
SWMU 14-1 (0.5-2.0')	1409955-006	9/17/2014	N
SWMU 14-1 (8-10')	1409955-007	9/17/2014	N
SWMU 14-1 (18-20')	1409955-008	9/17/2014	N
SWMU 14-2 (0-0.5')	1409955-009	9/17/2014	N
SWMU 14-2 (0.5-2')	1409955-010	9/17/2014	N
SWMU 14-2 (18-20')	1409955-011	9/17/2014	N
SWMU 14-2 (20-22')	1409955-012	9/18/2014	N
SWMU 14 EB01	1409961-001	9/18/2014	EB
SWMU 14 FB01	1409961-002	9/18/2014	FB
SWMU 13-10 (0-0.5')	1409B75-001	9/19/2014	N
SWMU 13-10 (0.5-2')	1409b75-002	9/19/2014	N
SWMU 13-10 (24-26')	1409B75-003	9/19/2014	N
SWMU 13-10 (26-28')	1409B75-004	9/19/2014	N
SWMU 13-1 (0.5-2')	1409B77-001	9/22/2014	N
SWMU 13-1 (12-14')	1409B77-002	9/22/2014	N
SWMU 13-1 (26'28')	1409B77-003	9/22/2014	N
SWMU 13-2 (0.5-2')	1409B77-004	9/22/2014	N
SWMU 13-2 (24-26')	1409B77-005	9/22/2014	N
SWMU 13-2 (26-28')	1409B77-006	9/22/2014	N
SWMU 14-4 (6-8')	1409B79-001	9/18/2014	N
SWMU 14-4 (18-20')	1409B79-002	9/18/2014	N
SWMU 13-18 (0-0.5')	1409b80-001	9/19/2014	N
SWMU 13-18 (0.5-2')	1409b80-002	9/19/2014	N
SWMU 13-18 (12-14')	1409b80-003	9/19/2014	N
SWMU 13-18 (22-24')	1409B80-004	9/19/2014	N
SWMU 13-18 (24-26')	1409B80-005	9/19/2014	N
SWMU 12-3 (0-0.5')	1409C40-001	9/23/2014	N
SWMU 12-3 (0.5-2')	1409C40-002	9/23/2014	N
SWMU 12-3 (2-4')	1409C40-003	9/23/2014	N
SWMU 12-3 (22-24')	1409C40-004	9/23/2014	N
SWMU 12-3 (26-28')	1409C40-005	9/23/2014	N
SWMU 12-2 (0-0.5')	1409C40-006	9/23/2014	N
SWMU 12-2 (0.5-2')	1409C40-007	9/23/2014	N
SWMU 12-2 (6-8')	1409c40-008	9/23/2014	N
SWMU 12-2 (22-24')	1409C40-009	9/23/2014	N
SWMU 12 DUP01	1409C40-010	9/23/2014	FD
SWMU 13-3 (0.5-2)	1409c41-001	9/23/2014	N
SWMU 13-3 (4-6')	1409C41-002	9/23/2014	N
SWMU 13-3 (26-28')	1409C41-003	9/23/2014	N
SWMU 12 EB01	1409C42-001	9/23/2014	EB
SWMU 12 FB01	1409C42-002	9/23/2014	FB
SWMU 13-8 (0-0.5)	1409E14-001	9/26/2014	N
SWMU 13-8 (0.5-2')	1409E14-002	9/26/2014	N
SWMU 13-8 (22-24')	1409E14-003	9/26/2014	N
SWMU 13-8 (24-26')	1409E14-004	9/26/2014	N
SWMU 13 EB01	1409E15-001	9/25/2014	EB
SWMU 13 FB01	1409E15-002	9/25/2014	FB
SWMU 13 DUP01	1409E41-001	9/26/2014	FD
SWMU 13-16 (0-0.5')	1409e42-001	9/24/2014	N

Table A-1
Sample Identification
Group 9 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

Sample ID	Lab ID	Date Collected	Sample Type
SWMU 13-16 (0.5-2')	1409e42-002	9/24/2014	N
SWMU 13-16 (18-20')	1409E42-003	9/24/2014	N
SWMU 13-16 (26-28')	1409E42-004	9/24/2014	N
SWMU 13-4 (0.5-2')	1409E43-001	9/25/2014	N
SWMU 13-4 (6-8')	1409E43-002	9/25/2014	N
SWMU 13-4 (24-26')	1409E43-003	9/25/2014	N
SWMU 13-5 (0-0.5')	1409e43-004	9/25/2014	N
SWMU 13-5 (0.5-2')	1409e43-005	9/25/2014	N
SWMU 13-5 (10-12')	1409E43-006	9/25/2014	N
SWMU 13-5 (24-26')	1409E43-007	9/25/2014	N
SWMU 12-1 (0.5-2')	1409e44-001	9/24/2014	N
SWMU 12-1 (4-6')	1409e44-002	9/24/2014	N
SWMU 12-1 (24-26')	1409E44-003	9/24/2014	N
SWMU 13-23 (0-0.5')	1410011-001	9/29/2014	N
SWMU 13-24 (0-0.5')	1410011-002	9/29/2014	N
SWMU 13-25 (0-0.5')	1410011-003	9/29/2014	N
SWMU 13-26 (0-0.5')	1410011-004	9/29/2014	N
SWMU 13-20 (0-0.5')	1410011-005	9/29/2014	N
SWMU 13-21 (0-0.5')	1410011-006	9/29/2014	N
SWMU 13-22 (0-0.5')	1410011-007	9/29/2014	N
SWMU 13-27 (0-0.5')	1410080-001	9/30/2014	N
SWMU 13-28 (0-0.5')	1410080-002	9/30/2014	N
SWMU 13-29 (0-0.5')	1410080-003	9/30/2014	N
SWMU 13 DUP02	1410080-004	9/30/2014	FD
SWMU 13-17 (0-0.5')	1410080-005	9/30/2014	N
SWMU 13-17 (0.5-2')	1410080-006	9/30/2014	N
SWMU 13-17 (6-8')	1410080-007	9/30/2014	N
SWMU 13-17 (24-26')	1410080-008	9/30/2014	N
SWMU 13-30 (0-0.5')	1410091-001	9/30/2014	N
SWMU 13-6 (0.5-2')	1410212-001	10/3/2014	N
SWMU 13-6 (10-12')	1410212-002	10/3/2014	N
SWMU 13-6(24-26')	1410212-003	10/3/2014	N
SWMU 13-12 (0-0.5')	1410213-001	10/2/2014	N
SWMU 13-12 (0.5-2')	1410213-002	10/2/2014	N
SWMU 13-12 (16-18')	1410213-003	10/2/2014	N
SWMU 13-12 (24-26')	1410213-004	10/2/2014	N
SWMU 13-14 (0.5-2')	1410214-001	10/2/2014	N
SWMU 13-14 (2-4')	1410214-002	10/2/2014	N
SWMU 13-14 (26-28')	1410214-003	10/2/2014	N
SWMU 13-11 (0-0.5')	1410215-003	10/2/2014	N
SWMU 13-11 (0.5-2')	1410215-003	10/2/2014	N
SWMU 13-11 (26-28')	1410215-003	10/2/2014	N
SWMU 13-7 (0-0.5')	1410359-001	10/6/2014	N
SWMU 13-7 (0.5-2')	1410359-002	10/6/2014	N
SWMU 13-7 (2-4')	1410359-003	10/6/2014	N
SWMU 13-7 (14-16')	1410359-004	10/6/2014	N
SWMU 13-7 (22-24')	1410359-005	10/6/2014	N
SWMU 13-15 (0-0.5')	1410360-001	10/6/2014	N
SWMU 13-15 (0.5-2')	1410360-002	10/6/2014	N
SWMU 13-15 (12-14')	1410360-003	10/6/2014	N
SWMU 13-15 (14-16')	1410360-004	10/6/2014	N
SWMU 13-15 (24-26')	1410360-005	10/6/2014	N
SWMU 13-19 (0.5-2')	1410522-001	10/8/2014	N
SWMU 13-19 (12-14')	1410522-002	10/8/2014	N
SWMU 13-19 (26-28')	1410522-003	10/8/2014	N
SWMU 13-13 (0-0.5')	1410523-004	10/7/2014	N
SWMU 13-13 (0.5-2')	1410523-004	10/7/2014	N
SWMU 13-13 (10-12')	1410523-004	10/7/2014	N
SWMU 13-13 (24-26')	1410523-004	10/7/2014	N
MW-71	1410e28-001	10/30/2014	N
MW-77	1410e28-002	10/30/2014	N

Table A-1
Sample Identification
Group 9 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

Sample ID	Lab ID	Date Collected	Sample Type
MW-72	1411265-001	11/6/2014	N
MW-73	1411267-001	11/6/2014	N
EB01	1411268-001	11/6/2014	EB
FB01	1411269-001	11/6/2014	FB
GW DUP 01	1411270-001	11/6/2014	FD
MW-74	1411271-001	11/6/2014	N
MW-75	1411272-001	11/6/2014	N
MW-76	1411273-001	11/6/2014	N
MW-72	1412839-001	12/16/2014	N
MW-73	1412839-002	12/16/2014	N
MW-75	1412839-003	12/16/2014	N
MW-76	1412839-004	12/16/2014	N
MW-76D	1412839-005	12/16/2014	FD

Notes:

N = Normal field sample
FD = Field duplicate
FB = Field Blank
TB = Trip Blank
EB = Equipment Blank
GW = Groundwater

Table A-2
Qualified Data
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Western Refining Southwest, Inc. - Bloomfield Refinery

Sample ID	Date Collected	Analyte	Result	Units	Matrix	Qualifier	Comments
SWMU 13-10 (0-0.5')	9/19/2014	GRO	14	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-10 (0.5-2')	9/19/2014	GRO	8.3	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-10 (24-26')	9/19/2014	GRO	52	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-10 (26-28')	9/19/2014	GRO	44	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-10 (0-0.5')	9/19/2014	mercury	0.62	mg/kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-10 (0.5-2')	9/19/2014	mercury	<0.035	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-10 (24-26')	9/19/2014	mercury	<0.032	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-10 (26-28')	9/19/2014	mercury	<0.035	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-1 (12-14')	9/19/2014	Gasoline Range Organics (GRO)	3000	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-1 (26-28')	9/19/2014	GRO	130	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-2 (24-26')	9/19/2014	GRO	20	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-2 (26-28')	9/19/2014	GRO	160	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 14-4 (18-20')	9/18/2014	GRO	7.1	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-18 (0-0.5')	9/19/2014	Antimony	<2.7	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-18 (0-0.5')	9/19/2014	Barium	180	mg/kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-18 (12-14')	9/19/2014	Antimony	<5.7	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-18 (12-14')	9/19/2014	Barium	220	mg/kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-18 (22-24')	9/19/2014	Antimony	<2.5	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-18 (22-24')	9/19/2014	Barium	57	mg/kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-18 (24-26')	9/19/2014	Antimony	<2.5	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-18 (24-26')	9/19/2014	Barium	50	mg/kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-18 (0-0.5')	9/19/2014	GRO	171	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-18 (24-26')	9/19/2014	GRO	167	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 12-3 (0.5-2')	9/23/2014	GRO	810	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 12-3 (2-4')	9/23/2014	GRO	88	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 12-3 (22-24')	9/23/2014	GRO	41	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 12-3 (26-28')	9/23/2014	GRO	140	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 12 DUP01	9/23/2014	GRO	1500	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 12-3 (0-0.5')	9/23/2014	Antimony	<2.5	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 12-3 (0.5-2')	9/23/2014	Antimony	<2.7	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 12-3 (2-4')	9/23/2014	Antimony	<2.6	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.

Table A-2
Qualified Data
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Sample ID	Date Collected	Analyte	Result	Units	Matrix	Qualifier	Comments
SWMU 12-3 (22-24')	9/23/2014	Antimony	<2.6	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 12-3 (26-28')	9/23/2014	Antimony	<2.5	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 12-2 (0-0.5')	9/23/2014	Antimony	<2.7	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 12-2 (0.5-2')	9/23/2014	Antimony	<2.6	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 12-2 (6-8')	9/23/2014	Antimony	<2.8	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 12-2 (22-24')	9/23/2014	Antimony	<2.5	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 12 DUP01	9/23/2014	Antimony	<2.7	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-3 (4-6')	9/23/2014	GRO	1800	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-3 (26-28')	9/23/2014	GRO	520	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-8 (0-0.5')	9/26/2014	Antimony	<2.6	mg/Kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-8 (0-0.5')	9/26/2014	Barium	240	mg/Kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-8 (0-0.5')	9/26/2014	Chromium	7.5	mg/Kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-8 (2-4')	9/26/2014	Antimony	<2.8	mg/Kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-8 (2-4')	9/26/2014	Barium	210	mg/Kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-8 (2-4')	9/26/2014	Chromium	8	mg/Kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-8 (22-24')	9/26/2014	Antimony	<2.5	mg/Kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-8 (22-24')	9/26/2014	Barium	130	mg/Kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-8 (22-24')	9/26/2014	Chromium	3.3	mg/Kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-8 (24-26')	9/26/2014	Antimony	<2.7	mg/Kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-8 (24-26')	9/26/2014	Barium	140	mg/Kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-8 (24-26')	9/26/2014	Chromium	12	mg/Kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13 DUP 01	9/26/2014	Antimony	<2.	mg/Kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13 DUP 01	9/26/2014	Barium	190	mg/Kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13 DUP 01	9/26/2014	Chromium	8.4	mg/Kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 12-1 (4-6')	9/24/2014	GRO	14	mg/Kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-16 0-0.5')	9/24/2014	GRO	12	mg/Kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-16 (26-28')	9/24/2014	GRO	19	mg/Kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-4 (6-8')	9/25/2014	Diesel Range Organics DRO)	980	mg/Kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-4 (6-8')	9/25/2014	Motor Oil Range Organics (MRO)	1300	mg/Kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-5 (24-26')	9/25/2014	DRO	4500	mg/Kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.

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Sample ID	Date Collected	Analyte	Result	Units	Matrix	Qualifier	Comments
SWMU 13-5 (24-26')	9/25/2014	MRO	<520	mg/Kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
MW-71	10/30/2014	Benzene	17	mg/l	water	J+	Qualified high bias, out of calibration range
MW-71	10/30/2014	Toluene	12	mg/l	water	J+	Qualified high bias, out of calibration range
MW-77	10/30/2014	Benzene	1.4	mg/l	water	J+	Qualified high bias, out of calibration range
MW-77	10/30/2014	Toluene		mg/l	water	J+	Qualified high bias, out of calibration range
MW-71	10/30/2014	bis(2-ethylhexyl)phthalate	0.011	mg/l	water	J+	Qualified high bias, out of calibration range
MW-77	10/30/2014	bis(2-ethylhexyl)phthalate	0.036	mg/l	water	J+	Qualified high bias, out of calibration range
SWMU 14-3 (0.5-2')	9/16/2014	GRO	30	mg/Kg	Soil	J+	Qualified high bias, out of calibration range
SWMU 14-3 (14-16')	9/16/2014	GRO	49	mg/Kg	Soil	J+	Qualified high bias, out of calibration range
SWMU 14-5 (0.5-2')	9/1/2014	GRO	<3.3	mg/Kg	Soil	UJ	Qualified low bias due to low surrogate recovery.
SWMU 14-5 (26-28')	9/17/2014	GRO	3700	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 14-1 (18-20')	9/17/2014	GRO	82	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 14-2 (18-20')	9/17/2014	GRO	45	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 14-2 (20-22')	9/18/2014	GRO	470	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-23 (0-0.5')	9/29/2014	Antimony	<2.8	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-24 (0-0.5')	9/29/2014	Antimony	<2.8	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-25 (0-0.5')	9/29/2014	Antimony	<2.8	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-26 (0-0.5')	9/29/2014	Antimony	<2.6	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-20 (0-0.5')	9/29/2014	Antimony	<2.8	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-21 (0-0.5')	9/29/2014	Antimony	<2.7	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-22 (0-0.5')	9/29/2014	Antimony	<2.7	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-17 (6-8')	9/30/2014	GRO	25	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-17 (24-26')	9/30/2014	GRO	55	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-6 (0.5-2')	10/3/2014	GRO	5.1	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-6 (24-26')	10/3/2014	GRO	29	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-14 (0.5-2')	10/2/2014	GRO	110	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-14 (2-4')	10/2/2014	GRO	57	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-14 (26-28')	10/2/2014	GRO	52	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-7 (0-0.5')	10/6/2014	mercury	0.58	mg/kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (0.5-2')	10/6/2014	mercury	<0.037	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.

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Sample ID	Date Collected	Analyte	Result	Units	Matrix	Qualifier	Comments
SWMU 13-7 (2-4')	10/6/2014	mercury	<0.039	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (14-16')	10/6/2014	mercury	<0.036	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (22-24')	10/6/2014	mercury	<0.034	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (0-0.5')	10/6/2014	antimony	<3.0	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (0.5-2')	10/6/2014	antimony	<5.5	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (2-4')	10/6/2014	antimony	<5.7	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (14-16')	10/6/2014	antimony	<2.7	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (22-24')	10/6/2014	antimony	<2.6	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (0-0.5')	10/6/2014	barium	160	mg/kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (0.5-2')	10/6/2014	barium	200	mg/kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (2-4')	10/6/2014	barium	230	mg/kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (14-16')	10/6/2014	barium	120	mg/kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (22-24')	10/6/2014	barium	160	mg/kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (0-0.5')	10/6/2014	chromium	33	mg/kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (0.5-2')	10/6/2014	chromium	8.4	mg/kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (2-4')	10/6/2014	chromium	8.4	mg/kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (14-16')	10/6/2014	chromium	4.4	mg/kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (22-24')	10/6/2014	chromium	3.6	mg/kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (0-0.5')	10/6/2014	cobalt	4.9	mg/kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (0.5-2')	10/6/2014	cobalt	5.9	mg/kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (2-4')	10/6/2014	cobalt	6.5	mg/kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (14-16')	10/6/2014	cobalt	3.2	mg/kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (22-24')	10/6/2014	cobalt	2.5	mg/kg	Soil	J-	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (0-0.5')	10/6/2014	selenium	<3	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (0.5-2')	10/6/2014	selenium	<5.5	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (2-4')	10/6/2014	selenium	<5.7	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (14-16')	10/6/2014	selenium	<2.7	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (22-24')	10/6/2014	selenium	<2.6	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (0-0.5')	10/6/2014	silver	<0.3	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (0.5-2')	10/6/2014	silver	<0.55	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (2-4')	10/6/2014	silver	<0.57	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.

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Sample ID	Date Collected	Analyte	Result	Units	Matrix	Qualifier	Comments
SWMU 13-7 (14-16')	10/6/2014	silver	<0.27	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (22-24')	10/6/2014	silver	<0.26	mg/kg	Soil	UJ	Qualified low bias due to low MS/MSD recoveries.
SWMU 13-7 (0-0.5')	10/6/2014	zinc	93	mg/kg	Soil	J+	Qualified high bias due to high MS/MSD recovery
SWMU 13-7 (0.5-2')	10/6/2014	zinc	42	mg/kg	Soil	J+	Qualified high bias due to high MS/MSD recovery
SWMU 13-7 (2-4')	10/6/2014	zinc	45	mg/kg	Soil	J+	Qualified high bias due to high MS/MSD recovery
SWMU 13-7 (14-16')	10/6/2014	zinc	21	mg/kg	Soil	J+	Qualified high bias due to high MS/MSD recovery
SWMU 13-7 (22-24')	10/6/2014	zinc	11	mg/kg	Soil	J+	Qualified high bias due to high MS/MSD recovery
SWMU 13-15 (12-14')	10/6/2014	GRO	170	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-15 (14-16')	10/6/2014	GRO	170	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-15 (24-26')	10/6/2014	GRO	42	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.
SWMU 13-13 (24-26')	10/7/2014	GRO	130	mg/kg	Soil	J+	Qualified high bias due to high surrogate recovery.

Notes:

UJ = estimated reporting limit

J- = Low bias

J+ = High bias

Table A-3
Field Duplicate Summary
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Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 12-3 (0.5-2.0') Sample Result	DUP01 Field Duplicate	RPD (%)
TPH (mg/kg-dry):	Gasoline Range Organics (GRO)	3.9	1500	**199.0**
	Diesel Range Organics (DRO)	71	1700	**184.0**
	Motor Oil Range Organics (MRO)	120	< 550	NC
VOCs (ug/kg-dry)	1,1,1,2-Tetrachloroethane	< 0.032	< 0.72	NC
	1,1,1-Trichloroethane	< 0.032	< 0.72	NC
	1,1,2,2-Tetrachloroethane	< 0.032	< 0.72	NC
	1,1,2-Trichloroethane	< 0.032	< 0.72	NC
	1,1-Dichloroethane	< 0.032	< 0.72	NC
	1,1-Dichloroethene	< 0.032	< 0.72	NC
	1,1-Dichloropropene	< 0.065	< 1.4	NC
	1,2,3-Trichlorobenzene	< 0.065	< 1.4	NC
	1,2,3-Trichloropropane	< 0.065	< 1.4	NC
	1,2,4-Trichlorobenzene	< 0.032	< 0.72	NC
	1,2,4-Trimethylbenzene	< 0.032	< 0.72	NC
	1,2-Dibromo-3-chloropropane	< 0.065	< 1.4	NC
	1,2-Dibromoethane (EDB)	< 0.032	< 0.72	NC
	1,2-Dichlorobenzene	< 0.032	< 0.72	NC
	1,2-Dichloroethane (EDC)	< 0.032	< 0.72	NC
	1,2-Dichloropropane	< 0.032	< 0.72	NC
	1,3,5-Trimethylbenzene	< 0.032	< 0.72	NC
	1,3-Dichlorobenzene	< 0.032	< 0.72	NC
	1,3-Dichloropropane	< 0.032	< 0.72	NC
	1,4-Dichlorobenzene	< 0.032	< 0.72	NC
	1-Methylnaphthalene	< 0.13	5.4	NC
	2,2-Dichloropropane	< 0.065	< 1.4	NC
	2-Butanone	< 0.32	< 7.2	NC
	2-Chlorotoluene	< 0.032	< 0.72	NC
	2-Hexanone	< 0.32	< 7.2	NC
	2-Methylnaphthalene	< 0.13	6.2	NC
	4-Chlorotoluene	< 0.032	< 0.72	NC
	4-Isopropyltoluene	< 0.032	< 0.72	NC
	4-Methyl-2-pentanone	< 0.32	< 7.2	NC
	Acetone	< 0.48	< 11	NC
	Benzene	< 0.032	< 0.72	NC
	Bromobenzene	< 0.032	< 0.72	NC
	Bromodichloromethane	< 0.032	< 0.72	NC
	Bromoform	< 0.032	< 0.72	NC
	Bromomethane	< 0.097	< 2.1	NC
	Carbon disulfide	< 0.32	< 7.2	NC
	Carbon tetrachloride	< 0.032	< 0.72	NC
	Chlorobenzene	< 0.032	< 0.72	NC
	Chloroethane	< 0.065	< 1.4	NC
	Chloroform	< 0.032	< 0.72	NC
	Chloromethane	< 0.097	< 2.1	NC
	cis-1,2-DCE	< 0.032	< 0.72	NC
	cis-1,3-Dichloropropene	< 0.032	< 0.72	NC
	Dibromochloromethane	< 0.032	< 0.72	NC
	Dibromomethane	< 0.032	< 0.72	NC
	Dichlorodifluoromethane	< 0.032	< 0.72	NC
	Ethylbenzene	< 0.032	< 0.72	NC
	Hexachlorobutadiene	< 0.065	< 1.4	NC
	Isopropylbenzene	< 0.032	< 0.72	NC
	Methyl tert-butyl ether (MTBE)	< 0.032	< 0.72	NC
	Methylene chloride	< 0.097	< 2.1	NC
	Naphthalene	< 0.097	1.5	NC
	n-Butylbenzene	< 0.032	< 2.1	NC
	n-Propylbenzene	< 0.065	< 0.72	NC
	sec-Butylbenzene	< 0.032	< 0.72	NC
	Styrene	< 0.032	< 0.72	NC
	tert-Butylbenzene	< 0.032	< 0.72	NC
	Tetrachloroethene (PCE)	< 0.032	< 0.72	NC
	Toluene	< 0.032	< 0.72	NC
	trans-1,2-DCE	< 0.032	< 0.72	NC
	trans-1,3-Dichloropropene	< 0.032	< 0.72	NC
	Trichloroethene (TCE)	< 0.032	< 0.72	NC
	Trichlorofluoromethane	< 0.032	< 0.72	NC
	Vinyl chloride	< 0.032	< 0.72	NC
	Xylenes, Total	< 0.065	< 1.4	NC

Table A-3
Field Duplicate Summary
Group 9 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 12-3 (0.5-2.0') Sample Result	DUP01 Field Duplicate	RPD (%)
SVOCs (mg/kg-dry):	1,2,4-Trichlorobenzene	< 0.41	< 2.2	NC
	1,2-Dichlorobenzene	< 0.41	< 2.2	NC
	1,3-Dichlorobenzene	< 0.41	< 2.2	NC
	1,4-Dichlorobenzene	< 0.41	< 2.2	NC
	1-Methylnaphthalene	< 0.41	8.1	NC
	2,4,5-Trichlorophenol	< 0.41	< 2.2	NC
	2,4,6-Trichlorophenol	< 0.41	< 2.2	NC
	2,4-Dichlorophenol	< 0.82	< 4.3	NC
	2,4-Dimethylphenol	< 0.62	< 3.3	NC
	2,4-Dinitrophenol	< 1.0	< 5.4	NC
	2,4-Dinitrotoluene	< 1.0	< 5.4	NC
	2,6-Dinitrotoluene	< 1.0	< 5.4	NC
	2-Chloronaphthalene	< 0.52	< 2.7	NC
	2-Chlorophenol	< 0.41	< 2.2	NC
	2-Methylnaphthalene	< 0.41	8.4	NC
	2-Methylphenol	< 1.0	< 5.4	NC
	2-Nitroaniline	< 0.41	< 2.2	NC
	2-Nitrophenol	< 0.41	< 2.2	NC
	3,3´-Dichlorobenzidine	< 0.41	< 2.7	NC
	3+4-Methylphenol	< 0.52	< 2.2	NC
	3-Nitroaniline	< 0.41	< 2.2	NC
	4,6-Dinitro-2-methylphenol	< 1.0	< 5.4	NC
	4-Bromophenyl phenyl ether	< 0.41	< 2.2	NC
	4-Chloro-3-methylphenol	< 1.0	< 5.4	NC
	4-Chloroaniline	< 1.0	< 5.4	NC
	4-Chlorophenyl phenyl ether	< 0.41	< 2.2	NC
	4-Nitroaniline	< 0.82	< 4.3	NC
	4-Nitrophenol	< 0.52	< 2.7	NC
	Acenaphthene	< 0.41	< 2.2	NC
	Acenaphthylene	< 0.41	< 2.2	NC
	Aniline	< 0.41	< 2.2	NC
	Anthracene	< 0.41	< 2.2	NC
	Azobenzene	< 0.41	< 2.2	NC
	Benz(a)anthracene	< 0.41	< 2.2	NC
	Benzo(a)pyrene	< 0.41	< 2.2	NC
	Benzo(b)fluoranthene	< 0.41	< 2.2	NC
	Benzo(g,h,i)perylene	< 0.41	< 2.2	NC
	Benzo(k)fluoranthene	< 0.41	< 2.2	NC
	Benzoic acid	< 1.0	< 5.4	NC
	Benzyl alcohol	< 0.41	< 2.2	NC
	Bis(2-chloroethoxy)methane	< 0.41	< 2.2	NC
	Bis(2-chloroethyl)ether	< 0.41	< 2.2	NC
	Bis(2-chloroisopropyl)ether	< 0.41	< 2.2	NC
	Bis(2-ethylhexyl)phthalate	< 1.0	< 5.4	NC
	Butyl benzyl phthalate	< 0.41	< 2.2	NC
	Carbazole	< 0.41	< 2.2	NC
	Chrysene	< 0.41	< 2.2	NC
	Dibenz(a,h)anthracene	< 1.0	< 2.2	NC
	Dibenzofuran	< 0.82	< 2.2	NC
	Diethyl phthalate	< 0.41	< 2.2	NC
	Dimethyl phthalate	< 0.41	< 2.2	NC
	Di-n-butyl phthalate	< 0.41	< 5.4	NC
	Di-n-octyl phthalate	< 0.41	< 4.3	NC
	Fluoranthene	< 0.41	< 2.2	NC
	Fluorene	< 0.41	< 2.2	NC
	Hexachlorobenzene	< 0.41	< 2.2	NC
	Hexachlorobutadiene	< 0.41	< 2.2	NC
	Hexachlorocyclopentadiene	< 0.41	< 2.2	NC
	Hexachloroethane	< 0.41	< 2.2	NC
	Indeno(1,2,3-cd)pyrene	< 0.41	< 2.2	NC
	Isophorone	< 1.0	< 5.4	NC
	Naphthalene	< 0.41	< 2.2	NC
	Nitrobenzene	< 0.41	< 5.4	NC
	N-Nitrosodi-n-propylamine	< 0.41	< 2.2	NC
	N-Nitrosodiphenylamine	< 1.0	< 2.2	NC
	Pentachlorophenol	< 0.82	< 4.3	NC
	Phenanthrene	< 0.41	< 2.2	NC
	Phenol	< 0.41	< 2.2	NC
	Pyrene	< 0.41	< 2.2	NC
	Pyridine	< 1.0	< 5.4	NC

Table A-3
Field Duplicate Summary
Group 9 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 12-3 (0.5-2.0') Sample Result	DUP01 Field Duplicate	RPD (%)
Metals (mg/kg-dry):	Antimony	< 2.5	< 2.7	NC
	Arsenic	< 2.5	3.1	NC
	Barium	160	150	6.5
	Beryllium	0.26	0.37	34.9
	Cadmium	< 0.10	< 0.11	NC
	Chromium	5.6	7.2	25.0
	Cobalt	3.8	3.8	0.0
	Lead	4.6	6.0	26.4
	Nickel	4.1	5.3	25.5
	Selenium	< 2.5	< 2.7	NC
	Silver	< 0.25	< 0.27	NC
	Vanadium	17	21	21.1
	Zinc	38	28	30.3
	Mercury	0.05	< 0.036	NC
	Cyanide	< 0.24	< 0.25	NC

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
* = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
Group 9 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 13-8 (0.5-2.0') Sample Result	SWMU 13 DUP01 Field Duplicate	RPD (%)
TPH (mg/kg-dry):	Gasoline Range Organics (GRO)	< 3.4	110	NC
	Diesel Range Organics (DRO)	26	580	**182.8**
	Motor Oil Range Organics (MRO)	60	730	**169.6**
VOCs (ug/kg-dry)	1,1,1,2-Tetrachloroethane	< 0.00178	< 0.043	NC
	1,1,1-Trichloroethane	< 0.00178	< 0.043	NC
	1,1,2,2-Tetrachloroethane	< 0.00178	< 0.043	NC
	1,1,2-Trichloroethane	< 0.00178	< 0.043	NC
	1,1-Dichloroethane	< 0.00178	< 0.043	NC
	1,1-Dichloroethene	< 0.00178	< 0.043	NC
	1,1-Dichloropropene	< 0.00178	< 0.087	NC
	1,2,3-Trichlorobenzene	< 0.00178	< 0.087	NC
	1,2,3-Trichloropropane	< 0.00178	< 0.087	NC
	1,2,4-Trichlorobenzene	< 0.00178	< 0.043	NC
	1,2,4-Trimethylbenzene	< 0.00178	0.54	NC
	1,2-Dibromo-3-chloropropane	< 0.00178	< 0.087	NC
	1,2-Dibromoethane (EDB)	< 0.00178	< 0.043	NC
	1,2-Dichlorobenzene	< 0.00178	< 0.043	NC
	1,2-Dichloroethane (EDC)	< 0.00178	< 0.043	NC
	1,2-Dichloropropane	< 0.00178	< 0.043	NC
	1,3,5-Trimethylbenzene	< 0.00178	0.26	NC
	1,3-Dichlorobenzene	< 0.00178	< 0.043	NC
	1,3-Dichloropropane	< 0.00178	< 0.043	NC
	1,4-Dichlorobenzene	< 0.00178	< 0.043	NC
	1-Methylnaphthalene	< 0.00355	< 0.17	NC
	2,2-Dichloropropane	< 0.00178	< 0.087	NC
	2-Butanone	< 0.00888	< 0.43	NC
	2-Chlorotoluene	< 0.00178	< 0.043	NC
	2-Hexanone	< 0.00888	< 0.43	NC
	2-Methylnaphthalene	< 0.00355	< 0.17	NC
	4-Chlorotoluene	< 0.00178	< 0.043	NC
	4-Isopropyltoluene	< 0.00178	< 0.043	NC
	4-Methyl-2-pentanone	< 0.00888	< 0.43	NC
	Acetone	0.0136	< 0.65	NC
	Benzene	< 0.00178	0.063	NC
	Bromobenzene	< 0.00178	< 0.043	NC
	Bromodichloromethane	< 0.00178	< 0.043	NC
	Bromoform	< 0.00178	< 0.043	NC
	Bromomethane	< 0.00266	< 0.13	NC
	Carbon disulfide	< 0.00888	< 0.43	NC
	Carbon tetrachloride	< 0.00178	< 0.043	NC
	Chlorobenzene	< 0.00178	< 0.043	NC
	Chloroethane	< 0.00178	< 0.087	NC
	Chloroform	< 0.00178	< 0.043	NC
	Chloromethane	< 0.00178	< 0.13	NC
	cis-1,2-DCE	< 0.00178	< 0.043	NC
	cis-1,3-Dichloropropene	< 0.00178	< 0.043	NC
	Dibromochloromethane	< 0.00178	< 0.043	NC
	Dibromomethane	< 0.00178	< 0.043	NC
	Dichlorodifluoromethane	< 0.00178	< 0.043	NC
	Ethylbenzene	< 0.00178	0.54	NC
	Hexachlorobutadiene	< 0.00178	< 0.087	NC
	Isopropylbenzene	< 0.00178	0.11	NC
	Methyl tert-butyl ether (MTBE)	< 0.00178	< 0.043	NC
	Methylene chloride	< 0.00178	< 0.13	NC
	Naphthalene	< 0.00178	< 0.087	NC
	n-Butylbenzene	< 0.00178	< 0.13	NC
	n-Propylbenzene	< 0.00178	0.31	NC
	sec-Butylbenzene	< 0.00178	0.13	NC
	Styrene	< 0.00178	< 0.043	NC
	tert-Butylbenzene	< 0.00178	< 0.043	NC
	Tetrachloroethene (PCE)	< 0.00178	< 0.043	NC
	Toluene	< 0.00178	< 0.043	NC
	trans-1,2-DCE	< 0.00178	< 0.043	NC
	trans-1,3-Dichloropropene	< 0.00178	< 0.043	NC
	Trichloroethene (TCE)	< 0.00178	< 0.043	NC
	Trichlorofluoromethane	< 0.00178	< 0.043	NC
	Vinyl chloride	< 0.00178	< 0.043	NC
	Xylenes, Total	< 0.00178	1.5	NC

Table A-3
Field Duplicate Summary
Group 9 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 13-8 (0.5-2.0') Sample Result	SWMU 13 DUP01 Field Duplicate	RPD (%)
SVOCs (mg/kg-dry):	1,2,4-Trichlorobenzene	< 0.41	< 0.46	NC
	1,2-Dichlorobenzene	< 0.41	< 0.46	NC
	1,3-Dichlorobenzene	< 0.41	< 0.46	NC
	1,4-Dichlorobenzene	< 0.41	< 0.46	NC
	1-Methylnaphthalene	< 0.41	< 0.46	NC
	2,4,5-Trichlorophenol	< 0.41	< 0.46	NC
	2,4,6-Trichlorophenol	< 0.41	< 0.46	NC
	2,4-Dichlorophenol	< 0.82	< 0.91	NC
	2,4-Dimethylphenol	< 0.61	< 0.69	NC
	2,4-Dinitrophenol	< 1.0	< 1.1	NC
	2,4-Dinitrotoluene	< 1.0	< 1.1	NC
	2,6-Dinitrotoluene	< 1.0	< 1.1	NC
	2-Chloronaphthalene	< 0.51	< 0.57	NC
	2-Chlorophenol	< 0.41	< 0.46	NC
	2-Methylnaphthalene	< 0.41	< 0.46	NC
	2-Methylphenol	< 1.0	< 1.1	NC
	2-Nitroaniline	< 0.41	< 0.46	NC
	2-Nitrophenol	< 0.41	< 0.46	NC
	3,3´-Dichlorobenzidine	< 0.41	< 0.57	NC
	3+4-Methylphenol	< 0.51	< 0.46	NC
	3-Nitroaniline	< 0.41	< 0.46	NC
	4,6-Dinitro-2-methylphenol	< 1.0	< 1.1	NC
	4-Bromophenyl phenyl ether	< 0.41	< 0.46	NC
	4-Chloro-3-methylphenol	< 1.0	< 1.1	NC
	4-Chloroaniline	< 1.0	< 1.1	NC
	4-Chlorophenyl phenyl ether	< 0.41	< 0.46	NC
	4-Nitroaniline	< 0.82	< 0.91	NC
	4-Nitrophenol	< 0.51	< 0.57	NC
	Acenaphthene	< 0.41	< 0.46	NC
	Acenaphthylene	< 0.41	< 0.46	NC
	Aniline	< 0.41	< 0.46	NC
	Anthracene	< 0.41	< 0.46	NC
	Azobenzene	< 0.41	< 0.46	NC
	Benz(a)anthracene	< 0.41	< 0.46	NC
	Benzo(a)pyrene	< 0.41	< 0.46	NC
	Benzo(b)fluoranthene	< 0.41	< 0.46	NC
	Benzo(g,h,i)perylene	< 0.41	< 0.46	NC
	Benzo(k)fluoranthene	< 0.41	< 0.46	NC
	Benzoic acid	< 1.0	< 1.1	NC
	Benzyl alcohol	< 0.41	< 0.46	NC
	Bis(2-chloroethoxy)methane	< 0.41	< 0.46	NC
	Bis(2-chloroethyl)ether	< 0.41	< 0.46	NC
	Bis(2-chloroisopropyl)ether	< 0.41	< 0.46	NC
	Bis(2-ethylhexyl)phthalate	< 1.0	< 1.1	NC
	Butyl benzyl phthalate	< 0.41	< 0.46	NC
	Carbazole	< 0.41	< 0.46	NC
	Chrysene	< 0.41	< 0.46	NC
	Dibenz(a,h)anthracene	< 1.0	< 0.46	NC
	Dibenzofuran	< 0.82	< 0.46	NC
	Diethyl phthalate	< 0.41	< 0.46	NC
	Dimethyl phthalate	< 0.41	< 0.46	NC
	Di-n-butyl phthalate	< 0.41	< 1.1	NC
	Di-n-octyl phthalate	< 0.41	< 0.91	NC
	Fluoranthene	< 0.41	< 0.46	NC
	Fluorene	< 0.41	< 0.46	NC
	Hexachlorobenzene	< 0.41	< 0.46	NC
	Hexachlorobutadiene	< 0.41	< 0.46	NC
	Hexachlorocyclopentadiene	< 0.41	< 0.46	NC
	Hexachloroethane	< 0.41	< 0.46	NC
	Indeno(1,2,3-cd)pyrene	< 0.41	< 0.46	NC
	Isophorone	< 1.0	< 1.1	NC
	Naphthalene	< 0.41	< 0.46	NC
	Nitrobenzene	< 0.41	< 1.1	NC
	N-Nitrosodi-n-propylamine	< 0.41	< 0.46	NC
	N-Nitrosodiphenylamine	< 1.0	< 0.46	NC
	Pentachlorophenol	< 0.82	< 0.91	NC
	Phenanthrene	< 0.41	< 0.46	NC
	Phenol	< 0.41	< 0.46	NC
	Pyrene	< 0.41	< 0.46	NC
	Pyridine	< 1.0	< 1.1	NC

Table A-3
Field Duplicate Summary
Group 9 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 13-8 (0.5-2.0') Sample Result	SWMU 13 DUP01 Field Duplicate	RPD (%)
Metals (mg/kg-dry):	Antimony	< 2.6	< 2.8	NC
	Arsenic	< 2.6	3.0	NC
	Barium	240	190	23.3
	Beryllium	0.22	0.53	**82.7**
	Cadmium	< 0.10	< 0.11	NC
	Chromium	7.5	8.4	11.3
	Cobalt	3.5	4.9	33.3
	Lead	4.3	6.9	**46.4**
	Nickel	4.9	7.4	**40.7**
	Selenium	< 2.6	< 2.8	NC
	Silver	< 0.26	< 0.28	NC
	Vanadium	22	26	16.7
	Zinc	42	34	21.1
	Mercury	0.083	< 0.036	NC
	Cyanide	< 0.24	< 0.26	NC

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
bold value = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
Group 9 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 13-27 (0-0.5') Sample Result	SWMU 13 DUP02 Field Duplicate	RPD (%)
TPH (mg/kg-dry):	Gasoline Range Organics (GRO)	< 3.4	< 3.3	NC
	Diesel Range Organics (DRO)	110	76	**36.6**
	Motor Oil Range Organics (MRO)	470	440	6.6
VOCs (ug/kg-dry)	1,1,1,2-Tetrachloroethane	< 0.00217	< 0.00181	NC
	1,1,1-Trichloroethane	< 0.00217	< 0.00181	NC
	1,1,2,2-Tetrachloroethane	< 0.00217	< 0.00181	NC
	1,1,2-Trichloroethane	< 0.00217	< 0.00181	NC
	1,1-Dichloroethane	< 0.00217	< 0.00181	NC
	1,1-Dichloroethene	< 0.00217	< 0.00181	NC
	1,1-Dichloropropene	< 0.00217	< 0.00181	NC
	1,2,3-Trichlorobenzene	< 0.00217	< 0.00181	NC
	1,2,3-Trichloropropane	< 0.00217	< 0.00181	NC
	1,2,4-Trichlorobenzene	< 0.00217	< 0.00181	NC
	1,2,4-Trimethylbenzene	< 0.00217	< 0.00181	NC
	1,2-Dibromo-3-chloropropane	< 0.00217	< 0.00181	NC
	1,2-Dibromoethane (EDB)	< 0.00217	< 0.00181	NC
	1,2-Dichlorobenzene	< 0.00217	< 0.00181	NC
	1,2-Dichloroethane (EDC)	< 0.00217	< 0.00181	NC
	1,2-Dichloropropane	< 0.00217	< 0.00181	NC
	1,3,5-Trimethylbenzene	< 0.00217	< 0.00181	NC
	1,3-Dichlorobenzene	< 0.00217	< 0.00181	NC
	1,3-Dichloropropane	< 0.00217	< 0.00181	NC
	1,4-Dichlorobenzene	< 0.00217	< 0.00181	NC
	1-Methylnaphthalene	< 0.00434	< 0.00362	NC
	2,2-Dichloropropane	< 0.00217	< 0.00181	NC
	2-Butanone	< 0.0108	< 0.00905	NC
	2-Chlorotoluene	< 0.00217	< 0.00181	NC
	2-Hexanone	< 0.0108	< 0.00905	NC
	2-Methylnaphthalene	< 0.00434	< 0.00362	NC
	4-Chlorotoluene	< 0.00217	< 0.00181	NC
	4-Isopropyltoluene	< 0.00217	< 0.00181	NC
	4-Methyl-2-pentanone	< 0.0108	< 0.00905	NC
	Acetone	0.0442	0.0545	20.9
	Benzene	< 0.00217	< 0.00181	NC
	Bromobenzene	< 0.00217	< 0.00181	NC
	Bromodichloromethane	< 0.00217	< 0.00181	NC
	Bromoform	< 0.00217	< 0.00181	NC
	Bromomethane	< 0.00325	< 0.00272	NC
	Carbon disulfide	< 0.0108	< 0.00905	NC
	Carbon tetrachloride	< 0.00217	< 0.00181	NC
	Chlorobenzene	< 0.00217	< 0.00181	NC
	Chloroethane	< 0.00217	< 0.00181	NC
	Chloroform	< 0.00217	< 0.00181	NC
	Chloromethane	< 0.00217	< 0.00181	NC
	cis-1,2-DCE	< 0.00217	< 0.00181	NC
	cis-1,3-Dichloropropene	< 0.00217	< 0.00181	NC
	Dibromochloromethane	< 0.00217	< 0.00181	NC
	Dibromomethane	< 0.00217	< 0.00181	NC
	Dichlorodifluoromethane	< 0.00217	< 0.00181	NC
	Ethylbenzene	< 0.00217	< 0.00181	NC
	Hexachlorobutadiene	< 0.00217	< 0.00181	NC
	Isopropylbenzene	< 0.00217	< 0.00181	NC
	Methyl tert-butyl ether (MTBE)	< 0.00217	< 0.00181	NC
	Methylene chloride	< 0.00217	< 0.00181	NC
	Naphthalene	< 0.00217	< 0.00181	NC
	n-Butylbenzene	< 0.00217	< 0.00181	NC
	n-Propylbenzene	< 0.00217	< 0.00181	NC
	sec-Butylbenzene	< 0.00217	< 0.00181	NC
	Styrene	< 0.00217	< 0.00181	NC
	tert-Butylbenzene	< 0.00217	< 0.00181	NC
	Tetrachloroethene (PCE)	< 0.00217	< 0.00181	NC
	Toluene	< 0.00217	< 0.00181	NC
	trans-1,2-DCE	< 0.00217	< 0.00181	NC
	trans-1,3-Dichloropropene	< 0.00217	< 0.00181	NC
	Trichloroethene (TCE)	< 0.00217	< 0.00181	NC
	Trichlorofluoromethane	< 0.00217	< 0.00181	NC
	Vinyl chloride	< 0.00217	< 0.00181	NC
	Xylenes, Total	< 0.00217	< 0.00181	NC

Table A-3
Field Duplicate Summary
Group 9 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 13-27 (0-0.5') Sample Result	SWMU 13 DUP02 Field Duplicate	RPD (%)
SVOCs (mg/kg-dry):	1,2,4-Trichlorobenzene	< 2.3	< 2.3	NC
	1,2-Dichlorobenzene	< 2.3	< 2.3	NC
	1,3-Dichlorobenzene	< 2.3	< 2.3	NC
	1,4-Dichlorobenzene	< 2.3	< 2.3	NC
	1-Methylnaphthalene	< 2.3	< 2.3	NC
	2,4,5-Trichlorophenol	< 2.3	< 2.3	NC
	2,4,6-Trichlorophenol	< 2.3	< 2.3	NC
	2,4-Dichlorophenol	< 4.5	< 4.6	NC
	2,4-Dimethylphenol	< 3.4	< 3.4	NC
	2,4-Dinitrophenol	< 5.6	< 5.7	NC
	2,4-Dinitrotoluene	< 5.6	< 5.7	NC
	2,6-Dinitrotoluene	< 5.6	< 5.7	NC
	2-Chloronaphthalene	< 2.8	< 2.9	NC
	2-Chlorophenol	< 2.3	< 2.3	NC
	2-Methylnaphthalene	< 2.3	< 2.3	NC
	2-Methylphenol	< 5.6	< 5.7	NC
	2-Nitroaniline	< 2.3	< 2.3	NC
	2-Nitrophenol	< 2.3	< 2.3	NC
	3,3´-Dichlorobenzidine	< 2.3	< 2.9	NC
	3+4-Methylphenol	< 2.8	< 2.3	NC
	3-Nitroaniline	< 2.3	< 2.3	NC
	4,6-Dinitro-2-methylphenol	< 5.6	< 5.7	NC
	4-Bromophenyl phenyl ether	< 2.3	< 2.3	NC
	4-Chloro-3-methylphenol	< 5.6	< 5.7	NC
	4-Chloroaniline	< 5.6	< 5.7	NC
	4-Chlorophenyl phenyl ether	< 2.3	< 2.3	NC
	4-Nitroaniline	< 4.5	< 4.6	NC
	4-Nitrophenol	< 2.8	< 2.9	NC
	Acenaphthene	< 2.3	< 2.3	NC
	Acenaphthylene	< 2.3	< 2.3	NC
	Aniline	< 2.3	< 2.3	NC
	Anthracene	< 2.3	< 2.3	NC
	Azobenzene	< 2.3	< 2.3	NC
	Benz(a)anthracene	< 2.3	< 2.3	NC
	Benzo(a)pyrene	< 2.3	< 2.3	NC
	Benzo(b)fluoranthene	< 2.3	< 2.3	NC
	Benzo(g,h,i)perylene	< 2.3	< 2.3	NC
	Benzo(k)fluoranthene	< 2.3	< 2.3	NC
	Benzoic acid	< 5.6	< 5.7	NC
	Benzyl alcohol	< 2.3	< 2.3	NC
	Bis(2-chloroethoxy)methane	< 2.3	< 2.3	NC
	Bis(2-chloroethyl)ether	< 2.3	< 2.3	NC
	Bis(2-chloroisopropyl)ether	< 2.3	< 2.3	NC
	Bis(2-ethylhexyl)phthalate	< 5.6	< 5.7	NC
	Butyl benzyl phthalate	< 2.3	< 2.3	NC
	Carbazole	< 2.3	< 2.3	NC
	Chrysene	< 2.3	< 2.3	NC
	Dibenz(a,h)anthracene	< 5.6	< 2.3	NC
	Dibenzofuran	< 4.5	< 2.3	NC
	Diethyl phthalate	< 2.3	< 2.3	NC
	Dimethyl phthalate	< 2.3	< 2.3	NC
	Di-n-butyl phthalate	< 2.3	< 5.7	NC
	Di-n-octyl phthalate	< 2.3	< 4.6	NC
	Fluoranthene	< 2.3	< 2.3	NC
	Fluorene	< 2.3	< 2.3	NC
	Hexachlorobenzene	< 2.3	< 2.3	NC
	Hexachlorobutadiene	< 2.3	< 2.3	NC
	Hexachlorocyclopentadiene	< 2.3	< 2.3	NC
	Hexachloroethane	< 2.3	< 2.3	NC
	Indeno(1,2,3-cd)pyrene	< 2.3	< 2.3	NC
	Isophorone	< 5.6	< 5.7	NC
	Naphthalene	< 2.3	< 2.3	NC
	Nitrobenzene	< 2.3	< 5.7	NC
	N-Nitrosodi-n-propylamine	< 2.3	< 2.3	NC
	N-Nitrosodiphenylamine	< 5.6	< 2.3	NC
	Pentachlorophenol	< 4.5	< 4.6	NC
	Phenanthrene	< 2.3	< 2.3	NC
	Phenol	< 2.3	< 2.3	NC
	Pyrene	< 2.3	< 2.3	NC
	Pyridine	< 5.6	< 5.7	NC

Table A-3
Field Duplicate Summary
Group 9 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 13-27 (0-0.5') Sample Result	SWMU 13 DUP02 Field Duplicate	RPD (%)
Metals (mg/kg-dry):	Antimony	< 2.8	< 2.9	NC
	Arsenic	22	20	9.5
	Barium	160	170	6.1
	Beryllium	0.41	0.41	0.0
	Cadmium	0.14	< 0.12	NC
	Chromium	9.9	9.0	9.5
	Cobalt	3.9	3.8	2.6
	Lead	10	10	0.0
	Nickel	16	15	NC
	Selenium	< 2.8	< 2.9	NC
	Silver	< 0.28	< 0.29	NC
	Vanadium	46	40	14.0
	Zinc	79	73	7.9
	Mercury	0.25	0.11	**77.8**
	Cyanide	< 0.27	< 0.24	NC

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
bold value = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
Group 9 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 14-3 (0.5-2.0') Sample Result	SWMU 14-3 DUP01 Field Duplicate	RPD (%)
TPH (mg/kg-dry):	Gasoline Range Organics (GRO)	30	30	0.0
	Diesel Range Organics (DRO)	86	84	2.4
	Motor Oil Range Organics (MRO)	< 58	< 57	NC
VOCs (ug/kg-dry)	1,1,1,2-Tetrachloroethane	< 0.035	< 0.034	NC
	1,1,1-Trichloroethane	< 0.035	< 0.034	NC
	1,1,2,2-Tetrachloroethane	< 0.035	< 0.034	NC
	1,1,2-Trichloroethane	< 0.035	< 0.034	NC
	1,1-Dichloroethane	< 0.035	< 0.034	NC
	1,1-Dichloroethene	< 0.035	< 0.034	NC
	1,1-Dichloropropene	< 0.071	< 0.069	NC
	1,2,3-Trichlorobenzene	< 0.071	< 0.069	NC
	1,2,3-Trichloropropane	< 0.071	< 0.069	NC
	1,2,4-Trichlorobenzene	< 0.035	< 0.034	NC
	1,2,4-Trimethylbenzene	2.1	3.2	**41.5**
	1,2-Dibromo-3-chloropropane	< 0.071	< 0.069	NC
	1,2-Dibromoethane (EDB)	< 0.035	< 0.034	NC
	1,2-Dichlorobenzene	< 0.035	< 0.034	NC
	1,2-Dichloroethane (EDC)	< 0.035	< 0.034	NC
	1,2-Dichloropropane	< 0.035	< 0.034	NC
	1,3,5-Trimethylbenzene	0.79	1.3	**48.8**
	1,3-Dichlorobenzene	< 0.035	< 0.034	NC
	1,3-Dichloropropane	< 0.035	< 0.034	NC
	1,4-Dichlorobenzene	< 0.035	< 0.034	NC
	1-Methylnaphthalene	0.35	0.84	**82.4**
	2,2-Dichloropropane	< 0.071	< 0.069	NC
	2-Butanone	< 0.35	< 0.34	NC
	2-Chlorotoluene	< 0.035	< 0.034	NC
	2-Hexanone	< 0.35	< 0.34	NC
	2-Methylnaphthalene	0.69	1.8	**89.2**
	4-Chlorotoluene	< 0.035	< 0.034	NC
	4-Isopropyltoluene	< 0.035	0.045	NC
	4-Methyl-2-pentanone	< 0.35	< 0.34	NC
	Acetone	< 0.53	< 0.52	NC
	Benzene	0.063	0.077	20.0
	Bromobenzene	< 0.035	< 0.034	NC
	Bromodichloromethane	< 0.035	< 0.034	NC
	Bromoform	< 0.035	< 0.034	NC
	Bromomethane	< 0.11	< 0.10	NC
	Carbon disulfide	< 0.35	< 0.34	NC
	Carbon tetrachloride	< 0.035	< 0.034	NC
	Chlorobenzene	< 0.035	< 0.034	NC
	Chloroethane	< 0.071	< 0.069	NC
	Chloroform	< 0.035	< 0.034	NC
	Chloromethane	< 0.11	< 0.10	NC
	cis-1,2-DCE	< 0.035	< 0.034	NC
	cis-1,3-Dichloropropene	< 0.035	< 0.034	NC
	Dibromochloromethane	< 0.035	< 0.034	NC
	Dibromomethane	< 0.035	< 0.034	NC
	Dichlorodifluoromethane	< 0.035	< 0.034	NC
	Ethylbenzene	0.44	0.67	**41.4**
	Hexachlorobutadiene	< 0.071	< 0.069	NC
	Isopropylbenzene	0.061	0.10	**48.4**
	Methyl tert-butyl ether (MTBE)	< 0.035	< 0.034	NC
	Methylene chloride	< 0.11	< 0.10	NC
	Naphthalene	0.17	0.93	**138.2**
	n-Butylbenzene	0.26	0.32	20.7
	n-Propylbenzene	0.42	0.44	4.7
	sec-Butylbenzene	0.046	0.081	**55.1**
	Styrene	< 0.035	< 0.034	NC
	tert-Butylbenzene	< 0.035	< 0.034	NC
	Tetrachloroethene (PCE)	< 0.035	< 0.034	NC
	Toluene	< 0.035	< 0.034	NC
	trans-1,2-DCE	< 0.035	< 0.034	NC
	trans-1,3-Dichloropropene	< 0.035	< 0.034	NC
	Trichloroethene (TCE)	< 0.035	< 0.034	NC
	Trichlorofluoromethane	< 0.035	< 0.034	NC
	Vinyl chloride	< 0.035	< 0.034	NC
	Xylenes, Total	1.5	2.1	33.3

Table A-3
Field Duplicate Summary
Group 9 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 14-3 (0.5-2.0') Sample Result	SWMU 14-3 DUP01 Field Duplicate	RPD (%)
SVOCs (mg/kg-dry):	1,2,4-Trichlorobenzene	< 0.23	< 0.23	NC
	1,2-Dichlorobenzene	< 0.23	< 0.23	NC
	1,3-Dichlorobenzene	< 0.23	< 0.23	NC
	1,4-Dichlorobenzene	< 0.23	< 0.23	NC
	1-Methylnaphthalene	1.5	1.1	30.8
	2,4,5-Trichlorophenol	< 0.23	< 0.23	NC
	2,4,6-Trichlorophenol	< 0.23	< 0.23	NC
	2,4-Dichlorophenol	< 0.46	< 0.46	NC
	2,4-Dimethylphenol	< 0.34	< 0.35	NC
	2,4-Dinitrophenol	< 0.57	< 0.58	NC
	2,4-Dinitrotoluene	< 0.57	< 0.58	NC
	2,6-Dinitrotoluene	< 0.57	< 0.58	NC
	2-Chloronaphthalene	< 0.29	< 0.29	NC
	2-Chlorophenol	< 0.23	< 0.23	NC
	2-Methylnaphthalene	2.5	2.0	22.2
	2-Methylphenol	< 0.57	< 0.58	NC
	2-Nitroaniline	< 0.23	< 0.23	NC
	2-Nitrophenol	< 0.23	< 0.23	NC
	3,3´-Dichlorobenzidine	< 0.23	< 0.29	NC
	3+4-Methylphenol	< 0.29	< 0.23	NC
	3-Nitroaniline	< 0.23	< 0.23	NC
	4,6-Dinitro-2-methylphenol	< 0.57	< 0.58	NC
	4-Bromophenyl phenyl ether	< 0.23	< 0.23	NC
	4-Chloro-3-methylphenol	< 0.57	< 0.58	NC
	4-Chloroaniline	< 0.57	< 0.58	NC
	4-Chlorophenyl phenyl ether	< 0.23	< 0.23	NC
	4-Nitroaniline	< 0.46	< 0.46	NC
	4-Nitrophenol	< 0.29	< 0.29	NC
	Acenaphthene	< 0.23	< 0.23	NC
	Acenaphthylene	< 0.23	< 0.23	NC
	Aniline	< 0.23	< 0.23	NC
	Anthracene	< 0.23	< 0.23	NC
	Azobenzene	< 0.23	< 0.23	NC
	Benz(a)anthracene	< 0.23	< 0.23	NC
	Benzo(a)pyrene	< 0.23	< 0.23	NC
	Benzo(b)fluoranthene	< 0.23	< 0.23	NC
	Benzo(g,h,i)perylene	< 0.23	< 0.23	NC
	Benzo(k)fluoranthene	< 0.23	< 0.23	NC
	Benzoic acid	< 0.57	< 0.58	NC
	Benzyl alcohol	< 0.23	< 0.23	NC
	Bis(2-chloroethoxy)methane	< 0.23	< 0.23	NC
	Bis(2-chloroethyl)ether	< 0.23	< 0.23	NC
	Bis(2-chloroisopropyl)ether	< 0.23	< 0.23	NC
	Bis(2-ethylhexyl)phthalate	< 0.57	< 0.58	NC
	Butyl benzyl phthalate	< 0.23	< 0.23	NC
	Carbazole	< 0.23	< 0.23	NC
	Chrysene	< 0.23	< 0.23	NC
	Dibenz(a,h)anthracene	< 0.57	< 0.23	NC
	Dibenzofuran	< 0.46	< 0.23	NC
	Diethyl phthalate	< 0.23	< 0.23	NC
	Dimethyl phthalate	< 0.23	< 0.23	NC
	Di-n-butyl phthalate	< 0.23	< 0.58	NC
	Di-n-octyl phthalate	< 0.23	< 0.46	NC
	Fluoranthene	< 0.23	< 0.23	NC
	Fluorene	< 0.23	< 0.23	NC
	Hexachlorobenzene	< 0.23	< 0.23	NC
	Hexachlorobutadiene	< 0.23	< 0.23	NC
	Hexachlorocyclopentadiene	< 0.23	< 0.23	NC
	Hexachloroethane	< 0.23	< 0.23	NC
	Indeno(1,2,3-cd)pyrene	< 0.23	< 0.23	NC
	Isophorone	< 0.57	< 0.58	NC
	Naphthalene	1.1	0.92	17.8
	Nitrobenzene	< 0.23	< 0.58	NC
	N-Nitrosodi-n-propylamine	< 0.23	< 0.23	NC
	N-Nitrosodiphenylamine	< 0.57	< 0.23	NC
	Pentachlorophenol	< 0.46	< 0.46	NC
	Phenanthrene	< 0.23	< 0.23	NC
	Phenol	< 0.23	< 0.23	NC
	Pyrene	< 0.23	< 0.23	NC
	Pyridine	< 0.57	< 0.58	NC

Table A-3
Field Duplicate Summary
Group 9 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 14-3 (0.5-2.0') Sample Result	SWMU 14-3 DUP01 Field Duplicate	RPD (%)
Metals (mg/kg-dry):	Antimony	< 2.9	< 2.8	NC
	Arsenic	5.8	5.8	0.0
	Barium	230	200	14.0
	Beryllium	0.59	0.63	6.6
	Cadmium	< 0.11	< 0.11	NC
	CR VI	NA		NC
	Chromium	11	12	8.7
	Cobalt	6.9	5.4	24.4
	Lead	20	17	16.2
	4 KEAD	NA		NC
	Nickel	11	9.4	15.7
	Selenium	< 2.9	< 2.8	NC
	Silver	0.33	< 0.28	NC
	Vanadium	26	27	3.8
	Zinc	110	50	**75.0**
	Mercury	0.18	0.093	**63.7**
	Cyanide	< 0.26	< 0.28	NC

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
bold value = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
Group 9 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	MW-76 Sample Result	MW-76D Field Duplicate	RPD (%)
TPH (mg/l):	Gasoline Range Organics (GRO)	13	11	16.7
	Diesel Range Organics (DRO)	7.0	2.2	**104.3**
	Motor Oil Range Organics (MRO)	< 2.5	< 2.5	NC
VOCs (ug/l)	1,1,1,2-Tetrachloroethane	< 10	< 10	NC
	1,1,1-Trichloroethane	< 10	< 10	NC
	1,1,2,2-Tetrachloroethane	< 20	< 20	NC
	1,1,2-Trichloroethane	< 10	< 10	NC
	1,1-Dichloroethane	< 10	< 10	NC
	1,1-Dichloroethene	< 10	< 10	NC
	1,1-Dichloropropene	< 10	< 10	NC
	1,2,3-Trichlorobenzene	< 10	< 10	NC
	1,2,3-Trichloropropane	< 20	< 20	NC
	1,2,4-Trichlorobenzene	< 10	< 10	NC
	1,2,4-Trimethylbenzene	240	240	0.0
	1,2-Dibromo-3-chloropropane	< 20	< 20	NC
	1,2-Dibromoethane (EDB)	< 10	< 10	NC
	1,2-Dichlorobenzene	< 10	< 10	NC
	1,2-Dichloroethane (EDC)	< 10	< 10	NC
	1,2-Dichloropropane	< 10	< 10	NC
	1,3,5-Trimethylbenzene	34	32	6.1
	1,3-Dichlorobenzene	< 10	< 10	NC
	1,3-Dichloropropane	< 10	< 10	NC
	1,4-Dichlorobenzene	< 10	< 10	NC
	1-Methylnaphthalene	120	120	0.0
	2,2-Dichloropropane	< 20	< 20	NC
	2-Butanone	< 100	< 100	NC
	2-Chlorotoluene	< 10	< 10	NC
	2-Hexanone	< 100	< 100	NC
	2-Methylnaphthalene	200	200	0.0
	4-Chlorotoluene	< 10	< 10	NC
	4-Isopropyltoluene	< 10	< 10	NC
	4-Methyl-2-pentanone	< 100	< 100	NC
	Acetone	< 100	< 100	NC
	Benzene	1900	1900	0.0
	Bromobenzene	< 10	< 10	NC
	Bromodichloromethane	< 10	< 10	NC
	Bromoform	< 10	< 10	NC
	Bromomethane	< 30	< 30	NC
	Carbon disulfide	< 100	< 100	NC
	Carbon Tetrachloride	< 10	< 10	NC
	Chlorobenzene	< 10	< 10	NC
	Chloroethane	< 20	< 20	NC
	Chloroform	< 10	< 10	NC
	Chloromethane	< 30	< 30	NC
	cis-1,2-DCE	< 10	< 10	NC
	cis-1,3-Dichloropropene	< 10	< 10	NC
	Dibromochloromethane	< 10	< 10	NC
	Dibromomethane	< 10	< 10	NC
	Dichlorodifluoromethane	< 10	< 10	NC
	Ethylbenzene	420	410	2.4
	Hexachlorobutadiene	< 10	< 10	NC
	Isopropylbenzene	65	62	4.7
	Methyl tert-butyl ether (MTBE)	45	43	NC
	Methylene Chloride	< 30	< 30	NC
	Naphthalene	250	250	0.0
	n-Butylbenzene	< 30	< 30	NC
	n-Propylbenzene	64	60	6.5
	sec-Butylbenzene	10	< 10	NC
	Styrene	< 10	< 10	NC
	tert-Butylbenzene	< 10	< 10	NC
	Tetrachloroethene (PCE)	< 10	< 10	NC
	Toluene	< 10	< 10	NC
	trans-1,2-DCE	< 10	< 10	NC
	trans-1,3-Dichloropropene	< 10	< 10	NC
	Trichloroethene (TCE)	< 10	< 10	NC
	Trichlorofluoromethane	< 10	< 10	NC
	Vinyl chloride	< 10	< 10	NC
	Xylenes, Total	41	43	4.8

Table A-3
Field Duplicate Summary
Group 9 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	MW-76 Sample Result	MW-76D Field Duplicate	RPD (%)
SVOCs (mg/kg-dry):	1,2,4-Trichlorobenzene	< 10	< 11	NC
	1,2-Dichlorobenzene	< 10	< 11	NC
	1,3-Dichlorobenzene	< 10	< 11	NC
	1,4-Dichlorobenzene	< 10	< 11	NC
	1-Methylnaphthalene	110	100	9.5
	2,4,5-Trichlorophenol	< 10	< 11	NC
	2,4,6-Trichlorophenol	< 10	< 11	NC
	2,4-Dichlorophenol	< 20	< 22	NC
	2,4-Dimethylphenol	< 10	< 11	NC
	2,4-Dinitrophenol	< 20	< 22	NC
	2,4-Dinitrotoluene	< 10	< 11	NC
	2,6-Dinitrotoluene	< 10	< 11	NC
	2-Chloronaphthalene	< 10	< 11	NC
	2-Chlorophenol	< 10	< 11	NC
	2-Methylnaphthalene	130	110	16.7
	2-Methylphenol	< 10	< 11	NC
	2-Nitroaniline	< 10	< 11	NC
	2-Nitrophenol	< 10	< 11	NC
	3,3´-Dichlorobenzidine	< 10	< 11	NC
	3+4-Methylphenol	< 10	< 11	NC
	3-Nitroaniline	< 10	< 11	NC
	4,6-Dinitro-2-methylphenol	< 20	< 22	NC
	4-Bromophenyl phenyl ether	< 10	< 11	NC
	4-Chloro-3-methylphenol	< 10	< 11	NC
	4-Chloroaniline	< 10	< 11	NC
	4-Chlorophenyl phenyl ether	< 10	< 11	NC
	4-Nitroaniline	< 10	< 11	NC
	4-Nitrophenol	< 10	< 11	NC
	Acenaphthene	< 10	< 11	NC
	Acenaphthylene	< 10	< 11	NC
	Aniline	< 10	< 11	NC
	Anthracene	< 10	< 11	NC
	Azobenzene	< 10	< 11	NC
	Benz(a)anthracene	< 10	< 11	NC
	Benzo(a)pyrene	< 10	< 11	NC
	Benzo(b)fluoranthene	< 10	< 11	NC
	Benzo(g,h,i)perylene	< 10	< 11	NC
	Benzo(k)fluoranthene	< 10	< 11	NC
	Benzoic acid	< 20	< 22	NC
	Benzyl alcohol	< 10	< 11	NC
	Bis(2-chloroethoxy)methane	< 10	< 11	NC
	Bis(2-chloroethyl)ether	< 10	< 11	NC
	Bis(2-chloroisopropyl)ether	< 10	< 11	NC
	Bis(2-ethylhexyl)phthalate	< 10	< 11	NC
	Butyl benzyl phthalate	< 10	< 11	NC
	Carbazole	< 10	< 11	NC
	Chrysene	< 10	< 11	NC
	Dibenz(a,h)anthracene	< 10	< 11	NC
	Dibenzofuran	< 10	< 11	NC
	Diethyl phthalate	< 10	< 11	NC
	Dimethyl phthalate	< 10	< 11	NC
	Di-n-butyl phthalate	< 10	< 11	NC
	Di-n-octyl phthalate	< 10	< 11	NC
	Fluoranthene	< 10	< 11	NC
	Fluorene	< 10	11	NC
	Hexachlorobenzene	< 10	< 11	NC
	Hexachlorobutadiene	< 10	< 11	NC
	Hexachlorocyclopentadiene	< 10	< 11	NC
	Hexachloroethane	< 10	< 11	NC
	Indeno(1,2,3-cd)pyrene	< 10	< 11	NC
	Isophorone	< 10	< 11	NC
	Naphthalene	160	170	6.1
	Nitrobenzene	< 10	< 11	NC
	N-Nitrosodimethylamine	< 10	< 11	NC
	N-Nitrosodi-n-propylamine	< 10	< 11	NC
	N-Nitrosodiphenylamine	< 10	< 11	NC
	Pentachlorophenol	< 20	< 22	NC
	Phenanthrene	< 10	< 11	NC
	Phenol	< 10	34	NC
	Pyrene	< 10	< 11	NC
	Pyridine	< 10	< 11	NC

Table A-3
Field Duplicate Summary
Group 9 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	MW-76 Sample Result	MW-76D Field Duplicate	RPD (%)
Water Quality (mg/l)	Nitrogen, Nitrate (As N)	< 0.50	< 0.50	NC
	Nitrogen, Nitrite (As N)	< 0.50	< 0.50	NC
	Sulfate	55	59	7.0
	Chloride	330	330	0.0
	Total Dissolved Solids	1970	1960	0.5
	Bicarbonate (As CaCO3)	1200	1200	0.0
	Carbonate (As CaCO3)	< 5.0	< 5.0	NC
	Total Alkalinity (as CaCO3)	1200	1200	0.0
Dissolved Metals (mg/l):	Antimony	< 0.0050	< 0.0010	NC
	Arsenic	< 0.010	< 0.010	NC
	Barium	2.1	2.7	25.0
	Beryllium	< 0.0020	< 0.0020	NC
	Cadmium	< 0.0020	< 0.0020	NC
	Calcium	100	98	2.0
	Chromium	< 0.0060	< 0.0060	NC
	Cobalt	< 0.0060	< 0.0060	NC
	Iron	9.0	8.9	1.1
	Lead	< 0.0050	< 0.0010	NC
	Magnesium	66	64	3.1
	Manganese	2.4	2.5	4.1
	Mercury	< 0.00020	< 0.00020	NC
	Nickel	< 0.010	< 0.010	NC
	Potassium	4.5	4.6	2.2
	Selenium	< 0.050	< 0.010	NC
	Silver	< 0.0050	< 0.0050	NC
	Sodium	540	520	3.8
	Vanadium	< 0.050	< 0.050	NC
	Zinc	0.024	< 0.010	NC
Total Metals (mg/l):	Antimony	< 0.0010	< 0.0010	NC
	Arsenic	< 0.020	< 0.020	NC
	Barium	2.2	2.9	**27.5**
	Beryllium	< 0.0020	< 0.0020	NC
	Cadmium	< 0.0020	< 0.0020	NC
	Calcium	150	100	**40.0**
	Chromium	< 0.0060	< 0.0060	NC
	Cobalt	< 0.0060	< 0.0060	NC
	Iron	13	12	8.0
	Lead	0.0042	0.0051	19.4
	Magnesium	80	69	14.8
	Manganese	2.7	2.5	7.7
	Mercury	< 0.00020	< 0.00020	NC
	Nickel	< 0.010	< 0.010	NC
	Potassium	6.0	5.7	5.1
	Selenium	< 0.020	< 0.020	NC
	Silver	< 0.0050	< 0.0050	NC
	Sodium	640	570	11.6
	Vanadium	< 0.050	< 0.050	NC
	Zinc	0.017	0.024	**34.1**
	Cyanide	< 0.0100	< 0.0100	NC

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
bold value = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
Group 9 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	MW-74 Sample Result	GW DUP 01 Field Duplicate	RPD (%)
TPH (mg/l):	Gasoline Range Organics (GRO)	80	77	3.8
	Diesel Range Organics (DRO)	6.5	6.0	8.0
	Motor Oil Range Organics (MRO)	< 2.5	< 2.5	NC
VOCs (ug/l)	1,1,1,2-Tetrachloroethane	< 50	< 50	NC
	1,1,1-Trichloroethane	< 50	< 50	NC
	1,1,2,2-Tetrachloroethane	< 100	< 100	NC
	1,1,2-Trichloroethane	< 50	< 50	NC
	1,1-Dichloroethane	< 50	< 50	NC
	1,1-Dichloroethene	< 50	< 50	NC
	1,1-Dichloropropene	< 50	< 50	NC
	1,2,3-Trichlorobenzene	< 50	< 50	NC
	1,2,3-Trichloropropane	< 100	< 100	NC
	1,2,4-Trichlorobenzene	< 50	< 50	NC
	1,2,4-Trimethylbenzene	2000	1700	16.2
	1,2-Dibromo-3-chloropropane	< 100	< 100	NC
	1,2-Dibromoethane (EDB)	< 50	< 50	NC
	1,2-Dichlorobenzene	< 50	< 50	NC
	1,2-Dichloroethane (EDC)	< 50	< 50	NC
	1,2-Dichloropropane	< 50	< 50	NC
	1,3,5-Trimethylbenzene	470	400	16.1
	1,3-Dichlorobenzene	< 50	< 50	NC
	1,3-Dichloropropane	< 50	< 50	NC
	1,4-Dichlorobenzene	< 50	< 50	NC
	1-Methylnaphthalene	< 200	< 200	NC
	2,2-Dichloropropane	< 100	< 100	NC
	2-Butanone	< 500	< 500	NC
	2-Chlorotoluene	< 50	< 50	NC
	2-Hexanone	< 500	< 500	NC
	2-Methylnaphthalene	< 200	< 200	NC
	4-Chlorotoluene	< 50	< 50	NC
	4-Isopropyltoluene	< 50	< 50	NC
	4-Methyl-2-pentanone	< 500	< 500	NC
	Acetone	< 500	< 500	NC
	Benzene	15000	13000	14.3
	Bromobenzene	< 50	< 50	NC
	Bromodichloromethane	< 50	< 50	NC
	Bromoform	< 50	< 50	NC
	Bromomethane	< 150	< 150	NC
	Carbon disulfide	< 500	< 500	NC
	Carbon Tetrachloride	< 50	< 50	NC
	Chlorobenzene	< 50	< 50	NC
	Chloroethane	< 100	< 100	NC
	Chloroform	< 50	< 50	NC
	Chloromethane	< 150	< 150	NC
	cis-1,2-DCE	< 50	< 50	NC
	cis-1,3-Dichloropropene	< 50	< 50	NC
	Dibromochloromethane	< 50	< 50	NC
	Dibromomethane	< 50	< 50	NC
	Dichlorodifluoromethane	< 50	< 50	NC
	Ethylbenzene	2400	2200	8.7
	Hexachlorobutadiene	< 50	< 50	NC
	Isopropylbenzene	150	140	6.9
	Methyl tert-butyl ether (MTBE)	840	790	6.1
	Methylene Chloride	< 150	< 150	NC
	Naphthalene	420	340	21.1
	n-Butylbenzene	< 150	< 150	NC
	n-Propylbenzene	310	250	21.4
	sec-Butylbenzene	< 50	< 50	NC
	Styrene	< 50	< 50	NC
	tert-Butylbenzene	< 50	< 50	NC
	Tetrachloroethene (PCE)	< 50	< 50	NC
	Toluene	12000	11000	8.7
	trans-1,2-DCE	< 50	< 50	NC
	trans-1,3-Dichloropropene	< 50	< 50	NC
	Trichloroethene (TCE)	< 50	< 50	NC
	Trichlorofluoromethane	< 50	< 50	NC
	Vinyl chloride	< 50	< 50	NC
	Xylenes, Total	9400	9200	2.2

Table A-3
Field Duplicate Summary
Group 9 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	MW-74 Sample Result	GW DUP 01 Field Duplicate	RPD (%)
SVOCs (mg/kg-dry):	1,2,4-Trichlorobenzene	< 10	< 10	NC
	1,2-Dichlorobenzene	< 10	< 10	NC
	1,3-Dichlorobenzene	< 10	< 10	NC
	1,4-Dichlorobenzene	< 10	< 10	NC
	1-Methylnaphthalene	78	52	**40.0**
	2,4,5-Trichlorophenol	< 10	< 10	NC
	2,4,6-Trichlorophenol	< 10	< 10	NC
	2,4-Dichlorophenol	< 20	< 20	NC
	2,4-Dimethylphenol	13	12	8.0
	2,4-Dinitrophenol	< 20	< 20	NC
	2,4-Dinitrotoluene	< 10	< 10	NC
	2,6-Dinitrotoluene	< 10	< 10	NC
	2-Chloronaphthalene	< 10	< 10	NC
	2-Chlorophenol	< 10	< 10	NC
	2-Methylnaphthalene	120	73	**48.7**
	2-Methylphenol	78	58	**29.4**
	2-Nitroaniline	< 10	< 10	NC
	2-Nitrophenol	< 10	< 10	NC
	3,3´-Dichlorobenzidine	< 10	< 10	NC
	3+4-Methylphenol	20	18	10.5
	3-Nitroaniline	< 10	< 10	NC
	4,6-Dinitro-2-methylphenol	< 20	< 20	NC
	4-Bromophenyl phenyl ether	< 10	< 10	NC
	4-Chloro-3-methylphenol	< 10	< 10	NC
	4-Chloroaniline	< 10	< 10	NC
	4-Chlorophenyl phenyl ether	< 10	< 10	NC
	4-Nitroaniline	< 10	< 10	NC
	4-Nitrophenol	< 10	< 10	NC
	Acenaphthene	< 10	< 10	NC
	Acenaphthylene	< 10	< 10	NC
	Aniline	< 10	< 10	NC
	Anthracene	< 10	< 10	NC
	Azobenzene	< 10	< 10	NC
	Benz(a)anthracene	< 10	< 10	NC
	Benzo(a)pyrene	< 10	< 10	NC
	Benzo(b)fluoranthene	< 10	< 10	NC
	Benzo(g,h,i)perylene	< 10	< 10	NC
	Benzo(k)fluoranthene	< 10	< 10	NC
	Benzoic acid	< 20	< 20	NC
	Benzyl alcohol	< 10	< 10	NC
	Bis(2-chloroethoxy)methane	< 10	< 10	NC
	Bis(2-chloroethyl)ether	< 10	< 10	NC
	Bis(2-chloroisopropyl)ether	< 10	< 10	NC
	Bis(2-ethylhexyl)phthalate	< 10	16	NC
	Butyl benzyl phthalate	< 10	< 10	NC
	Carbazole	< 10	< 10	NC
	Chrysene	< 10	< 10	NC
	Dibenz(a,h)anthracene	< 10	< 10	NC
	Dibenzofuran	< 10	< 10	NC
	Diethyl phthalate	< 10	< 10	NC
	Dimethyl phthalate	< 10	< 10	NC
	Di-n-butyl phthalate	< 10	< 10	NC
	Di-n-octyl phthalate	< 10	< 10	NC
	Fluoranthene	< 10	< 10	NC
	Fluorene	< 10	< 10	NC
	Hexachlorobenzene	< 10	< 10	NC
	Hexachlorobutadiene	< 10	< 10	NC
	Hexachlorocyclopentadiene	< 10	< 10	NC
	Hexachloroethane	< 10	< 10	NC
	Indeno(1,2,3-cd)pyrene	< 10	< 10	NC
	Isophorone	< 10	< 10	NC
	Naphthalene	230	180	24.4
	Nitrobenzene	< 10	< 10	NC
	N-Nitrosodimethylamine	< 10	< 10	NC
	N-Nitrosodi-n-propylamine	< 10	< 10	NC
	N-Nitrosodiphenylamine	< 10	< 10	NC
	Pentachlorophenol	< 20	< 20	NC
	Phenanthrene	< 10	< 10	NC
	Phenol	41	38	7.6
	Pyrene	< 10	< 10	NC
	Pyridine	< 10	< 10	NC

Table A-3
Field Duplicate Summary
Group 9 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	MW-74 Sample Result	GW DUP 01 Field Duplicate	RPD (%)
Water Quality (mg/l)	Nitrogen, Nitrate (As N)	< 0.50	< 0.50	NC
	Nitrogen, Nitrite (As N)	< 0.50	< 0.50	NC
	Sulfate	40	24	**50.0**
	Chloride	270	280	3.6
	Total Dissolved Solids	1730	1730	0.0
	Bicarbonate (As CaCO3)	1200	1200	0.0
	Carbonate (As CaCO3)	< 2.0	< 2.0	NC
	Total Alkalinity (as CaCO3)	1200	1200	0.0
Dissolved Metals (mg/l):	Antimony	< 0.0010	< 0.0010	NC
	Arsenic	< 0.020	< 0.020	NC
	Barium	1.9	1.9	0.0
	Beryllium	< 0.0020	< 0.0020	NC
	Cadmium	< 0.0020	< 0.0020	NC
	Calcium	170	170	0.0
	Chromium	< 0.0060	< 0.0060	NC
	Cobalt	< 0.0060	< 0.0060	NC
	Iron	3.1	3.2	3.2
	Lead	0.0070	0.0063	10.5
	Magnesium	53	52	1.9
	Manganese	4.4	4.4	0.0
	Mercury	< 0.00020	< 0.00020	NC
	Nickel	0.015	0.015	0.0
	Potassium	4.9	4.9	0.0
	Selenium	< 0.020	< 0.020	NC
	Silver	< 0.0050	< 0.0050	NC
	Sodium	370	370	0.0
	Vanadium	< 0.050	< 0.050	NC
	Zinc	0.050	0.12	**82.4**
Total Metals (mg/l):	Antimony	< 0.0010	< 0.0010	NC
	Arsenic	< 0.010	< 0.010	NC
	Barium	2.0	2.0	0.0
	Beryllium	< 0.0020	< 0.0020	NC
	Cadmium	< 0.0020	< 0.0020	NC
	Calcium	190	190	0.0
	Chromium	< 0.0060	< 0.0060	NC
	Cobalt	< 0.0060	< 0.0060	NC
	Iron	5.2	4.6	12.2
	Lead	0.0098	0.0087	11.9
	Magnesium	57	55	3.6
	Manganese	5.0	4.9	2.0
	Mercury	< 0.00020	< 0.00020	NC
	Nickel	0.012	0.012	0.0
	Potassium	5.6	5.5	1.8
	Selenium	< 0.020	< 0.020	NC
	Silver	< 0.0050	< 0.0050	NC
	Sodium	390	380	2.6
	Vanadium	< 0.050	< 0.050	NC
	Zinc	0.015	< 0.010	NC
	Cyanide	< 0.0100	< 0.0100	NC

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
bold value = Field Duplicate RPD Outlier

Table A-4
Completeness Summary - Soil
Group 9 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	Total Number of Results	Number of Usable Results	Percent Technical Compliance
TPH (mg/kg-dry):	Diesel Range Organics (DRO)	133	133	100
	Motor Oil Range Organics (MRO)	133	133	100
	Gasoline Range Organics (GRO)	133	133	100
VOCs (ug/kg-dry)	All VOC Analytes	133	133	100
SVOCs (mg/kg-dry):	All SVOC Analytes	133	133	100
Metals (mg/kg-dry):	Antimony	133	133	100
	Arsenic	133	133	100
	Barium	133	133	100
	Beryllium	133	133	100
	Cadmium	133	133	100
	Calcium	133	133	100
	Chromium	133	133	100
	Cobalt	133	133	100
	Iron	133	133	100
	Lead	133	133	100
	Magnesium	133	133	100
	Manganese	133	133	100
	Mercury	133	133	100
	Nickel	133	133	100
	Potassium	133	133	100
	Selenium	133	133	100
	Silver	133	133	100
	Sodium	133	133	100
	Vanadium	133	133	100
	Zinc	133	133	100
	Cyanide	133	133	100
Water Quality Parameters	Nitrogen, Nitrate (As N)	15	15	100
	Nitrogen, Nitrite (As N)	15	15	100
	Sulfate	15	15	100
	Chloride	15	15	100
	Total Dissolved Solids	15	15	100
	Bicarbonate (As CaCO3)	15	15	100
	Carbonate (As CaCO3)	15	15	100
	Total Alkalinity (as CaCO3)	15	15	100

Notes:
Number of samples used in completeness calculations includes field duplicates, equipment rinsate, and field blanks.
Percent Technial Compliance = (Number of usable results / Number of reported results) * 100