

REMEDIATION REPORT
Townsend 16 Inch Pipeline Release
Lea County, New Mexico

1RP-4312

LAI Project No. 15-0143-01


January 12, 2017

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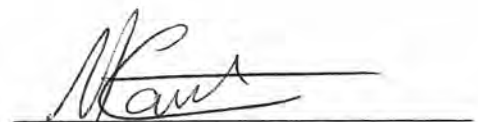
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Introduction

This final remediation report is prepared on behalf of Targa Midstream Services, LLC (Targa), a wholly owned subsidiary of Targa Resources Corp., for a natural gas liquid (NGL) release from the Townsend 16-inch pipeline (Site) in Unit M (SW/4, SW/4), Section 3, Township 16 South, Range 35 East, in Lea County, New Mexico. The Site is located about four (4) miles west of Lovington, New Mexico. The release occurred on July 2015 due to corrosion of an underground 16-inch steel line. Between 5 and 10 barrels (bbl) of natural gas liquid (NGL) was released with 0 bbl recovered. The NGL release covered an area measuring about 1,025 square feet. Initial remediation was performed between September 19 and October 30, 2015, with additional remediation performed between April 26, 2016 and May 10, 2016. The geodetic position is 33°32'04.816" North and 103°05'32.604" West. Figure 1 presents a topographic map showing the site location. Figure 2 presents an aerial map and approximate release location.

Setting

The surface elevation is about 4,003 feet above mean sea level (MSL) and the topography is nearly level with a regional slope to the southeast. No surface water features are present within one mile of the Site. The soils are designated as "Kimbrough-Lea complex, 0 to 3 percent slopes", consisting of gravelly and loamy deposits derived from reworking moderately fine textured eolian sediments of the Blackwater Draw (Pleistocene) formation. The soils have a gravelly loam surface layer over a heavier loam subsoil or indurated caliche that extends to depths greater than about 6 to 26 inches below ground surface (bgs). Groundwater occurs at about 68 feet bgs according to depth to groundwater that was measured in a fresh water well located about 2.5 miles north of the Site in Unit F (SE/4, NW/4), Section 5, Township 9 South, Range 38 East (L03881).

Remediation Action Levels

Remediation action levels (RRAL) were calculated for total benzene, ethyl benzene, toluene, and xylenes (BTEX) and total petroleum hydrocarbons (TPH) based on the following criteria established by the New Mexico Oil Conservation Division (OCD) in "Guidelines for Remediation of Leaks, Spills and Releases, August 13, 1993":

<i>Criteria</i>	<i>Result</i>	<i>Score</i>
Depth-to-Groundwater	68 feet	10
Wellhead Protection Area	No	0
Distance to Surface Water Body	>1000 Horizontal Feet	0

The following RRAL apply to the release for ranking score: 10

- Benzene 10 milligrams per kilogram (mg/Kg)
- BTEX 50 mg/Kg
- TPH 1,000 mg/Kg

In addition, the screening criterion for chloride of 250 mg/Kg based on guidance applies to the remediation activities.

Investigation Activities (July-August 2015)

On July 16, 2015, personnel from Larson & Associates, Inc. (LAI) met with Targa representative, Ralph England, to document the release and collect soil samples. Surface soil samples were collected from four hand auger borings (HA-1 through HA-4) located east, north, and west of the original excavation for the repair of the pipeline. The locations of the borings are depicted on Figure 3. Soil sample HA-5 was collected from the bottom of the excavation at approximately 4 feet bgs. Four (4) samples (S-1 through S-1) were also collected from the excavation sidewalls at about 2 feet bgs. The samples were analyzed in the field for the presence of headspace vapors with a calibrated photoionization detector (PID). Soil samples were submitted to Trace Analysis, Inc. (Trace) in Midland and Lubbock, Texas for laboratory analyses of BTEX by Method 8021B, TPH by Method 8015D and chloride by Method E300.

On August 3, 2015, Scarborough Drilling, Inc. (SDI) under supervision from LAI drilled five (5) borings (SB-1 through SB-5). Borings SB-1, SB-2, SB-3 and SB-4 were drilled to about 10 feet bgs east, north, west, and south of the excavation, respectively. Boring SB-5 was drilled to about 25 feet bgs in the bottom of the excavation and south of the pipeline. Soil samples were collected from borings SB-1 through SB-4 at 5 and 10 feet bgs. Samples were collected from boring SB-5 at 10, 15, 20 and 25 feet bgs. The samples were sent to the laboratory and analyzed for TPH (EPA SW-846 Method 8015D) and chloride EPA Method E300). Table 1 presents the investigation sample analytical data summary. Figure 3 presents the investigation sample locations.

Initial Remediation Activities (September-October 2015)

Initial remediation was performed between September 19 and October 30, 2015. Watson Construction Inc. (Watson) under supervision from LAI excavated soil to a maximum depth of about 24 feet bgs. Confirmation samples were collected from the excavation sidewalls and bottom and reported concentrations of TPH below the RRAL (1,000 mg/Kg) and chloride below the OCD delineation requirement of 250 mg/Kg. The excavation measured about 30 feet wide by 60 feet long and about 24 feet deep. LAI personnel collected confirmation soil samples the bottom and sidewalls of the excavation as remediation progressed to confirm that soil exceeding the RRAL for was removed for disposal. Confirmation soil samples were analyzed for TPH by EPA SW-486 Method 8015D and chloride by Method E300. The final confirmation samples reported TPH below the RRAL and chloride below the OCD delineation criteria of 250 mg/Kg. The soil was stockpiled on location until disposal was arranged. Based on the investigation soil sample analysis the chloride concentration was below the waste acceptance criteria for chloride for the soil to be disposed at Jay Dan Landfarm (NM-01-0045). Between September 16, 2015 and October 30, 2015, approximately 2,100 cubic yards of soil was hauled by Carranza Trucking, Rios Trucking, Senior and Son Trucking to Jay Dan Landfarm, LLC located northwest of Lovington, New Mexico. Targa was unable to retrieve waste manifests from Jay Dan Landfarm, LLC, an amended report will be sent to OCD if waste manifests are received. On April 19, 2016, LAI, on behalf of Targa, forwarded a remediation report entitled "Remediation Summary, December 15, 2015" to the OCD in Hobbs and Santa Fe, New Mexico. Appendix A presents the waste manifests.

Additional Remediation Activities (April 2016)

On February 9, 2016, after completing the initial remediation, the landowner, Dan Fields, through a third party, collected soil samples at two (2) locations from the excavation. The samples were submitted to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico and were analyzed for TPH by Method 418.1. The laboratory reported TPH at 44,000 mg/Kg in sample T-1-4 and 49,000 mg/Kg in sample T-2-18. Dan Fields made contact directly with the Santa Fe and Hobbs district OCD offices to report the newly observed hydrocarbon staining at the following locations:

- south wall near the east end of the excavation between 18 and 20 feet bgs;
- near the northeast corner of the excavation at about 15 feet bgs; and
- the west wall directly below the pipeline at about four (4) feet bgs.

The OCD confirmed the staining and required further remediation of the newly found contamination.

Between May 6 and May 11, 2016, Gandy Corporation (Gandy) under LAI supervision used a trackhoe to excavate the additional hydrocarbon-impacted soil at the locations observed by the landowner. Soil was not excavated directly beneath the pipeline on the west side of the excavation until the main excavation was backfilled to support the pipe and provide safe working conditions. Gandy excavated approximately 60 cubic yards of additional soil and disposed at the Gandy-Marley Landfill located west of Tatum, New Mexico, between May 6 and 11, 2016. Regulatory communication with the OCD is presented in Appendix B. Appendix C presents the waste manifests for the additional soil disposal.

On May 13, 2016 LAI personnel accompanied OCD District 1 representative, Jaime Keyes, and Todd Roberson with Trinity Oilfield Services, LLC (Trinity) representing the landowner, to spilt soil samples from the additional excavation areas. All parties agreed upon soil sample locations and LAI and Trinity personnel collected spilt samples. LAI samples were delivered to Trace, in Midland and Lubbock, Texas, and were analyzed by EPA SW-846 Method 8015D for TPH and chloride by Method E300. All samples reported TPH below the method reporting limit (RL) except from the west wall beneath the pipeline at 4 feet bgs (6,198 mg/Kg). Chloride was below the OCD delineation limit of 250 mg/Kg. The additional remediation soil samples analytical data summary is presented in Table 3. Table 4 presents the Trinity confirmation sample analytical data summary. Figure 4 presents a drawing showing locations for the additional remediation soil sample. Appendix D presents laboratory reports for the additional remediation soil samples.

Between September 15 and 19, 2016, Gandy backfilled the excavation to the bottom of the pipeline to allow safe access. On September 19 and 20, 2016, Gandy excavated approximately 120 cubic yards of soil from beneath the pipeline on the west side of the excavation. Soil was excavated to a maximum depth of approximately 15 feet bgs and disposed at the Gandy-Marley Landfill. On September 30, 2016 LAI, personnel accompanied Todd Roberson with Trinity, and representing the landowner, to collect additional confirmation soil samples from the west sidewall and bottom of the west excavation. LAI samples were analyzed by Trace, located in Midland and Lubbock, Texas, by EPA SW-846 Method 8015D for TPH and chloride by Method E300. Neither Targa nor LAI representatives received laboratory results for spilt samples collected by Trinity on behalf of the landowner. Table 3 presents the LAI additional remediation soil sample analytical data summary. Table 4 presents the Trinity confirmation sample analytical data summary. Figure 5 presents the additional remediation confirmation soil sample

locations. Appendix D presents the laboratory reports. Appendix E presents photographic documentation.

In referring to Table 3 and Table 4, laboratory results for samples collected from both LAI and Trinity confirmed that remaining TPH in sidewall and bottom samples is below the RRAL. The collected confirmation soil samples that were split between LAI and Trinity on May 13, 2016 indicate similar concentrations for BTEX and TPH.

Conclusions

The laboratory results of soil samples collected from the bottom and sidewalls of the excavation confirm that the RRAL of 50 mg/Kg for BTEX and 1,000 mg/Kg for TPH has been achieved. Chloride was less than 250 mg/Kg in all samples from the excavation. Based on the information presented herein, no additional investigation or remediation is required at this time. Targa requests no further action for the release and final closure approval. Appendix F presents the initial and final C-141 forms.

Table 1

Investigation Soil Sample Analytical Data Summary
Targa Midstream Services, LLC, Townsend 16" Pipeline Release
Lea County, New Mexico

Sample	Depth (Feet)	Collection Date	PID (ppm)	Benzene (mg/Kg)	BTEX (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
OCD RRAL:				10	50			1,000	
HA-1	0.5	07/16/2015	4	--	--	589	<4.0	589	<25.0
SB-1	5	08/03/2015	393	--	--	8,570	2,810	11,380	--
	10	08/03/2015	323	--	--	5,900	1,870	7,770	--
HA-2	0.5	07/16/2015	71	--	--	8,680	31.6	8,711.6	<25.0
HA-3	0.5	07/16/2015	412	6.82	366	14,700	4,460	19,160	<25.0
SB-2	5	08/03/2015	317	--	--	2,870	847	3,717	--
	10	08/03/2015	22.8	--	--	<50.0	<4.00	<54.0	--
HA-4	0.5	07/16/2015	236	0.503	34.4	6,930	619	7,549	28
SB-3	5	08/03/2015	7.9	--	--	<50.0	<4.00	<54.0	--
	10	08/03/2015	4.4	--	--	<50.0	<4.00	<54.0	--
SB-4	0	08/03/2015	20.3	--	--	253	<8.00	253	<20.0
	5	08/03/2015	543	--	--	2,430	546	2,976	<20.0
	10	08/03/2015	11.5	--	--	<50.0	<4.00	<54.0	<20.0
HA-5	4	07/16/2015	307	60.6	698.6	21,600	7,320	28,920	2,370
SB-5	10	08/03/2015	54	--	--	104	<4.00	104	488
	15	08/03/2015	52	--	--	56.6	<4.00	56.6	<20.0
	20	08/03/2015	7.9	--	--	<50.0	<4.00	<54.0	299
	25	08/03/2015	6.1	--	--	<50.0	<4.00	<54.0	498

Table 1

Soil Investigation Analytical Data Summary
Targa Midstream Services, LLC, Townsend 16" Pipeline Release
Lea County, New Mexico

Sidewall Samples									
S-1	2	07/16/2015	243	5.51	199.3	26,900	3,940	30,840	936
S-2	2	07/16/2015	312	12.3	334.9	31,000	4,700	35,700	572
S-3	2	07/16/2015	204	8.18	186.9	35,800	3,440	32,240	403
S-4	2	07/16/2015	371	21	578	23,500	8,380	31,880	488

Notes: Laboratory analysis performed by Trace Analysis, Inc., Midland and Lubbock, Texas.

BTEX performed by EPA SW-846 method 8021B

TPH (GRO and DRO) performed by EPA SW-846 method 8015M

Chloride performed by method E300.0

Depth in feet below ground surface (bgs)

mg/Kg: milligrams per kilogram equivalent to parts per million (ppm)

Bold and highlighted indicates that analyte was detected above the OCD recommended remediation action level (RRAL)

Table 2

Initial Remediation: Soil Confirmation Analytical Data Summary
Targa Midstream Services, LLC, Townsend 16" Pipeline Release
Lea County, New Mexico

Location	Depth (Feet)	Collection Date	Status	DRO (mg/Kg)	GRO (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
OCD RRAL:						1,000	
Bottom (North of Pipeline)	15	9/21/2015	Excavated	3,120	3,921	7,040	--
	18	10/13/2015	Excavated	4,640	4,640	9,280	<25.0
	20	10/13/2015	Excavated	8,300	5,240	13,540	<25.0
	22	10/13/2015	Excavated	1,050	668	1,718	<25.0
	23	10/26/2015	In-Situ	<50.0	<4.00	<54.0	<25.0
	24	10/13/2015	In-Situ	281	201	482	<25.0
	26	10/13/2015	In-Situ	578	86.6	664.6	<25.0
Bottom (South of Pipeline)	15	9/23/2015	Excavated	3,220	1,420	4,640	--
	18	10/15/2015	Excavated	2,450	5,770	8,220	--
	20	10/15/2015	Excavated	1,850	1,400	3,250	--
	21	10/22/2015	In-Situ	171	<4.0	171	--
	22	10/15/2015	In-Situ	69	11.9	80.9	183
	24	10/15/2015	In-Situ	<50.0	<4.00	<54.0	--
North Side	12	9/21/2015	In-Situ	<50.0	<4.00	<54.0	--
	23	10/26/2015	In-Situ	<50.0	<4.00	<54.0	<25.0
South Side	9	9/21/2015	In-Situ	<50.0	<4.00	<54.0	--
	21	10/23/2015	In-Situ	<50.0	<4.00	<54.0	<25.0
East Side	12	9/21/2015	In-Situ	<50.0	<4.00	<54.0	--
	23	10/22/2015	In-Situ	<50.0	<4.00	<54.0	110
West Side (north of P/L)	12	9/21/2015	Excavated	12,500	5,350	17,850	--
	15	10/15/2015	In-Situ	242	77.3	319.3	--
	18	10/15/2015	In-Situ	<50.0	<4.0	<54.0	<25.0
	21	10/30/2015	In-Situ	<50.0	<4.0	<54.0	<25.0
West Side (under P/L)	6	9/21/2015	In-Situ	106	<4.0	106	--
	12	9/21/2015	In-Situ	<50.0	<4.0	<54.0	<25.0

Table 2

Initial Remediation: Soil Confirmation Analytical Data Summary
Targa Midstream Services, LLC, Townsend 16" Pipeline Release
Lea County, New Mexico

West Side (south of P/L)	12	9/21/2015	In-Situ	<50.0	<4.0	<54.0	<25.0
	15	10/15/2015	In-Situ	<50.0	<4.0	<54.0	<25.0
	18	10/15/2015	In-Situ	<50.0	<4.0	<54.0	<25.0
	21	10/22/2015	In-Situ	<50.0	<4.0	<54.0	112

Notes: Laboratory analysis performed by Trace Analysis, Inc., Midland and Lubbock, Texas.

TPH (GRO and DRO) performed by EPA SW-846 method 8015M

Chloride performed by method E300.0

Depth in feet below ground surface (bgs)

mg/Kg: milligrams per kilogram equivalent to parts per million (ppm)

Bold and highlighted indicates that analyte was detected above the OCD recommended remediation action level (RRAL)

Table 3

Additional Remediation: Soil Confirmation Sample Analytical Data Summary
Targa Midstream Services, LLC, Townsend 16" Pipeline Release
Lea County, New Mexico

Location	Depth (Feet)	Collection Date	Status	DRO (mg/Kg)	GRO (mg/Kg)	ORO (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
OCD RRAL:							1,000	
North Wall West (SP-1)	4	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	<25.0
	8	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	<25.0
	10	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	97.9
	14	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	<25.0
	18	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	25.5
North Wall East (SP-2)	4	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	89.9
	8	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	32.5
	10	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	36.6
	14	5/13/2016	In Situ	320	<4.00	<50.0	320	31.1
	18	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	<25.0
East Wall (SP-3)	4	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	<25.0
	8	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	<25.0
	10	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	<25.0
	14	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	<25.0
	18	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	<25.0
South Wall East (SP-4)	4	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	<25.0
	8	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	<25.0
	10	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	<25.0
	14	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	<25.0
	18	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	25
South Wall West (SP-5)	4	5/13/2016	In Situ	69.8	<4.00	<50.0	69.8	25
	8	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	<25.0
	10	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	<25.0
	14	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	124
	18	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	120

Additional Remediation: Soil Confirmation Sample Analytical Data Summary
Targa Midstream Services, LLC, Townsend 16" Pipeline Release
Lea County, New Mexico

West Wall (SP-6)	4	5/13/2016	Excavated	4,870	248	1,080	6,198	<25.0
	8	5/13/2016	Excavated	<50.0	<4.00	<50.0	<50.0	25.9
	10	5/13/2016	Excavated	<50.0	<4.00	<50.0	<50.0	<25.0
	14	5/13/2016	Excavated	<50.0	<4.00	<50.0	<50.0	<25.0
	18	5/13/2016	Excavated	<50.0	<4.00	<50.0	<50.0	89.5
SP-1 S P/L Bottom	10	9/30/2016	In Situ	<50.0	<4.00	<50.0	<50.0	<25.0
SP-2 S P/L Wall	5	9/30/2016	In Situ	<50.0	<4.00	<50.0	<50.0	<25.0
SP-3 N P/L Wall	5	9/30/2016	In Situ	162	<4.00	<50.0	<50.0	<25.0
SP-4 N P/L Bottom	15	9/30/2016	In Situ	<50.0	<4.00	<50.0	<50.0	<25.0
Bottom (SP-7)	24	5/13/2016	In Situ	<50.0	<4.00	<50.0	<50.0	57.5

Notes: Laboratory analysis performed by Trace Analysis, Inc., Midland and Lubbock, Texas.

TPH (GRO, DRO, and ORO) performed by EPA SW-846 method 8015M

Chloride performed by method E300.0

Depth in feet below ground surface (bgs)

mg/Kg: milligrams per kilogram equivalent to parts per million (ppm)

Bold and highlighted indicates that analyte was detected above the OCD recommended remediation action level (RRAL)

Table 4

Trinity Oilfield Services Remediation: Soil Confirmation Sample Analytical Data Summary
Targa Midstream Services, LLC, Townsend 16" Pipeline Release
Lea County, New Mexico

Location	Depth (Feet)	Collection Date	Status	BTEX (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)	ORO (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
OCD RRAL:								1,000	
SP-1 (NW Wall)	4	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	<16.0
	8	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	48
	10	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	16.0
	14	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	<16.0
	18	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	<16.0
SP-2 (NE Wall)	4	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	112
	8	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	<16.0
	10	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	<16.0
	14	5/13/2016	In Situ	<0.3	269	<10.0	70.4	339.4	16.0
	18	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.1	<16.0
SP-3 (East Wall)	4	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	<16.0
	8	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	<16.0
	10	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	<16.0
	14	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	<16.0
	18	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	<16.0
SP-4 (SE Wall)	4	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	<16.0
	8	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	16.0
	10	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	16.0
	14	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	<16.0
	18	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	<16.0
SP-5 (SW Wall)	4	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	<16.0
	8	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	<16.0
	10	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	<16.0
	14	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	128
	18	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	128

Table 4

Trinity Oilfield Services Remediation: Soil Confirmation Sample Analytical Data Summary
Targa Midstream Services, LLC, Townsend 16" Pipeline Release
Lea County, New Mexico

SP-6 (West Wall)	4	5/13/2016	Excavated	14.9	3,570	136	556	4,262	<16.0
	8	5/13/2016	Excavated	<0.3	<10.0	<10.0	<10.0	<10.0	16
	10	5/13/2016	Excavated	<0.3	<10.0	<10.0	<10.0	<10.0	<16.0
	14	5/13/2016	Excavated	<0.3	<10.0	<10.0	<10.0	<10.0	<16.0
	18	5/13/2016	Excavated	<0.3	<10.0	<10.0	<10.0	<10.0	128
SP-7 (Bottom)	24	5/13/2016	In Situ	<0.3	<10.0	<10.0	<10.0	<10.0	64

Notes: Laboratory analysis performed by Trace Analysis, Inc., Midland and Lubbock, Texas.

TPH (GRO and DRO) performed by EPA SW-846 method 8015M

Chloride performed by SM4500Cl-B titration method

Depth in feet below ground surface (bgs)

mg/Kg: milligrams per kilogram equivalent to parts per million (ppm)

Bold and highlighted indicates that analyte was detected above the OCD recommended remediation action level (RRAL)

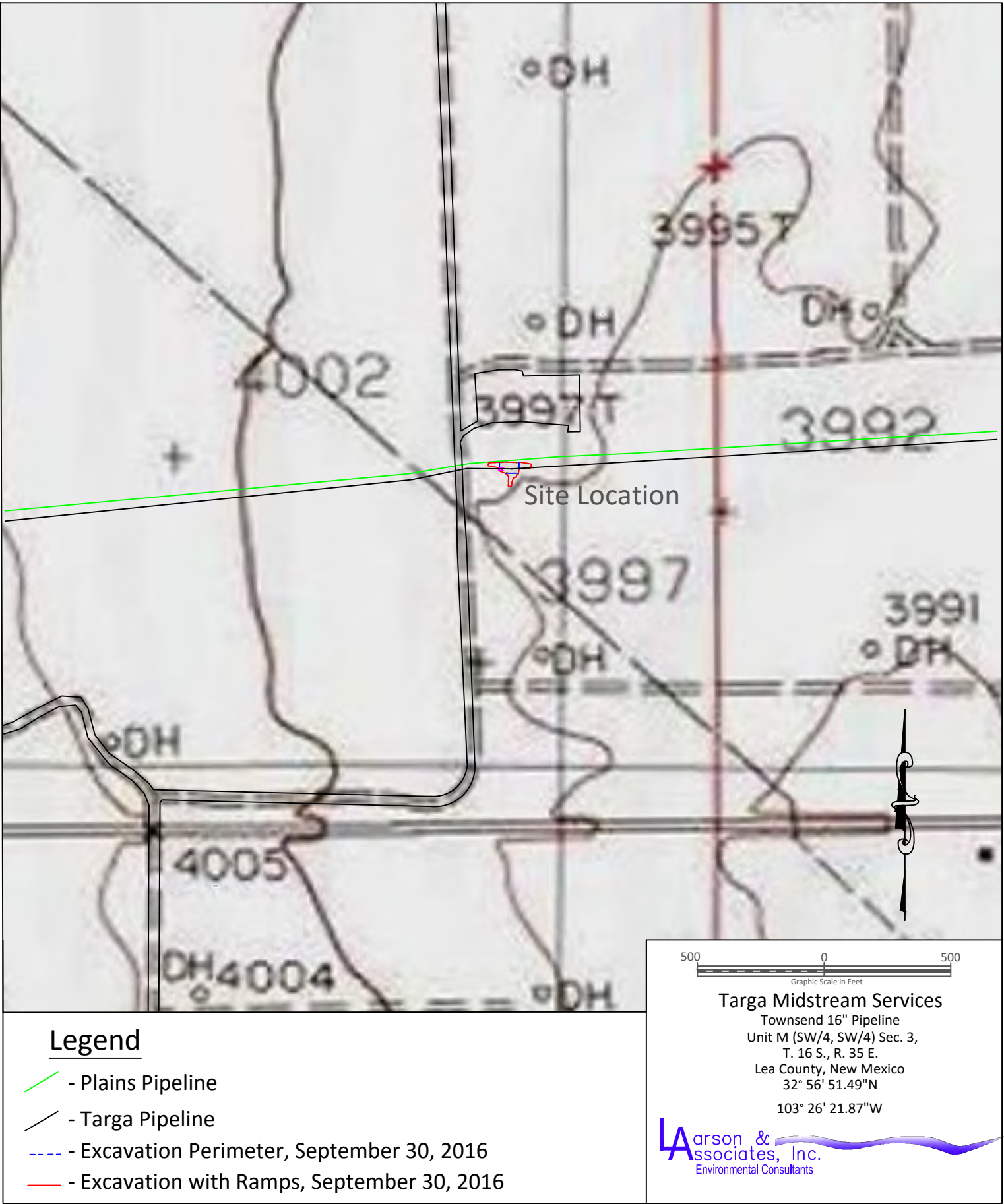


Figure 1- Topographic Map Showing Excavations, September 30, 2016

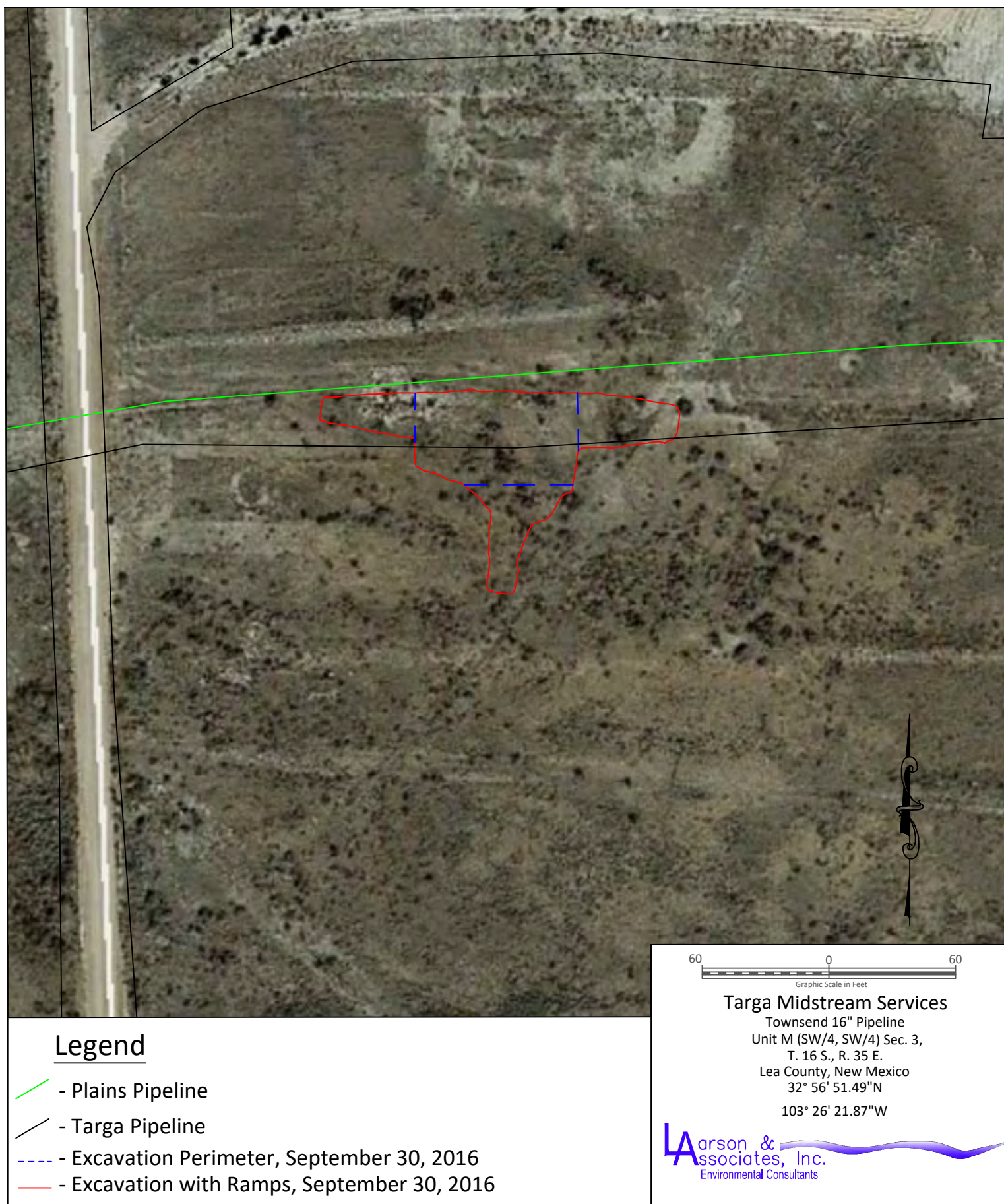
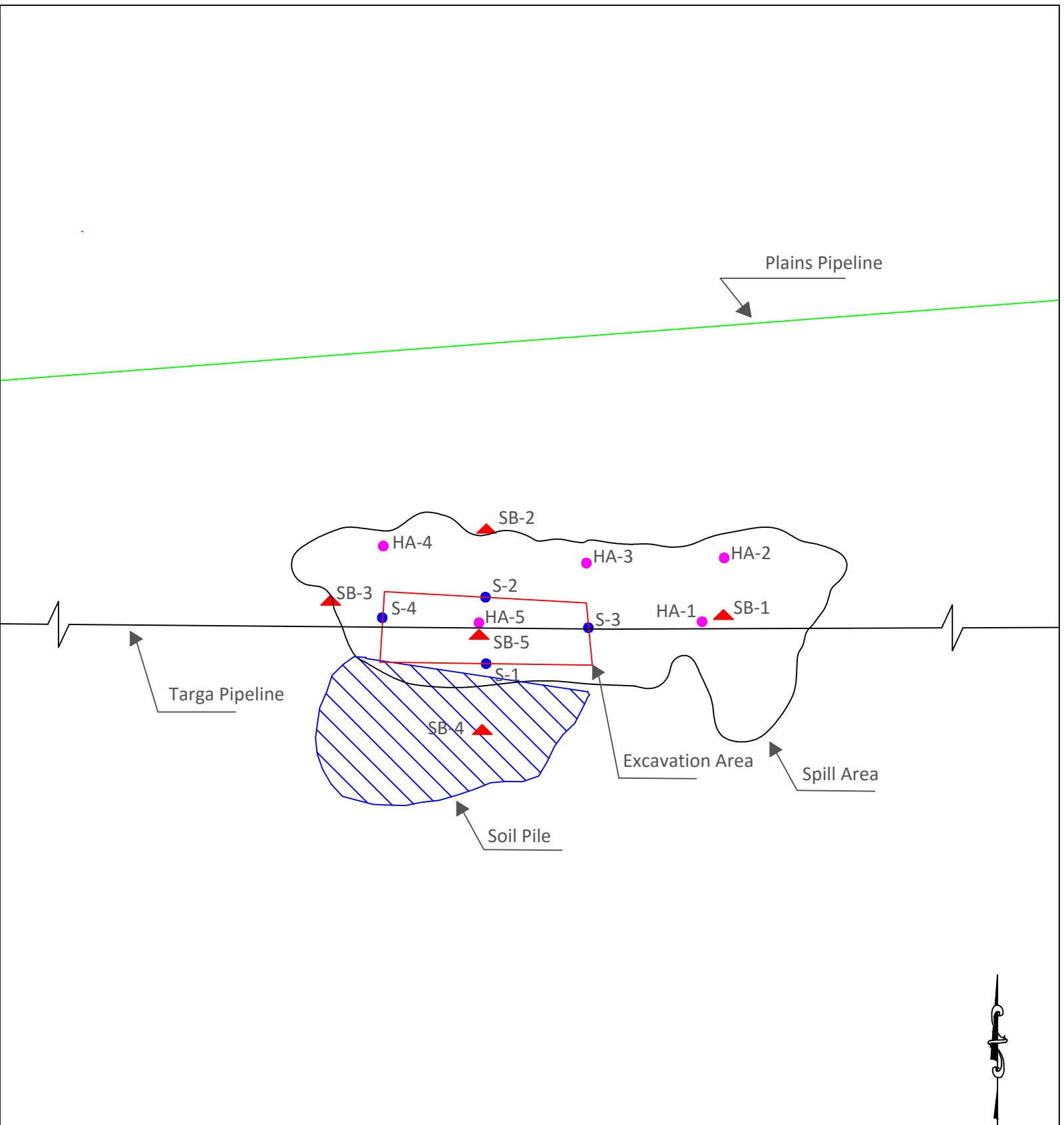


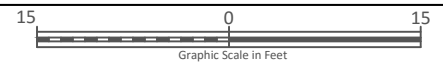
Figure 2- Aerial Showing Excavation, September 30, 2016



LEGEND

- HA-5 -Hand Auger Soil Sample
July 16, 2015
- S-1 -Sidewall Sample (Excavation)
July 16, 2015
- SB-1 -Soil Boring Location
August 3, 2015

- Spill Area
- Soil Pile
- Excavation
- Targa Pipeline
- Plains Pipeline



Targa Midstream Services

Townsend 16" Pipeline
Unit M (SW/4, SW/4) Sec. 3,
T. 16 S., R. 35 E.
Lea County, New Mexico
32° 56' 51.49"N
103° 26' 21.87"W

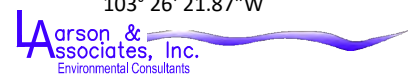
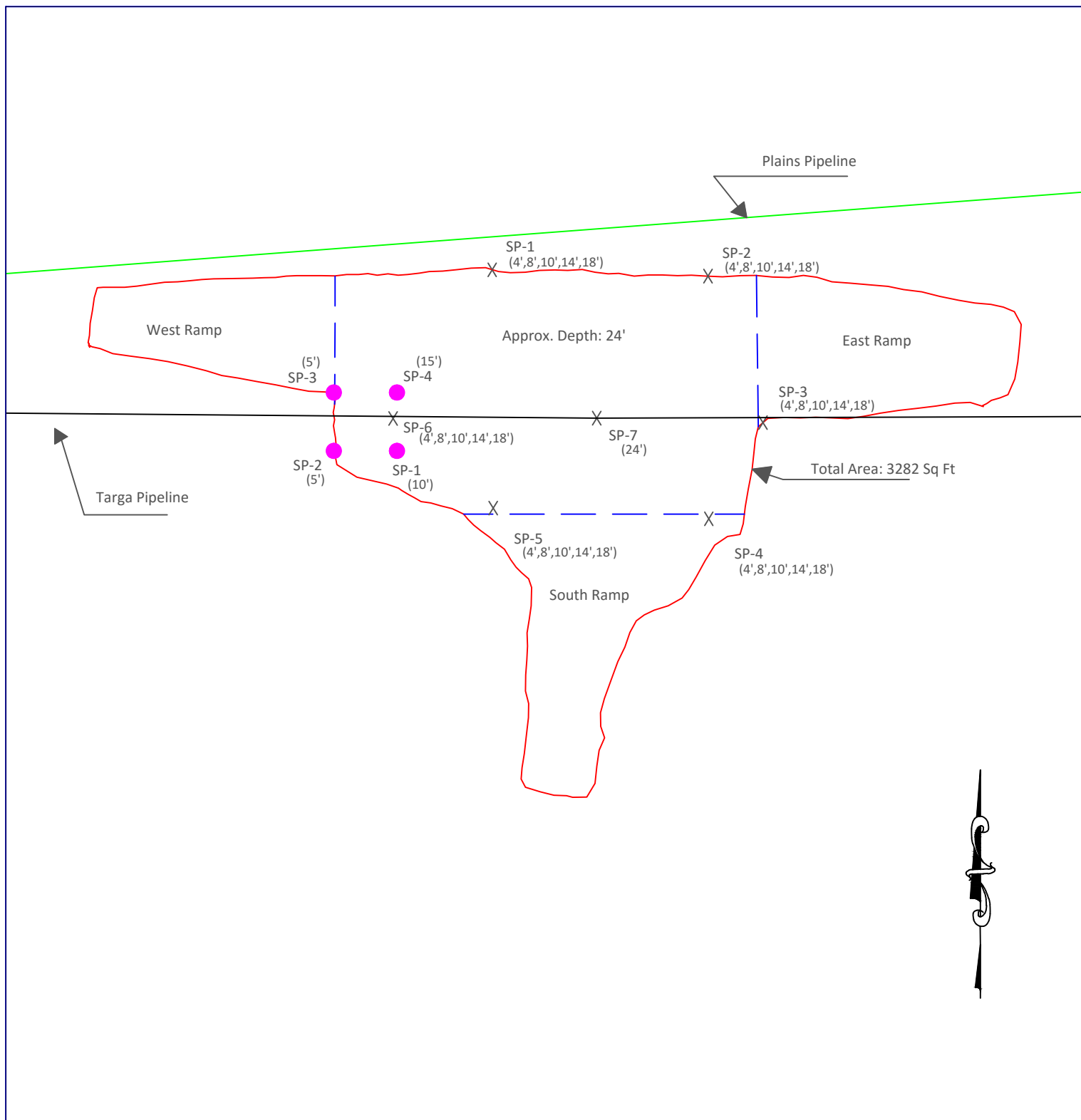
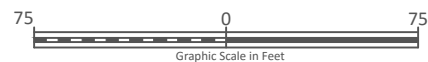


Figure 3 - Detailed Site Map with Soil Investigation Samples



Legend

- X - Soil Confirmation Sample Location, May 13, 2016
- - Soil Confirmation Sample Location, September 30, 2016
- - Plains Pipeline
- - Targa Pipeline
- - - - - Excavation Perimeter, September 30, 2016
- Excavation with Ramps, September 30, 2016



Targa Midstream Services
 Townsend 16" Pipeline
 Unit M (SW/4, SW/4) Sec. 3,
 T. 16 S., R. 35 E.
 Lea County, New Mexico
 32° 56' 51.49"N
 103° 26' 21.87"W

Larson & Associates, Inc.
 Environmental Consultants

Figure 4 - Detailed Site Map with Soil Confirmation Samples

Appendix A

GANDY•MARLEY, INC.

P.O. Box 1658
Roswell, NM 88202
(575) 347-0434
Fax (575) 347-0435

No. 32278

LEASE OPERATOR/SHIPPER/COMPANY: TARGA MIDSTREAM

LEASE NAME: TOWNSEND - DAN FIELDS

TRANSPORTER COMPANY: GANDY TIME: 1035 (AM/PM)

DATE: 05-11-16 VEHICLE NO.: 346 DRIVER NO.:

CHARGE TO:

TYPE OF MATERIAL

OCD

[] Other Material: [☒] Contaminated soil [] C-117 No.: _____
[] BS&W content: _____

Description: CL

COMPANY CONTACT:

VOLUME OF MATERIAL []: YARDS 20 : CELL# LF : []

AS A CONDITION TO GANDY•MARLEY, INC.'S ACCEPTANCE OF THE MATERIALS SHIPPED WITH THIS JOB TICKET, OPERATOR/SHIPPER REPRESENTS AND WARRANTS THAT THE WASTE MATERIAL SHIPPED HERewith IS MATERIAL EXEMPT FROM THE RESOURCE, CONSERVATION AND RECOVERY ACT OF 1976, AS AMENDED FROM TIME TO TIME, 40 U.S.C. §6901, et seq., THE NM HEALTH AND SAF. CODE, §361.001, et seq. AND REGULATIONS RELATED THERETO, BY VIRTUE OF THE EXEMPTION AFFORDED CONTAMINATED SOILS AND OTHER WASTE ASSOCIATED WITH THE EXPLORATION, DEVELOPMENT OR PRODUCTION OF CRUDE OIL OR NATURAL GAS OR GEOTHERMAL ENERGY.

ALSO AS A CONDITION TO GANDY•MARLEY, INC.'S ACCEPTANCE OF THE MATERIALS SHIPPED WITH THIS JOB TICKET, TRANSPORTER REPRESENTS AND WARRANTS THAT ONLY THE MATERIAL DELIVERED BY OPERATOR/SHIPPER TO TRANSPORTER IS NOW DELIVERED BY TRANSPORTER TO GANDY•MARLEY, INC.'S FACILITY FOR DISPOSAL.

THIS WILL CERTIFY that the above Transporter loaded the material represented by this Transporter Statement at the above described location, and that it was tendered by the above described shipper. This will certify that no additional materials were added to this load, and that the material was delivered without incident.

DRIVER: Joana Cruz

FACILITY REPRESENTATIVE: G. Tolton

White - GMI

Canary - Shipper

Pink - GMI

Gold - Transporter

GANDY•MARLEY, INC.

P.O. Box 1658
Roswell, NM 88202
(575) 347-0434
Fax (575) 347-0435

No. 32282

LEASE OPERATOR/SHIPPER/COMPANY: TARGA MIDSTREAM

LEASE NAME: TOWNSEND - DAN FIELDS

TRANSPORTER COMPANY: GANDY TIME: 2:13 AM/PM

DATE: 05-11-16 VEHICLE NO.: 346 DRIVER NO.:

CHARGE TO:

TYPE OF MATERIAL

OCD

☐ Other Material: ☒ Contaminated soil ☐ C-117 No.: _____
☐ BS&W content: _____

Description: CL

COMPANY CONTACT:

VOLUME OF MATERIAL ☐ : YARDS 20 : CELL# LF : ☐

AS A CONDITION TO GANDY•MARLEY, INC.'S ACCEPTANCE OF THE MATERIALS SHIPPED WITH THIS JOB TICKET, OPERATOR/SHIPPER REPRESENTS AND WARRANTS THAT THE WASTE MATERIAL SHIPPED HERewith IS MATERIAL EXEMPT FROM THE RESOURCE, CONSERVATION AND RECOVERY ACT OF 1976, AS AMENDED FROM TIME TO TIME, 40 U.S.C. §6901, et seq., THE NM HEALTH AND SAF. CODE, §361.001, et seq. AND REGULATIONS RELATED THERETO, BY VIRTUE OF THE EXEMPTION AFFORDED CONTAMINATED SOILS AND OTHER WASTE ASSOCIATED WITH THE EXPLORATION, DEVELOPMENT OR PRODUCTION OF CRUDE OIL OR NATURAL GAS OR GEOTHERMAL ENERGY.

ALSO AS A CONDITION TO GANDY•MARLEY, INC.'S ACCEPTANCE OF THE MATERIALS SHIPPED WITH THIS JOB TICKET, TRANSPORTER REPRESENTS AND WARRANTS THAT ONLY THE MATERIAL DELIVERED BY OPERATOR/SHIPPER TO TRANSPORTER IS NOW DELIVERED BY TRANSPORTER TO GANDY•MARLEY, INC.'S FACILITY FOR DISPOSAL.

THIS WILL CERTIFY that the above Transporter loaded the material represented by this Transporter Statement at the above described location, and that it was tendered by the above described shipper. This will certify that no additional materials were added to this load, and that the material was delivered without incident.

DRIVER: Norma Cervantes

FACILITY REPRESENTATIVE: J. Tolton

White - GMI

Canary - Shipper

Pink - GMI

Gold - Transporter

NEW MEXICO NON-HAZARDOUS OILFIELD WASTE MANIFEST
(PLEASE PRINT)

Company Man Contact Information

Name _____

Phone No. _____

No 00832

GENERATOR

Operator No. _____
Operators Name TARGA MIDSTREAM
Address 1400 N. 10th St. Suite 100
City, State, Zip _____
Phone No. _____

Location of Origin TOWNSEND FIELD LEAK
Lease/Well _____
Name & No. _____
County _____
API No. _____
Rig Name & No. _____
AFE/PO No. _____

TRUCK TIME STAMP

IN: 9:11 AM OUT: _____

DISPOSAL FACILITY

RECEIVING AREA

Name/No. LAND FILL

Site Name / Permit No. Commercial Landfarm (NM-711-1-0020)
Address _____

Phone No. _____

NORM Readings Taken? (Circle One) YES NO
Pass the Paint Filter Test? (Circle One) YES NO

If YES, was reading > 50 micro roentgens? (Circle One) YES NO

TRANSPORTER

Transporter's Name GANDY CORP
Address _____
Phone No. _____

Driver's Name _____
Print Name _____
Phone No. _____
Truck No. _____

I hereby certify that the above named material(s) was/were picked up at the Generator's site listed above and delivered without incident to the disposal facility listed below.

SHIPMENT DATE

DRIVER'S SIGNATURE

09-21-16
DELIVERY DATEX Rick Sanchez
DRIVER'S SIGNATURE

Exempt E&P Waste/Service Identification and Amount (Place volume next to waste type in barrels or cubic yards)

Oil Based Muds	_____	<u>NON-INJECTABLE WATERS</u>	_____	<u>INJECTABLE WATERS</u>	_____
Oil Based Cuttings	_____	Washout Water (Non-Injectable)	_____	Washout Water (Injectable)	_____
Water Based Muds	_____	Completion Fluid/Flowback (Non-Injectable)	_____	Completion Fluid/Flowback (Injectable)	_____
Water Based Cuttings	_____	Produced Water (Non-Injectable)	_____	Produced Water (Injectable)	_____
Produced Formation Solids	_____	Gathering Line Water/Waste (Non-Injectable)	_____	Gathering Line Water/Waste (Injectable)	_____
Tank Bottoms	_____	<u>INTERNAL USE ONLY</u>	_____	<u>OTHER EXEMPT WASTES</u>	_____
E&P Contaminated Soil	<u>1</u>	Truck Washout (Exempt Waste)	_____	(Types and generation process of the waste)	_____
Gas Plant Waste	_____				

WASTE GENERATION PROCESS: ☐ Drilling☐ Completion☐ Production☐ Gathering Lines

Non-Exempt E&P Waste/Service Identification and Amount

(All non-exempt E&P waste must be analyzed and be below the threshold limits for toxicity (TCLP), Ignition, corrosiveness, and reactivity.)

Non-Exempt Other: _____

*Please select from Non-Exempt Waste List on back

QUANTITY: _____ B - Barrels _____ L - Liquid 20 Y - Yards _____ E - Each

I hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination, the above described waste load is (Check the appropriate classification)

☐ RCRA EXEMPT: Oil field wastes generated from oil and gas exploration and production operations and are not mixed with non-exempt waste. (Gandy Marley, Inc. accepts certifications on a per month only basis.)☐ RCRA NON-EXEMPT: Oil field waste which is non-hazardous that does not exceed the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR 261.21-261.24, or listed hazardous waste as defined by 40 CFR, part 261, subpart D, as amended. The following documentation demonstrating the waste as non-hazardous is attached. (Check the appropriate items as provided.)☐ MSDS Information☐ RCRA Hazardous Waste Analysis☐ Other (Provide Description Below)☐ EMERGENCY NON-OILFIELD: Emergency non-hazardous, non-oilfield waste that has been ordered by the Department of Public Safety. (The order, documentation of non-hazardous waste determination and a description of the waste must accompany this form.)

(PRINT) AUTHORIZED AGENTS SIGNATURE

DATE

SIGNATURE

TANK BOTTOMS

Feet

Inches

1st Gauge _____
2nd Gauge _____
Received _____

BS&W/BBLS Received _____ BS&W (%) _____
Free Water _____
Total Received _____

I hereby certify that the above load material has been (circle one): ACCEPTED

DENIED

If denied, why? _____

NAME (PRINT)

DATE

TITLE

SIGNATURE

SUPERIOR PRINTING SERVICE, INC.



NEW MEXICO NON-HAZARDOUS OILFIELD WASTE MANIFEST
(PLEASE PRINT)

Company Man Contact Information

Name _____

Phone No. _____

No 00799

GENERATOR

Operator No. _____
Operators Name TARGA MIDSTREAM
Address _____
City, State, Zip _____
Phone No. _____

Location of Origin
Lease/Well TOWNSEND FIELD LEAK
Name & No. _____
County _____
API No. _____
Rig Name & No. _____
AFE/PO No. _____

TRUCK TIME STAMP

IN: 9:55 AM OUT: _____

DISPOSAL FACILITY

RECEIVING AREA

Name/No. LANDFILL

Site Name / Permit No. Commercial Landfarm (NM-711-1-0020)

Address _____

NORM Readings Taken? (Circle One) YES NO

Pass the Paint Filter Test? (Circle One) YES NO

Phone No. _____

If YES, was reading > 50 micro roentgens? (Circle One) YES NO

Transporter's Name GANDY CORP

Address _____

Phone No. _____

TRANSPORTER

Driver's Name _____

Print Name _____

Phone No. _____

Truck No. 353

I hereby certify that the above named material(s) was/were picked up at the Generator's site listed above and delivered without incident to the disposal facility listed below.

SHIPMENT DATE

DRIVER'S SIGNATURE

09-20-16
DELIVERY DATE

[Signature]
DRIVER'S SIGNATURE

Exempt E&P Waste/Service Identification and Amount (Place volume next to waste type in barrels or cubic yards)

Oil Based Muds	_____	<u>NON-INJECTABLE WATERS</u>	_____	<u>INJECTABLE WATERS</u>	_____
Oil Based Cuttings	_____	Washout Water (Non-Injectable)	_____	Washout Water (Injectable)	_____
Water Based Muds	_____	Completion Fluid/Flowback (Non-Injectable)	_____	Completion Fluid/Flowback (Injectable)	_____
Water Based Cuttings	_____	Produced Water (Non-Injectable)	_____	Produced Water (Injectable)	_____
Produced Formation Solids	_____	Gathering Line Water/Waste (Non-Injectable)	_____	Gathering Line Water/Waste (Injectable)	_____
Tank Bottoms	_____	<u>INTERNAL USE ONLY</u>	_____	<u>OTHER EXEMPT WASTES</u>	_____
E&P Contaminated Soil	<u>✓</u>	Truck Washout (Exempt Waste)	_____	(Types and generation process of the waste)	_____
Gas Plant Waste	_____				

WASTE GENERATION PROCESS: ☐ Drilling

☐ Completion

☐ Production

☐ Gathering Lines

Non-Exempt E&P Waste/Service Identification and Amount

(All non-exempt E&P waste must be analyzed and be below the threshold limits for toxicity (TCLP), ignition, corrosiveness, and reactivity.)

Non-Exempt Other: _____

*Please select from Non-Exempt Waste List on back

QUANTITY: _____ B - Barrels _____ L - Liquid 20 Y - Yards _____ E - Each

I hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination, the above described waste load is (Check the appropriate classification)

☐ RCRA EXEMPT: Oil field wastes generated from oil and gas exploration and production operations and are not mixed with non-exempt waste. (Gandy Marley, Inc. accepts certifications on a per month only basis.)

☐ RCRA NON-EXEMPT: Oil field waste which is non-hazardous that does not exceed the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR 261.21-261.24, or listed hazardous waste as defined by 40 CFR, part 261, subpart D, as amended. The following documentation demonstrating the waste as non-hazardous is attached. (Check the appropriate items as provided.)

☐ MSDS Information

☐ RCRA Hazardous Waste Analysis

☐ Other (Provide Description Below)

☐ EMERGENCY NON-OILFIELD: Emergency non-hazardous, non-oilfield waste that has been ordered by the Department of Public Safety. (The order, documentation of non-hazardous waste determination and a description of the waste must accompany this form.)

(PRINT) AUTHORIZED AGENTS SIGNATURE

DATE

SIGNATURE

TANK BOTTOMS

Feet

Inches

1st Gauge _____
2nd Gauge _____
Received _____

BS&W/BBLS Received _____ BS&W (%) _____
Free Water _____
Total Received _____

I hereby certify that the above load material has been (circle one): ACCEPTED

DENIED

If denied, why? _____

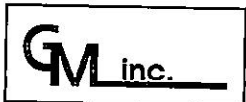
L. TOLTON
NAME (PRINT)

09-20-16
DATE

OFFICE
TITLE

[Signature]
SIGNATURE

SUPERIOR PRINTING SERVICE, INC.



NEW MEXICO NON-HAZARDOUS OILFIELD WASTE MANIFEST
(PLEASE PRINT)

Company Man Contact Information

Name _____

Phone No. _____

No 00800

GENERATOR

Operator No. _____
Operators Name TARGA MIDSTREAM
Address _____
City, State, Zip _____
Phone No. _____

Location of Origin
Lease/Well TOWNSEND FIELD LEAK
Name & No. _____
County _____
API No. _____
Rig Name & No. _____
AFE/PO No. _____

TRUCK TIME STAMP

IN: 9:57 AM OUT: _____

DISPOSAL FACILITY

RECEIVING AREA

Name/No. LANDFILL

Site Name / Permit No. Commercial Landfarm (NM-711-1-0020)

Address _____

NORM Readings Taken? (Circle One) YES NO

Pass the Paint Filter Test? (Circle One) YES NO

Phone No. _____

If YES, was reading > 50 micro roentgens? (Circle One) YES NO

TRANSPORTER

Transporter's Name GANDY CORP

Address _____

Phone No. _____

Driver's Name _____

Print Name _____

Phone No. _____

Truck No. 346

I hereby certify that the above named material(s) was/were picked up at the Generator's site listed above and delivered without incident to the disposal facility listed below.

SHIPMENT DATE

DRIVER'S SIGNATURE

09-20-16

DELIVERY DATE

[Signature]
DRIVER'S SIGNATURE

Exempt E&P Waste/Service Identification and Amount (Place volume next to waste type in barrels or cubic yards)

Oil Based Muds _____
Oil Based Cuttings _____
Water Based Muds _____
Water Based Cuttings _____
Produced Formation Solids _____
Tank Bottoms _____
E&P Contaminated Soil ✓
Gas Plant Waste _____

NON-INJECTABLE WATERS

Washout Water (Non-Injectable) _____
Completion Fluid/Flowback (Non-Injectable) _____
Produced Water (Non-Injectable) _____
Gathering Line Water/Waste (Non-Injectable) _____
INTERNAL USE ONLY
Truck Washout (Exempt Waste) _____

INJECTABLE WATERS

Washout Water (Injectable) _____
Completion Fluid/Flowback (Injectable) _____
Produced Water (Injectable) _____
Gathering Line Water/Waste (Injectable) _____
OTHER EXEMPT WASTES
(Types and generation process of the waste) _____

WASTE GENERATION PROCESS: ☐ Drilling

☐ Completion

☐ Production

☐ Gathering Lines

Non-Exempt E&P Waste/Service Identification and Amount

(All non-exempt E&P waste must be analyzed and be below the threshold limits for toxicity (TCLP), ignition, corrosiveness, and reactivity.)

Non-Exempt Other: _____

*Please select from Non-Exempt Waste List on back

QUANTITY: _____ B - Barrels _____ L - Liquid 20 Y - Yards _____ E - Each

I hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination, the above described waste load is (Check the appropriate classification)

☐ RCRA EXEMPT:

Oil field wastes generated from oil and gas exploration and production operations and are not mixed with non-exempt waste. (Gandy Marley, Inc. accepts certifications on a per month only basis.)

☐ RCRA NON-EXEMPT:

Oil field waste which is non-hazardous that does not exceed the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR 261.21-261.24, or listed hazardous waste as defined by 40 CFR, part 261, subpart D, as amended. The following documentation demonstrating the waste as non-hazardous is attached. (Check the appropriate items as provided.)

☐ MSDS Information

☐ RCRA Hazardous Waste Analysis

☐ Other (Provide Description Below)

☐ EMERGENCY NON-OILFIELD: Emergency non-hazardous, non-oilfield waste that has been ordered by the Department of Public Safety. (The order, documentation of non-hazardous waste determination and a description of the waste must accompany this form.)

(PRINT) AUTHORIZED AGENTS SIGNATURE

DATE

SIGNATURE

TANK BOTTOMS

Feet

Inches

1st Gauge _____
2nd Gauge _____
Received _____

BS&W/BBLS Received _____ BS&W (%) _____
Free Water _____
Total Received _____

I hereby certify that the above load material has been (circle one): ACCEPTED DENIED

If denied, why? _____

J. TOLTON

NAME (PRINT)

09-20-16

DATE

office

TITLE

[Signature]

SIGNATURE

SUPERIOR PRINTING SERVICE, INC.

NEW MEXICO NON-HAZARDOUS OILFIELD WASTE MANIFEST
(PLEASE PRINT)

Company Man Contact Information

Name _____

Phone No. _____

No 00808

GENERATOR

Operator No. _____
Operators Name TARGA MIDSTREAM
Address _____
City, State, Zip _____
Phone No. _____

Location of Origin
Lease/Well TOWNSEND FIELD LEAK
Name & No. _____
County _____
API No. _____
Rig Name & No. _____
AFE/PO No. _____

TRUCK TIME STAMP

IN: 11:11 AM OUT: _____

DISPOSAL FACILITY

RECEIVING AREA

Name/No. LAND FILL

Site Name / Permit No. Commercial Landfarm (NM-711-1-0020)
Address _____

Phone No. _____

NORM Readings Taken? (Circle One) YES NO
Pass the Paint Filter Test? (Circle One) YES NO

If YES, was reading > 50 micro roentgens? (Circle One) YES NO

TRANSPORTER

Transporter's Name GANDY CORP
Address _____
Phone No. _____

Driver's Name _____
Print Name _____
Phone No. _____
Truck No. 359

I hereby certify that the above named material(s) was/were picked up at the Generator's site listed above and delivered without incident to the disposal facility listed below.

SHIPMENT DATE

DRIVER'S SIGNATURE

DELIVERY DATE

DRIVER'S SIGNATURE

Exempt E&P Waste/Service Identification and Amount (Place volume next to waste type in barrels or cubic yards)

Oil Based Muds	_____	NON-INJECTABLE WATERS	_____	INJECTABLE WATERS	_____
Oil Based Cuttings	_____	Washout Water (Non-Injectable)	_____	Washout Water (Injectable)	_____
Water Based Muds	_____	Completion Fluid/Flowback (Non-Injectable)	_____	Completion Fluid/Flowback (Injectable)	_____
Water Based Cuttings	_____	Produced Water (Non-Injectable)	_____	Produced Water (Injectable)	_____
Produced Formation Solids	_____	Gathering Line Water/Waste (Non-Injectable)	_____	Gathering Line Water/Waste (Injectable)	_____
Tank Bottoms	_____	INTERNAL USE ONLY	_____	OTHER EXEMPT WASTES	_____
E&P Contaminated Soil	_____	Truck Washout (Exempt Waste)	_____	(Types and generation process of the waste)	_____
Gas Plant Waste	_____				

WASTE GENERATION PROCESS: ☐ Drilling☐ Completion☐ Production☐ Gathering Lines

Non-Exempt E&P Waste/Service Identification and Amount

(All non-exempt E&P waste must be analyzed and be below the threshold limits for toxicity (TCLP), ignition, corrosiveness, and reactivity.)

Non-Exempt Other: _____

*Please select from Non-Exempt Waste List on back

QUANTITY: _____ B - Barrels _____ L - Liquid 20 Y - Yards _____ E - Each

I hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination, the above described waste load is (Check the appropriate classification)

☐ RCRA EXEMPT: Oil field wastes generated from oil and gas exploration and production operations and are not mixed with non-exempt waste. (Gandy Marley, Inc. accepts certifications on a per month only basis.)☐ RCRA NON-EXEMPT: Oil field waste which is non-hazardous that does not exceed the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR 261.21-261.24, or listed hazardous waste as defined by 40 CFR, part 261, subpart D, as amended. The following documentation demonstrating the waste as non-hazardous is attached. (Check the appropriate items as provided.)☐ MSDS Information☐ RCRA Hazardous Waste Analysis☐ Other (Provide Description Below)☐ EMERGENCY NON-OILFIELD: Emergency non-hazardous, non-oilfield waste that has been ordered by the Department of Public Safety. (The order, documentation of non-hazardous waste determination and a description of the waste must accompany this form.)

(PRINT) AUTHORIZED AGENTS SIGNATURE

DATE

SIGNATURE

TANK BOTTOMS

Feet

Inches

1st Gauge _____
2nd Gauge _____
Received _____

BS&W/BBLs Received _____ BS&W (%) _____
Free Water _____
Total Received _____

I hereby certify that the above load material has been (circle one): ACCEPTED

DENIED

If denied, why? _____

d. Tolton

NAME (PRINT)

09-20-16

DATE

OFFICER

TITLE

g Tolton

SIGNATURE

SUPERIOR PRINTING SERVICE, INC.



NEW MEXICO NON-HAZARDOUS OILFIELD WASTE MANIFEST
(PLEASE PRINT)

Company Man Contact Information

Name _____

Phone No. _____

No 00823

GENERATOR

Operator No. _____
Operators Name TARGA MIDSTREAM
Address _____
City, State, Zip _____
Phone No. _____

Location of Origin
Lease/Well TOWNSEND FIELD LEAK
Name & No. _____
County _____
API No. _____
Rig Name & No. _____
AFE/PO No. _____

TRUCK TIME STAMP

IN: 2:17 PM OUT: _____

DISPOSAL FACILITY

RECEIVING AREA

Name/No. LAND FILL

Site Name / Permit No. Commercial Landfarm (NM-711-1-0020)

Address _____

NORM Readings Taken? (Circle One) YES NO

Pass the Paint Filter Test? (Circle One) YES NO

Phone No. _____

If YES, was reading > 50 micro roentgens? (Circle One) YES NO

TRANSPORTER

Transporter's Name GANDY CORP
Address _____
Phone No. _____

Driver's Name _____
Print Name _____
Phone No. _____
Truck No. 353

I hereby certify that the above named material(s) was/were picked up at the Generator's site listed above and delivered without incident to the disposal facility listed below.

SHIPMENT DATE

DRIVER'S SIGNATURE

09-20-16
DELIVERY DATE

X [Signature]
DRIVER'S SIGNATURE

Exempt E&P Waste/Service Identification and Amount (Place volume next to waste type in barrels or cubic yards)

Oil Based Muds	_____	NON-INJECTABLE WATERS	_____	INJECTABLE WATERS	_____
Oil Based Cuttings	_____	Washout Water (Non-Injectable)	_____	Washout Water (Injectable)	_____
Water Based Muds	_____	Completion Fluid/Flowback (Non-Injectable)	_____	Completion Fluid/Flowback (Injectable)	_____
Water Based Cuttings	_____	Produced Water (Non-Injectable)	_____	Produced Water (Injectable)	_____
Produced Formation Solids	_____	Gathering Line Water/Waste (Non-Injectable)	_____	Gathering Line Water/Waste (Injectable)	_____
Tank Bottoms	_____	INTERNAL USE ONLY	_____	OTHER EXEMPT WASTES	_____
E&P Contaminated Soil	_____	Truck Washout (Exempt Waste)	_____	(Types and generation process of the waste)	_____
Gas Plant Waste	_____				

WASTE GENERATION PROCESS: ☒ Drilling

☐ Completion

☐ Production

☐ Gathering Lines

Non-Exempt E&P Waste/Service Identification and Amount

(All non-exempt E&P waste must be analyzed and be below the threshold limits for toxicity (TCLP), ignition, corrosiveness, and reactivity.)

Non-Exempt Other: _____

*Please select from Non-Exempt Waste List on back

QUANTITY: _____ B - Barrels _____ L - Liquid 20 Y - Yards _____ E - Each

I hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination, the above described waste load is (Check the appropriate classification)

☐ RCRA EXEMPT: Oil field wastes generated from oil and gas exploration and production operations and are not mixed with non-exempt waste. (Gandy Marley, Inc. accepts certifications on a per month only basis.)

☐ RCRA NON-EXEMPT: Oil field waste which is non-hazardous that does not exceed the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR 261.21-261.24, or listed hazardous waste as defined by 40 CFR, part 261, subpart D, as amended. The following documentation demonstrating the waste as non-hazardous is attached. (Check the appropriate items as provided.)

☐ MSDS Information

☐ RCRA Hazardous Waste Analysis

☐ Other (Provide Description Below)

☐ EMERGENCY NON-OILFIELD: Emergency non-hazardous, non-oilfield waste that has been ordered by the Department of Public Safety. (The order, documentation of non-hazardous waste determination and a description of the waste must accompany this form.)

(PRINT) AUTHORIZED AGENTS SIGNATURE

DATE

SIGNATURE

TANK BOTTOMS

Feet

Inches

1st Gauge _____
2nd Gauge _____
Received _____

BS&W/BBLs Received _____ BS&W (%) _____
Free Water _____
Total Received _____

I hereby certify that the above load material has been (circle one): ACCEPTED DENIED

If denied, why? _____

J. TOLTON
NAME (PRINT)

09-20-16
DATE

OFFICER
TITLE

J. Tolton
SIGNATURE

SUPERIOR PRINTING SERVICE, INC.

NEW MEXICO NON-HAZARDOUS OILFIELD WASTE MANIFEST
(PLEASE PRINT)

Company Man Contact Information

Name _____

Phone No. _____

Nº 00824

GENERATOR

Operator No. _____
Operators Name TARGA MIDSTREAM
Address _____
City, State, Zip _____
Phone No. _____

Location of Origin
Lease/Well TOWNSEND FIELD LEAK
Name & No. _____
County _____
API No. _____
Rig Name & No. _____
AFE/PO No. _____

TRUCK TIME STAMP

IN: 2:19 PM OUT: _____

DISPOSAL FACILITY

RECEIVING AREA

Name/No. LAND FILLSite Name / Permit No. Commercial Landfarm (NM-711-1-0020)

Address _____

NORM Readings Taken? (Circle One) YES NO

Pass the Paint Filter Test? (Circle One) YES NO

Phone No. _____

If YES, was reading > 50 micro roentgens? (Circle One) YES NO

TRANSPORTER

Transporter's Name GAUDY CORP
Address _____
Phone No. _____

Driver's Name _____
Print Name _____
Phone No. _____
Truck No. 359

I hereby certify that the above named material(s) was/were picked up at the Generator's site listed above and delivered without incident to the disposal facility listed below.

SHIPMENT DATE

DRIVER'S SIGNATURE

09-20-16
DELIVERY DATE

DRIVER'S SIGNATURE

Exempt E&P Waste/Service Identification and Amount (Place volume next to waste type in barrels or cubic yards)

Oil Based Muds	_____	NON-INJECTABLE WATERS	_____	INJECTABLE WATERS	_____
Oil Based Cuttings	_____	Washout Water (Non-Injectable)	_____	Washout Water (Injectable)	_____
Water Based Muds	_____	Completion Fluid/Flowback (Non-Injectable)	_____	Completion Fluid/Flowback (Injectable)	_____
Water Based Cuttings	_____	Produced Water (Non-Injectable)	_____	Produced Water (Injectable)	_____
Produced Formation Solids	_____	Gathering Line Water/Waste (Non-Injectable)	_____	Gathering Line Water/Waste (Injectable)	_____
Tank Bottoms	_____	INTERNAL USE ONLY	_____	OTHER EXEMPT WASTES	_____
E&P Contaminated Soil	_____	Truck Washout (Exempt Waste)	_____	(Types and generation process of the waste)	_____
Gas Plant Waste	_____				

WASTE GENERATION PROCESS: ☒ Drilling☐ Completion☐ Production☐ Gathering Lines

Non-Exempt E&P Waste/Service Identification and Amount

(All non-exempt E&P waste must be analyzed and be below the threshold limits for toxicity (TCLP), ignition, corrosiveness, and reactivity.)

Non-Exempt Other: _____

*Please select from Non-Exempt Waste List on back

QUANTITY: _____ B - Barrels _____ L - Liquid 20 Y - Yards _____ E - Each

I hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination, the above described waste load is (Check the appropriate classification)

☐ RCRA EXEMPT: Oil field wastes generated from oil and gas exploration and production operations and are not mixed with non-exempt waste. (Gandy Marley, Inc. accepts certifications on a per month only basis.)☐ RCRA NON-EXEMPT: Oil field waste which is non-hazardous that does not exceed the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR 261.21-261.24, or listed hazardous waste as defined by 40 CFR, part 261, subpart D, as amended. The following documentation demonstrating the waste as non-hazardous is attached. (Check the appropriate items as provided.)☐ MSDS Information☐ RCRA Hazardous Waste Analysis☐ Other (Provide Description Below)☐ EMERGENCY NON-OILFIELD: Emergency non-hazardous, non-oilfield waste that has been ordered by the Department of Public Safety. (The order, documentation of non-hazardous waste determination and a description of the waste must accompany this form.)

(PRINT) AUTHORIZED AGENTS SIGNATURE

DATE

SIGNATURE

TANK BOTTOMS

Feet

Inches

1st Gauge _____
2nd Gauge _____
Received _____

BS&W/BBLs Received _____ BS&W (%) _____
Free Water _____
Total Received _____

I hereby certify that the above load material has been (circle one): ACCEPTED DENIED

If denied, why? _____

d. Tolton

NAME (PRINT)

09-20-16

DATE

OFFICER

TITLE

d. Tolton

SIGNATURE

SUPERIOR PRINTING SERVICE, INC.

Appendix B



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

February 17, 2016

Patrick McMahon

Dan Fields

311 N First

Lovington, NM 88260

TEL: (505) 396-5303

FAX

RE: Targa-Fields

OrderNo.: 1602530

Dear Patrick McMahon:

Hall Environmental Analysis Laboratory received 2 sample(s) on 2/11/2016 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order 1602530

Date Reported: 2/17/2016

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** Dan Fields**Client Sample ID:** T-1-4**Project:** Targa-Fields**Collection Date:** 2/9/2016 2:20:00 PM**Lab ID:** 1602530-001**Matrix:** SOIL**Received Date:** 2/11/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 418.1: TPH							Analyst: TOM
Petroleum Hydrocarbons, TR	44000	1900		mg/Kg	100	2/17/2016	23750

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 1 of 3
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1602530

Date Reported: 2/17/2016

CLIENT: Dan Fields

Client Sample ID: T-2-18

Project: Targa-Fields

Collection Date: 2/9/2016 2:30:00 PM

Lab ID: 1602530-002

Matrix: SOIL

Received Date: 2/11/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 418.1: TPH							Analyst: TOM
Petroleum Hydrocarbons, TR	49000	1900		mg/Kg	100	2/17/2016	23750

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

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1602530

17-Feb-16

Client: Dan Fields
Project: Targa-Fields

Sample ID	MB-23750	SampType:	MBLK	TestCode:	EPA Method 418.1: TPH					
Client ID:	PBS	Batch ID:	23750	RunNo:	32201					
Prep Date:	2/16/2016	Analysis Date:	2/17/2016	SeqNo:	984360	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	ND	20								

Sample ID	LCS-23750	SampType:	LCS	TestCode:	EPA Method 418.1: TPH					
Client ID:	LCSS	Batch ID:	23750	RunNo:	32201					
Prep Date:	2/16/2016	Analysis Date:	2/17/2016	SeqNo:	984361	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	110	20	100.0	0	106	83.4	127			

Sample ID	LCSD-23750	SampType:	LCSD	TestCode:	EPA Method 418.1: TPH					
Client ID:	LCSS02	Batch ID:	23750	RunNo:	32201					
Prep Date:	2/16/2016	Analysis Date:	2/17/2016	SeqNo:	984362	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	110	20	100.0	0	108	83.4	127	1.20	20	

Qualifiers:

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



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

Sample Log-In Check List

Client Name: DAN FIELDS

Work Order Number: 1602530

RcptNo: 1

Received by/date:

JA 02/11/16

Logged By: Ashley Gallegos

2/11/2016 9:30:00 AM

Completed By: Ashley Gallegos

2/12/2016 9:48:55 AM

Reviewed By:

JA 02/12/16

Chain of Custody

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

Log In

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

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

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:

Date:

By Whom:

Via:

☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

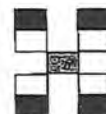
17. Additional remarks:

18. Cooler Information

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

Client: Dan Fields
 Patrick McMahon
 Mailing Address: 311 N. First
 Livingston N.J. 88260
 Phone #: 505.396.5303
 Mail or Fax#: hsnepbm@levo.net
 QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)
 Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:	
<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Rush _____
Project Name: Targa - Fields	
Project #: Targa spill	
Project Manager: Patrick McMahon	
Sampler: ELD	
On Ice:	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Sample Temperature: 1.0	



www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

[illegible]

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.

Appendix C

From: [Keyes, Jamie, EMNRD](#)
To: [Michael Gant](#)
Cc: [McQuade, David](#); [Mark Larson](#)
Subject: RE: C141 for Targa Townsend 16 Inch Pipeline
Date: Monday, June 20, 2016 9:45:36 AM

Good morning,

The C-141 has been received and the RP # for this project is 4312.

Thank you,

Jamie

From: Michael Gant [<mailto:mgant@laenvironmental.com>]
Sent: Wednesday, June 15, 2016 9:33 AM
To: Keyes, Jamie, EMNRD
Cc: McQuade, David; Mark Larson
Subject: RE: C141 for Targa Townsend 16 Inch Pipeline

Jamie,

Attached are the Laboratory Reports from Trace Analysis. Please let me know if there is anything else that you require.

Thanks,

Michael Gant

Geologist
432-664-5357



From: Keyes, Jamie, EMNRD [<mailto:Jamie.Keyes@state.nm.us>]
Sent: Wednesday, June 15, 2016 10:12 AM
To: Michael Gant
Subject: RE: C141 for Targa Townsend 16 Inch Pipeline

Good morning,

Do you have the lab results from the recent sampling?

Thank you,

Jamie

From: Michael Gant [<mailto:mgant@laenvironmental.com>]

Sent: Wednesday, June 15, 2016 7:59 AM

To: Keyes, Jamie, EMNRD

Subject: C141 for Targa Townsend 16 Inch Pipeline

Mr. Keyes,

Attached is the C-141 associated with the Targa Townsend 16 Inch pipeline release on Dan Fields property just outside of Lovington, NM. Please let me know if you need anything else or if I am missing anything.

Thanks.

Michael Gant

Geologist

432-664-5357



--

This message has been scanned for viruses and dangerous content by [MailScanner](#), and is believed to be clean.

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This message has been scanned for viruses and dangerous content by [MailScanner](#), and is believed to be clean.

Appendix D



July 15, 2015: Initial site investigation



July 15, 2015: Initial site investigation



July 15, 2015: Initial site investigation



July 15, 2015: Initial site investigation



August 3, 2015: Drilling SB-5 soil boring down to 25 feet bgs



September 16, 2015: Preliminary excavation at about 7 feet bgs



September 16, 2015: Preliminary excavation at about 7 feet bgs



September 18, 2015: Preliminary excavation at about 10 feet bgs



September 18, 2015: Preliminary excavation at about 10 feet bgs



September 21, 2015: Preliminary excavation at about 15 feet bgs



September 21, 2015: Preliminary excavation at about 15 feet bgs, showing staining on south wall



September 21, 2015: Preliminary excavation at about 15 feet bgs, showing staining on south wall



October 13, 2015: Preliminary excavation at about 18 feet bgs



October 13, 2015: Preliminary excavation at about 18 feet bgs, showing staining at bottom and west wall under pipeline



October 30, 2015: Excavation at about 22 feet bgs, facing east, looking at staining on boulder of south wall



October 30, 2015: Excavation at about 22 feet bgs, facing east, looking at staining on boulder of south wall



October 30, 2015: Excavation at about 22 feet bgs, facing northeast, looking at staining on NE corner at about 15 feet



October 30, 2015: Excavation at about 22 feet bgs, facing southeast, looking at staining



May 10, 2016: Excavation at about 24 feet bgs, showing remaining staining on west wall under pipeline



May 10, 2016: Excavation at about 24 feet bgs, showing south wall with stained boulder removed



May 20, 2016: Excavation at about 24 feet bgs, at west ramp and looking at east ramp



May 20, 2016: Excavation at about 24 feet bgs, looking at south ramp and reinforced supports



September 19, 2016: Looking at north wall and new clean caliche backfill



September 19, 2016: Looking at west wall staining at about 6 feet bgs before removal



September 19, 2016: Facing Southwest, looking at west wall staining at about 6 feet bgs before removal



September 19, 2016: Close up, looking at west wall staining at about 6 feet bgs before removal



September 19, 2016: Looking at north side of west wall staining at about 6 feet bgs before removal



September 19, 2016: Close up, looking at north side of west wall staining at about 6 feet bgs before removal



September 20, 2016: Facing South, beginning soil removal and western excavation extension



September 20, 2016: Facing West, beginning soil removal and western excavation extension



September 20, 2016: Facing Southwest, looking at west wall staining at about 6 feet bgs during soil removal



September 20, 2016: Facing Southwest, looking at west wall staining at about 6 feet bgs during soil removal



September 20, 2016: Facing South, looking at western extension of south wall at about 10 feet bgs during soil removal



September 20, 2016: Facing West, looking at west wall at about 10 feet bgs during soil removal

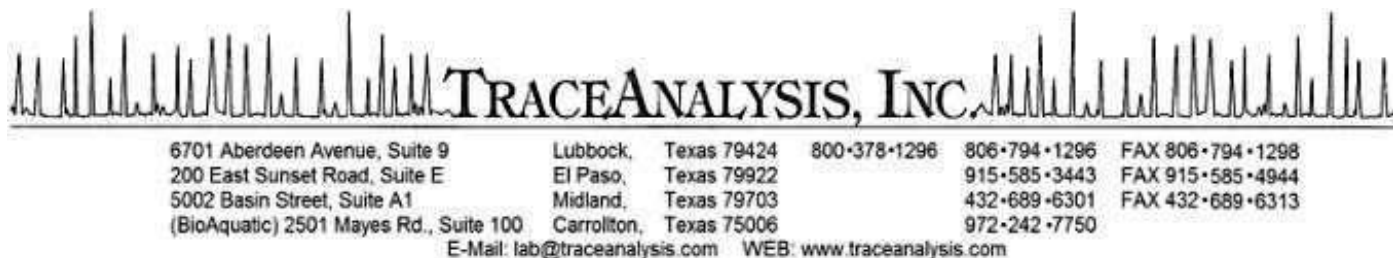


September 30, 2016: Facing West, looking at west wall excavation south of pipeline



September 30, 2016: Facing West, looking at west wall excavation north of pipeline

Appendix E



Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Mark Larson
 Larson and Associates, Inc.

Report Date: August 3, 2015

P. O. Box 50685
 Midland, TX, 79710

Work Order: 15071669



Project Location: Lea Co, NM
 Project Name: Pipeline Release
 Project Number: 15-0143-01

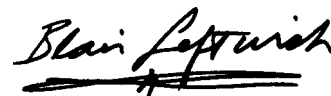
Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
398916	HA-1, 0.5'	soil	2015-07-12	10:35	2015-07-16
398917	HA-2, 0.5'	soil	2015-07-12	10:40	2015-07-16
398918	HA-3, 0.5'	soil	2015-07-12	10:42	2015-07-16
398919	HA-4, 0.5'	soil	2015-07-12	10:45	2015-07-16
398920	HA-5, 4'	soil	2015-07-12	10:48	2015-07-16
398921	S-1, 2'	soil	2015-07-12	10:55	2015-07-16
398922	S-2, 2'	soil	2015-07-12	10:58	2015-07-16
398923	S-3, 2'	soil	2015-07-12	11:00	2015-07-16
398924	S-4, 2'	soil	2015-07-12	11:05	2015-07-16

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.

This report consists of a total of 33 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

A handwritten signature in black ink, reading "Blair Leftwich". The signature is written in a cursive style with a prominent "B" and "L". Below the signature are three horizontal lines, the first two being solid and the third being a dashed line.

Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Brian Pellam, Operations Manager

Report Contents

Case Narrative	5
Analytical Report	6
Sample 398916 (HA-1, 0.5')	6
Sample 398917 (HA-2, 0.5')	7
Sample 398918 (HA-3, 0.5')	8
Sample 398919 (HA-4, 0.5')	10
Sample 398920 (HA-5, 4')	11
Sample 398921 (S-1, 2')	13
Sample 398922 (S-2, 2')	14
Sample 398923 (S-3, 2')	16
Sample 398924 (S-4, 2')	17
Method Blanks	20
QC Batch 123263 - Method Blank (1)	20
QC Batch 123264 - Method Blank (1)	20
QC Batch 123422 - Method Blank (1)	20
QC Batch 123592 - Method Blank (1)	21
QC Batch 123638 - Method Blank (1)	21
Laboratory Control Spikes	22
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QC Batch 123264 - LCS (1)	22
QC Batch 123422 - LCS (1)	23
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QC Batch 123263 - MS (1)	25
QC Batch 123264 - MS (1)	25
QC Batch 123422 - MS (1)	26
QC Batch 123592 - MS (1)	26
QC Batch 123638 - MS (1)	27
Calibration Standards	28
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QC Batch 123264 - CCV (2)	28
QC Batch 123422 - CCV (1)	29
QC Batch 123422 - CCV (2)	29
QC Batch 123422 - CCV (3)	29
QC Batch 123592 - CCV (1)	29
QC Batch 123592 - CCV (2)	30
QC Batch 123592 - CCV (3)	30
QC Batch 123638 - CCV (1)	30

QC Batch 123638 - CCV (2) 30

Appendix **32**

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Standard Flags 32

Attachments 32

Case Narrative

Samples for project Pipeline Release were received by TraceAnalysis, Inc. on 2015-07-16 and assigned to work order 15071669. Samples for work order 15071669 were received intact at a temperature of 5.8 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	104236	2015-07-20 at 07:41	123263	2015-07-21 at 07:42
Chloride (IC)	E 300.0	104511	2015-07-29 at 16:00	123592	2015-07-30 at 09:36
Chloride (IC)	E 300.0	104554	2015-07-31 at 13:30	123638	2015-07-31 at 14:55
TPH DRO	S 8015 D	104367	2015-07-24 at 08:15	123422	2015-07-24 at 15:36
TPH GRO	S 8015 D	104236	2015-07-20 at 07:41	123264	2015-07-21 at 07:47

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 15071669 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

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Analytical Report

Sample: 398916 - HA-1, 0.5'

Laboratory:	Midland	Analytical Method:	S 8021B	Prep Method:	S 5035
Analysis:	BTEX	Date Analyzed:	2015-07-21	Analyzed By:	AK
QC Batch:	123263	Sample Preparation:	2015-07-20	Prepared By:	AK
Prep Batch:	104236				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	3	<0.0200	mg/Kg	1	0.0200
Toluene	U	3	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	3	<0.0200	mg/Kg	1	0.0200
Xylene	U	3	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.70	mg/Kg	1	2.00	85	70 - 130
4-Bromofluorobenzene (4-BFB)			1.84	mg/Kg	1	2.00	92	70 - 130

Sample: 398916 - HA-1, 0.5'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2015-07-30	Analyzed By:	RL
QC Batch:	123592	Sample Preparation:		Prepared By:	RL
Prep Batch:	104511				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Jb	1,2,4	<25.0	mg/Kg	1	25.0

Sample: 398916 - HA-1, 0.5'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-07-24	Analyzed By:	AK
QC Batch:	123422	Sample Preparation:	2015-07-24	Prepared By:	AK
Prep Batch:	104367				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr	3	589	mg/Kg	1	50.0

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	116	mg/Kg	1	50.0	232	70 - 130

Sample: 398916 - HA-1, 0.5'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 123264
Prep Batch: 104236

Analytical Method: S 8015 D
Date Analyzed: 2015-07-21
Sample Preparation: 2015-07-20

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	3	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.90	mg/Kg	1	2.00	95	70 - 130
4-Bromofluorobenzene (4-BFB)			1.81	mg/Kg	1	2.00	90	70 - 130

Sample: 398917 - HA-2, 0.5'

Laboratory: Midland
Analysis: BTEX
QC Batch: 123263
Prep Batch: 104236

Analytical Method: S 8021B
Date Analyzed: 2015-07-21
Sample Preparation: 2015-07-20

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	3	<0.100	mg/Kg	5	0.0200
Toluene		3	0.322	mg/Kg	5	0.0200
Ethylbenzene		3	0.297	mg/Kg	5	0.0200
Xylene		3	1.14	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			9.10	mg/Kg	5	10.0	91	70 - 130
4-Bromofluorobenzene (4-BFB)			9.88	mg/Kg	5	10.0	99	70 - 130

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Sample: 398917 - HA-2, 0.5'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2015-07-30	Analyzed By:	RL
QC Batch:	123592	Sample Preparation:		Prepared By:	RL
Prep Batch:	104511				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Jb	1,2,4	<25.0	mg/Kg	1	25.0

Sample: 398917 - HA-2, 0.5'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-07-24	Analyzed By:	AK
QC Batch:	123422	Sample Preparation:	2015-07-24	Prepared By:	AK
Prep Batch:	104367				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr	3	8680	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	339	mg/Kg	5	50.0	678	70 - 130

Sample: 398917 - HA-2, 0.5'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-07-21	Analyzed By:	AK
QC Batch:	123264	Sample Preparation:	2015-07-20	Prepared By:	AK
Prep Batch:	104236				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		3	31.6	mg/Kg	5	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			10.0	mg/Kg	5	10.0	100	70 - 130
4-Bromofluorobenzene (4-BFB)			10.8	mg/Kg	5	10.0	108	70 - 130

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Sample: 398918 - HA-3, 0.5'

Laboratory: Midland

Analysis: BTEX

QC Batch: 123263

Prep Batch: 104236

Analytical Method: S 8021B

Date Analyzed: 2015-07-21

Sample Preparation: 2015-07-20

Prep Method: S 5035

Analyzed By: AK

Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		3	6.82	mg/Kg	50	0.0200
Toluene		3	77.2	mg/Kg	50	0.0200
Ethylbenzene		3	100	mg/Kg	50	0.0200
Xylene		3	182	mg/Kg	50	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			79.4	mg/Kg	50	100	79	70 - 130
4-Bromofluorobenzene (4-BFB)			114	mg/Kg	50	100	114	70 - 130

Sample: 398918 - HA-3, 0.5'

Laboratory: Lubbock

Analysis: Chloride (IC)

QC Batch: 123592

Prep Batch: 104511

Analytical Method: E 300.0

Date Analyzed: 2015-07-30

Sample Preparation:

Prep Method: N/A

Analyzed By: RL

Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	B	1,2,4	26.0	mg/Kg	1	25.0

Sample: 398918 - HA-3, 0.5'

Laboratory: Midland

Analysis: TPH DRO

QC Batch: 123422

Prep Batch: 104367

Analytical Method: S 8015 D

Date Analyzed: 2015-07-24

Sample Preparation: 2015-07-24

Prep Method: N/A

Analyzed By: AK

Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr	3	14700	mg/Kg	10	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	550	mg/Kg	10	50.0	1100	70 - 130

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Sample: 398918 - HA-3, 0.5'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 123264
Prep Batch: 104236

Analytical Method: S 8015 D
Date Analyzed: 2015-07-21
Sample Preparation: 2015-07-20

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		3	4460	mg/Kg	50	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			93.1	mg/Kg	50	100	93	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	155	mg/Kg	50	100	155	70 - 130

Sample: 398919 - HA-4, 0.5'

Laboratory: Midland
Analysis: BTEX
QC Batch: 123263
Prep Batch: 104236

Analytical Method: S 8021B
Date Analyzed: 2015-07-21
Sample Preparation: 2015-07-20

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		3	0.503	mg/Kg	5	0.0200
Toluene		3	5.51	mg/Kg	5	0.0200
Ethylbenzene		3	8.98	mg/Kg	5	0.0200
Xylene		3	19.4	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			7.80	mg/Kg	5	10.0	78	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	14.0	mg/Kg	5	10.0	140	70 - 130

Sample: 398919 - HA-4, 0.5'

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 123592
Prep Batch: 104511

Analytical Method: E 300.0
Date Analyzed: 2015-07-30
Sample Preparation:

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

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sample 398919 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	B	1,2,4	28.0	mg/Kg	1	25.0

Sample: 398919 - HA-4, 0.5'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-07-24	Analyzed By:	AK
QC Batch:	123422	Sample Preparation:	2015-07-24	Prepared By:	AK
Prep Batch:	104367				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr	3	6930	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	257	mg/Kg	5	50.0	514	70 - 130

Sample: 398919 - HA-4, 0.5'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-07-21	Analyzed By:	AK
QC Batch:	123264	Sample Preparation:	2015-07-20	Prepared By:	AK
Prep Batch:	104236				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		3	619	mg/Kg	5	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			9.39	mg/Kg	5	10.0	94	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	21.2	mg/Kg	5	10.0	212	70 - 130

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Sample: 398920 - HA-5, 4'

Laboratory: Midland

Analysis: BTEX

QC Batch: 123263

Prep Batch: 104236

Analytical Method: S 8021B

Date Analyzed: 2015-07-21

Sample Preparation: 2015-07-20

Prep Method: S 5035

Analyzed By: AK

Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		3	60.6	mg/Kg	50	0.0200
Toluene		3	212	mg/Kg	50	0.0200
Ethylbenzene		3	160	mg/Kg	50	0.0200
Xylene		3	266	mg/Kg	50	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			81.8	mg/Kg	50	100	82	70 - 130
4-Bromofluorobenzene (4-BFB)			116	mg/Kg	50	100	116	70 - 130

Sample: 398920 - HA-5, 4'

Laboratory: Lubbock

Analysis: Chloride (IC)

QC Batch: 123592

Prep Batch: 104511

Analytical Method: E 300.0

Date Analyzed: 2015-07-30

Sample Preparation:

Prep Method: N/A

Analyzed By: RL

Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	B	1,2,4	2370	mg/Kg	50	25.0

Sample: 398920 - HA-5, 4'

Laboratory: Midland

Analysis: TPH DRO

QC Batch: 123422

Prep Batch: 104367

Analytical Method: S 8015 D

Date Analyzed: 2015-07-24

Sample Preparation: 2015-07-24

Prep Method: N/A

Analyzed By: AK

Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr	3	21600	mg/Kg	20	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	570	mg/Kg	20	50.0	1140	70 - 130

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Sample: 398920 - HA-5, 4'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 123264
Prep Batch: 104236

Analytical Method: S 8015 D
Date Analyzed: 2015-07-21
Sample Preparation: 2015-07-20

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		3	7320	mg/Kg	50	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			90.0	mg/Kg	50	100	90	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	164	mg/Kg	50	100	164	70 - 130

Sample: 398921 - S-1, 2'

Laboratory: Midland
Analysis: BTEX
QC Batch: 123263
Prep Batch: 104236

Analytical Method: S 8021B
Date Analyzed: 2015-07-21
Sample Preparation: 2015-07-20

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		3	5.51	mg/Kg	50	0.0200
Toluene		3	38.0	mg/Kg	50	0.0200
Ethylbenzene		3	47.8	mg/Kg	50	0.0200
Xylene		3	108	mg/Kg	50	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			85.3	mg/Kg	50	100	85	70 - 130
4-Bromofluorobenzene (4-BFB)			117	mg/Kg	50	100	117	70 - 130

Sample: 398921 - S-1, 2'

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 123592
Prep Batch: 104511

Analytical Method: E 300.0
Date Analyzed: 2015-07-30
Sample Preparation:

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

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sample 398921 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,4	936	mg/Kg	5	25.0

Sample: 398921 - S-1, 2'

Laboratory:	Midland				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	123422	Date Analyzed:	2015-07-24	Analyzed By:	AK
Prep Batch:	104367	Sample Preparation:	2015-07-24	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr	3	26900	mg/Kg	20	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	803	mg/Kg	20	50.0	1606	70 - 130

Sample: 398921 - S-1, 2'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	123264	Date Analyzed:	2015-07-21	Analyzed By:	AK
Prep Batch:	104236	Sample Preparation:	2015-07-20	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		3	3940	mg/Kg	50	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			99.2	mg/Kg	50	100	99	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	164	mg/Kg	50	100	164	70 - 130

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Sample: 398922 - S-2, 2'

Laboratory: Midland

Analysis: BTEX

QC Batch: 123263

Prep Batch: 104236

Analytical Method: S 8021B

Date Analyzed: 2015-07-21

Sample Preparation: 2015-07-20

Prep Method: S 5035

Analyzed By: AK

Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		3	12.3	mg/Kg	50	0.0200
Toluene		3	80.8	mg/Kg	50	0.0200
Ethylbenzene		3	49.8	mg/Kg	50	0.0200
Xylene		3	192	mg/Kg	50	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			82.0	mg/Kg	50	100	82	70 - 130
4-Bromofluorobenzene (4-BFB)			116	mg/Kg	50	100	116	70 - 130

Sample: 398922 - S-2, 2'

Laboratory: Lubbock

Analysis: Chloride (IC)

QC Batch: 123592

Prep Batch: 104511

Analytical Method: E 300.0

Date Analyzed: 2015-07-30

Sample Preparation:

Prep Method: N/A

Analyzed By: RL

Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,4	572	mg/Kg	5	25.0

Sample: 398922 - S-2, 2'

Laboratory: Midland

Analysis: TPH DRO

QC Batch: 123422

Prep Batch: 104367

Analytical Method: S 8015 D

Date Analyzed: 2015-07-24

Sample Preparation: 2015-07-24

Prep Method: N/A

Analyzed By: AK

Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr	3	31000	mg/Kg	20	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	886	mg/Kg	20	50.0	1772	70 - 130

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Sample: 398922 - S-2, 2'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 123264
Prep Batch: 104236

Analytical Method: S 8015 D
Date Analyzed: 2015-07-21
Sample Preparation: 2015-07-20

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		3	4700	mg/Kg	50	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			97.1	mg/Kg	50	100	97	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	157	mg/Kg	50	100	157	70 - 130

Sample: 398923 - S-3, 2'

Laboratory: Midland
Analysis: BTEX
QC Batch: 123263
Prep Batch: 104236

Analytical Method: S 8021B
Date Analyzed: 2015-07-21
Sample Preparation: 2015-07-20

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		3	8.18	mg/Kg	50	0.0200
Toluene		3	42.6	mg/Kg	50	0.0200
Ethylbenzene		3	36.5	mg/Kg	50	0.0200
Xylene		3	99.7	mg/Kg	50	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			79.8	mg/Kg	50	100	80	70 - 130
4-Bromofluorobenzene (4-BFB)			106	mg/Kg	50	100	106	70 - 130

Sample: 398923 - S-3, 2'

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 123592
Prep Batch: 104511

Analytical Method: E 300.0
Date Analyzed: 2015-07-30
Sample Preparation:

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	B	1,2,4	403	mg/Kg	5	25.0

Sample: 398923 - S-3, 2'

Laboratory:	Midland				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	123422	Date Analyzed:	2015-07-24	Analyzed By:	AK
Prep Batch:	104367	Sample Preparation:	2015-07-24	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr	3	35800	mg/Kg	20	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	1040	mg/Kg	20	50.0	2080	70 - 130

Sample: 398923 - S-3, 2'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	123264	Date Analyzed:	2015-07-21	Analyzed By:	AK
Prep Batch:	104236	Sample Preparation:	2015-07-20	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		3	3440	mg/Kg	50	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			91.6	mg/Kg	50	100	92	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	133	mg/Kg	50	100	133	70 - 130

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Sample: 398924 - S-4, 2'

Laboratory: Midland

Analysis: BTEX

QC Batch: 123263

Prep Batch: 104236

Analytical Method: S 8021B

Date Analyzed: 2015-07-21

Sample Preparation: 2015-07-20

Prep Method: S 5035

Analyzed By: AK

Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		3	21.0	mg/Kg	50	0.0200
Toluene		3	158	mg/Kg	50	0.0200
Ethylbenzene		3	137	mg/Kg	50	0.0200
Xylene		3	261	mg/Kg	50	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			83.0	mg/Kg	50	100	83	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	131	mg/Kg	50	100	131	70 - 130

Sample: 398924 - S-4, 2'

Laboratory: Lubbock

Analysis: Chloride (IC)

QC Batch: 123638

Prep Batch: 104554

Analytical Method: E 300.0

Date Analyzed: 2015-07-31

Sample Preparation:

Prep Method: N/A

Analyzed By: RL

Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Q _r , Q _s	1,2,4	488	mg/Kg	5	25.0

Sample: 398924 - S-4, 2'

Laboratory: Midland

Analysis: TPH DRO

QC Batch: 123422

Prep Batch: 104367

Analytical Method: S 8015 D

Date Analyzed: 2015-07-24

Sample Preparation: 2015-07-24

Prep Method: N/A

Analyzed By: AK

Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Q _r	3	23500	mg/Kg	20	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	680	mg/Kg	20	50.0	1360	70 - 130

Sample: 398924 - S-4, 2'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 123264
Prep Batch: 104236

Analytical Method: S 8015 D
Date Analyzed: 2015-07-21
Sample Preparation: 2015-07-20

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Je	3	8380	mg/Kg	50	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			96.7	mg/Kg	50	100	97	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	202	mg/Kg	50	100	202	70 - 130

Method Blanks

Method Blank (1) QC Batch: 123263

QC Batch: 123263 Date Analyzed: 2015-07-21 Analyzed By: AK
Prep Batch: 104236 QC Preparation: 2015-07-20 Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		3	<0.00533	mg/Kg	0.02
Toluene		3	<0.00645	mg/Kg	0.02
Ethylbenzene		3	<0.0116	mg/Kg	0.02
Xylene		3	<0.00874	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.72	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			1.60	mg/Kg	1	2.00	80	70 - 130

Method Blank (1) QC Batch: 123264

QC Batch: 123264 Date Analyzed: 2015-07-21 Analyzed By: AK
Prep Batch: 104236 QC Preparation: 2015-07-20 Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		3	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.85	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			1.62	mg/Kg	1	2.00	81	70 - 130

Method Blank (1) QC Batch: 123422

QC Batch: 123422 Date Analyzed: 2015-07-24 Analyzed By: AK
Prep Batch: 104367 QC Preparation: 2015-07-24 Prepared By: AK

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Parameter	Flag	Cert	MDL Result	Units	RL
DRO		3	<7.41	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			49.6	mg/Kg	1	50.0	99	70 - 130

Method Blank (1) QC Batch: 123592

QC Batch: 123592 Date Analyzed: 2015-07-30 Analyzed By: RL
Prep Batch: 104511 QC Preparation: 2015-07-29 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1,2,4	8.81	mg/Kg	25

Method Blank (1) QC Batch: 123638

QC Batch: 123638 Date Analyzed: 2015-07-31 Analyzed By: RL
Prep Batch: 104554 QC Preparation: 2015-07-31 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1,2,4	<4.69	mg/Kg	25

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 123263
Prep Batch: 104236

Date Analyzed: 2015-07-21
QC Preparation: 2015-07-20

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		3	1.65	mg/Kg	1	2.00	<0.00533	82	70 - 130
Toluene		3	1.73	mg/Kg	1	2.00	<0.00645	86	70 - 130
Ethylbenzene		3	1.75	mg/Kg	1	2.00	<0.0116	88	70 - 130
Xylene		3	5.25	mg/Kg	1	6.00	<0.00874	88	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		3	1.70	mg/Kg	1	2.00	<0.00533	85	70 - 130	3	20
Toluene		3	1.81	mg/Kg	1	2.00	<0.00645	90	70 - 130	4	20
Ethylbenzene		3	1.84	mg/Kg	1	2.00	<0.0116	92	70 - 130	5	20
Xylene		3	5.52	mg/Kg	1	6.00	<0.00874	92	70 - 130	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.78	1.74	mg/Kg	1	2.00	89	87	70 - 130
4-Bromofluorobenzene (4-BFB)	1.85	1.84	mg/Kg	1	2.00	92	92	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 123264
Prep Batch: 104236

Date Analyzed: 2015-07-21
QC Preparation: 2015-07-20

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		3	14.2	mg/Kg	1	20.0	<2.32	71	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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control spikes continued ...

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		3	14.1	mg/Kg	1	20.0	<2.32	70	70 - 130	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.92	1.87	mg/Kg	1	2.00	96	94	70 - 130
4-Bromofluorobenzene (4-BFB)	1.93	1.85	mg/Kg	1	2.00	96	92	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 123422
Prep Batch: 104367

Date Analyzed: 2015-07-24
QC Preparation: 2015-07-24

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		3	210	mg/Kg	1	250	<7.41	84	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		3	241	mg/Kg	1	250	<7.41	96	70 - 130	14	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
n-Tricosane	51.3	57.2	mg/Kg	1	50.0	103	114	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 123592
Prep Batch: 104511

Date Analyzed: 2015-07-30
QC Preparation: 2015-07-29

Analyzed By: RL
Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,4	249	mg/Kg	1	250	8.81	96	90 - 110

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Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1,2,4	257	mg/Kg	1	250	8.81	99	90 - 110	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 123638
Prep Batch: 104554

Date Analyzed: 2015-07-31
QC Preparation: 2015-07-31

Analyzed By: RL
Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,4	245	mg/Kg	1	250	<4.69	98	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1,2,4	250	mg/Kg	1	250	<4.69	100	90 - 110	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 398916

QC Batch: 123263
Prep Batch: 104236

Date Analyzed: 2015-07-21
QC Preparation: 2015-07-20

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		3	1.48	mg/Kg	1	2.00	<0.00533	74	70 - 130
Toluene		3	1.70	mg/Kg	1	2.00	<0.00645	85	70 - 130
Ethylbenzene		3	1.81	mg/Kg	1	2.00	<0.0116	90	70 - 130
Xylene		3	5.43	mg/Kg	1	6.00	<0.00874	90	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		3	1.48	mg/Kg	1	2.00	<0.00533	74	70 - 130	0	20
Toluene		3	1.69	mg/Kg	1	2.00	<0.00645	84	70 - 130	1	20
Ethylbenzene		3	1.82	mg/Kg	1	2.00	<0.0116	91	70 - 130	1	20
Xylene		3	5.38	mg/Kg	1	6.00	<0.00874	90	70 - 130	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.68	1.74	mg/Kg	1	2	84	87	70 - 130
4-Bromofluorobenzene (4-BFB)	1.85	1.88	mg/Kg	1	2	92	94	70 - 130

Matrix Spike (MS-1) Spiked Sample: 398916

QC Batch: 123264
Prep Batch: 104236

Date Analyzed: 2015-07-21
QC Preparation: 2015-07-20

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		3	17.6	mg/Kg	1	20.0	<2.32	88	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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matrix spikes continued ...

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		3	15.8	mg/Kg	1	20.0	<2.32	79	70 - 130	11	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.95	1.85	mg/Kg	1	2	98	92	70 - 130
4-Bromofluorobenzene (4-BFB)	1.85	1.94	mg/Kg	1	2	92	97	70 - 130

Matrix Spike (MS-1) Spiked Sample: 398916

QC Batch: 123422
Prep Batch: 104367

Date Analyzed: 2015-07-24
QC Preparation: 2015-07-24

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	Qs	Qs	3	753	mg/Kg	1	250	589	66

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	Qr,Qs	Qr,Qs	3	499	mg/Kg	1	250	589	-36	70 - 130	41

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	Qsr	Qsr	112	85.4	mg/Kg	1	50	224

Matrix Spike (MS-1) Spiked Sample: 398923

QC Batch: 123592
Prep Batch: 104511

Date Analyzed: 2015-07-30
QC Preparation: 2015-07-29

Analyzed By: RL
Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	Qs	Qs	1,2,4	778	mg/Kg	5	250	403	150

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Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1,2,4	667	mg/Kg	5	250	403	106	80 - 120	15	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 398924

QC Batch: 123638
Prep Batch: 104554

Date Analyzed: 2015-07-31
QC Preparation: 2015-07-31

Analyzed By: RL
Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,4	755	mg/Kg	5	250	488	107	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param			F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	Qr,Qs	Qr,Qs	1,2,4	579	mg/Kg	5	250	488	36	80 - 120	26	20	

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Calibration Standards

Standard (CCV-1)

QC Batch: 123263

Date Analyzed: 2015-07-21

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		3	mg/kg	0.100	0.0864	86	80 - 120	2015-07-21
Toluene		3	mg/kg	0.100	0.0905	90	80 - 120	2015-07-21
Ethylbenzene		3	mg/kg	0.100	0.0919	92	80 - 120	2015-07-21
Xylene		3	mg/kg	0.300	0.275	92	80 - 120	2015-07-21

Standard (CCV-2)

QC Batch: 123263

Date Analyzed: 2015-07-21

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		3	mg/kg	0.100	0.0846	85	80 - 120	2015-07-21
Toluene		3	mg/kg	0.100	0.0881	88	80 - 120	2015-07-21
Ethylbenzene		3	mg/kg	0.100	0.0886	89	80 - 120	2015-07-21
Xylene		3	mg/kg	0.300	0.265	88	80 - 120	2015-07-21

Standard (CCV-1)

QC Batch: 123264

Date Analyzed: 2015-07-21

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		3	mg/Kg	1.00	1.11	111	80 - 120	2015-07-21

Standard (CCV-2)

QC Batch: 123264

Date Analyzed: 2015-07-21

Analyzed By: AK

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		3	mg/Kg	1.00	0.977	98	80 - 120	2015-07-21

Standard (CCV-1)

QC Batch: 123422

Date Analyzed: 2015-07-24

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		3	mg/Kg	250	246	98	80 - 120	2015-07-24

Standard (CCV-2)

QC Batch: 123422

Date Analyzed: 2015-07-24

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		3	mg/Kg	250	243	97	80 - 120	2015-07-24

Standard (CCV-3)

QC Batch: 123422

Date Analyzed: 2015-07-24

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		3	mg/Kg	250	207	83	80 - 120	2015-07-24

Standard (CCV-1)

QC Batch: 123592

Date Analyzed: 2015-07-30

Analyzed By: RL

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1,2,4	mg/Kg	25.0	24.8	99	90 - 110	2015-07-30

Standard (CCV-2)

QC Batch: 123592

Date Analyzed: 2015-07-30

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1,2,4	mg/Kg	25.0	25.0	100	90 - 110	2015-07-30

Standard (CCV-3)

QC Batch: 123592

Date Analyzed: 2015-07-30

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1,2,4	mg/Kg	25.0	23.6	94	90 - 110	2015-07-30

Standard (CCV-1)

QC Batch: 123638

Date Analyzed: 2015-07-31

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1,2,4	mg/Kg	25.0	25.1	100	90 - 110	2015-07-31

Standard (CCV-2)

QC Batch: 123638

Date Analyzed: 2015-07-31

Analyzed By: RL

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1,2,4	mg/Kg	25.0	25.7	103	90 - 110	2015-07-31

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

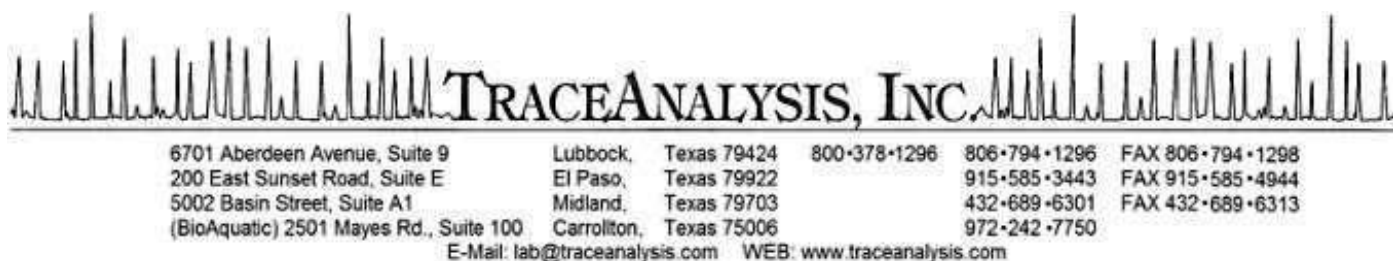
C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	LELAP	LELAP-02003	Lubbock
2	NELAP	T104704219-15-11	Lubbock
3	NELAP	T104704392-14-8	Midland
4		2014-018	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less than ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.



Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Mark Larson
 Larson and Associates, Inc.

Report Date: August 12, 2015

P. O. Box 50685
 Midland, TX, 79710

Work Order: 15080409



Project Location: Lea Co, NM
 Project Name: Townsend 12"
 Project Number: 15-0143-01

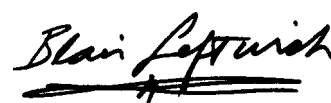
Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
400814	SB-5,10'	soil	2015-08-03	13:38	2015-08-04
400815	SB-5,15'	soil	2015-08-03	13:45	2015-08-04
400816	SB-5,20'	soil	2015-08-03	13:50	2015-08-04
400817	SB-5,25'	soil	2015-08-03	13:55	2015-08-04
400818	SB-4,0'	soil	2015-08-03	14:07	2015-08-04
400819	SB-4,5'	soil	2015-08-03	14:16	2015-08-04
400820	SB-4,10'	soil	2015-08-03	14:20	2015-08-04
400821	SB-2,5'	soil	2015-08-03	14:40	2015-08-04
400822	SB-2,10'	soil	2015-08-03	14:45	2015-08-04
400823	SB-1,5'	soil	2015-08-03	14:59	2015-08-04
400824	SB-1,10'	soil	2015-08-03	15:04	2015-08-04
400825	SB-3,5'	soil	2015-08-03	15:15	2015-08-04
400826	SB-3,10'	soil	2015-08-03	15:20	2015-08-04

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.

This report consists of a total of 30 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

A handwritten signature in black ink, reading "Blair Leftwich". The signature is written in a cursive style and is positioned above a horizontal line.

Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Brian Pellam, Operations Manager

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Case Narrative

Samples for project Townsend 12” were received by TraceAnalysis, Inc. on 2015-08-04 and assigned to work order 15080409. Samples for work order 15080409 were received intact at a temperature of 8.3 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	104587	2015-08-04 at 09:50	123882	2015-08-10 at 13:58
Chloride (Titration)	SM 4500-Cl B	104752	2015-08-10 at 16:44	123888	2015-08-10 at 16:45
TPH DRO	S 8015 D	104646	2015-08-05 at 08:00	123758	2015-08-05 at 08:45
TPH GRO	S 8015 D	104611	2015-08-05 at 10:45	123752	2015-08-06 at 07:36
TPH GRO	S 8015 D	104788	2015-08-11 at 07:12	123937	2015-08-12 at 07:13

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 15080409 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

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Analytical Report

Sample: 400814 - SB-5,10'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2015-08-10	Analyzed By:	AK
QC Batch:	123882	Sample Preparation:	2015-08-04	Prepared By:	AK
Prep Batch:	104587				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			488	mg/Kg	5	4.00

Sample: 400814 - SB-5,10'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-08-05	Analyzed By:	AK
QC Batch:	123758	Sample Preparation:	2015-08-05	Prepared By:	AK
Prep Batch:	104646				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		5	104	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	93.0	mg/Kg	1	50.0	186	70 - 130

Sample: 400814 - SB-5,10'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-08-06	Analyzed By:	AK
QC Batch:	123752	Sample Preparation:	2015-08-05	Prepared By:	AK
Prep Batch:	104611				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.97	mg/Kg	1	2.00	98	70 - 130

continued ...

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sample continued ...

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-Bromofluorobenzene (4-BFB)			1.90	mg/Kg	1	2.00	95	70 - 130

Sample: 400815 - SB-5,15'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2015-08-10	Analyzed By:	AK
QC Batch:	123882	Sample Preparation:	2015-08-04	Prepared By:	AK
Prep Batch:	104587				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 400815 - SB-5,15'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-08-05	Analyzed By:	AK
QC Batch:	123758	Sample Preparation:	2015-08-05	Prepared By:	AK
Prep Batch:	104646				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		5	56.6	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	85.8	mg/Kg	1	50.0	172	70 - 130

Sample: 400815 - SB-5,15'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-08-06	Analyzed By:	AK
QC Batch:	123752	Sample Preparation:	2015-08-05	Prepared By:	AK
Prep Batch:	104611				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.91	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			1.77	mg/Kg	1	2.00	88	70 - 130

Sample: 400816 - SB-5,20'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	123888	Date Analyzed:	2015-08-10	Analyzed By:	AM
Prep Batch:	104752	Sample Preparation:	2015-08-10	Prepared By:	AM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			299	mg/Kg	5	4.00

Sample: 400816 - SB-5,20'

Laboratory:	Midland				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	123758	Date Analyzed:	2015-08-05	Analyzed By:	AK
Prep Batch:	104646	Sample Preparation:	2015-08-05	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		5	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			61.5	mg/Kg	1	50.0	123	70 - 130

Sample: 400816 - SB-5,20'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	123752	Date Analyzed:	2015-08-06	Analyzed By:	AK
Prep Batch:	104611	Sample Preparation:	2015-08-05	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.90	mg/Kg	1	2.00	95	70 - 130
4-Bromofluorobenzene (4-BFB)			1.79	mg/Kg	1	2.00	90	70 - 130

Sample: 400817 - SB-5,25'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	123888	Date Analyzed:	2015-08-10	Analyzed By:	AM
Prep Batch:	104752	Sample Preparation:	2015-08-10	Prepared By:	AM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			498	mg/Kg	5	4.00

Sample: 400817 - SB-5,25'

Laboratory:	Midland				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	123758	Date Analyzed:	2015-08-05	Analyzed By:	AK
Prep Batch:	104646	Sample Preparation:	2015-08-05	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		5	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	76.8	mg/Kg	1	50.0	154	70 - 130

Sample: 400817 - SB-5,25'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	123752	Date Analyzed:	2015-08-06	Analyzed By:	AK
Prep Batch:	104611	Sample Preparation:	2015-08-05	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.90	mg/Kg	1	2.00	95	70 - 130
4-Bromofluorobenzene (4-BFB)			1.77	mg/Kg	1	2.00	88	70 - 130

Sample: 400818 - SB-4,0'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 123888 Date Analyzed: 2015-08-10 Analyzed By: AM
Prep Batch: 104752 Sample Preparation: 2015-08-10 Prepared By: AM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 400818 - SB-4,0'

Laboratory: Midland
Analysis: TPH DRO Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 123758 Date Analyzed: 2015-08-05 Analyzed By: AK
Prep Batch: 104646 Sample Preparation: 2015-08-05 Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		5	253	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	74.9	mg/Kg	1	50.0	150	70 - 130

Sample: 400818 - SB-4,0'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 123752 Date Analyzed: 2015-08-06 Analyzed By: AK
Prep Batch: 104611 Sample Preparation: 2015-08-05 Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	1 U	5	<8.00	mg/Kg	2	4.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.81	mg/Kg	2	4.00	95	70 - 130
4-Bromofluorobenzene (4-BFB)			3.77	mg/Kg	2	4.00	94	70 - 130

Sample: 400819 - SB-4,5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2015-08-10	Analyzed By:	AM
QC Batch:	123888	Sample Preparation:	2015-08-10	Prepared By:	AM
Prep Batch:	104752				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 400819 - SB-4,5'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-08-05	Analyzed By:	AK
QC Batch:	123758	Sample Preparation:	2015-08-05	Prepared By:	AK
Prep Batch:	104646				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		5	2430	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	126	mg/Kg	5	5.00	2520	70 - 130

Sample: 400819 - SB-4,5'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-08-06	Analyzed By:	AK
QC Batch:	123752	Sample Preparation:	2015-08-05	Prepared By:	AK
Prep Batch:	104611				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		5	546	mg/Kg	5	4.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			8.54	mg/Kg	5	10.0	85	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	18.1	mg/Kg	5	10.0	181	70 - 130

Sample: 400820 - SB-4,10'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 123888 Date Analyzed: 2015-08-10 Analyzed By: AM
Prep Batch: 104752 Sample Preparation: 2015-08-10 Prepared By: AM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 400820 - SB-4,10'

Laboratory: Midland
Analysis: TPH DRO Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 123758 Date Analyzed: 2015-08-05 Analyzed By: AK
Prep Batch: 104646 Sample Preparation: 2015-08-05 Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		5	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	69.9	mg/Kg	1	50.0	140	70 - 130

Sample: 400820 - SB-4,10'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 123752 Date Analyzed: 2015-08-06 Analyzed By: AK
Prep Batch: 104611 Sample Preparation: 2015-08-05 Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.74	mg/Kg	1	2.00	87	70 - 130
4-Bromofluorobenzene (4-BFB)			1.57	mg/Kg	1	2.00	78	70 - 130

Sample: 400821 - SB-2,5'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-08-05	Analyzed By:	AK
QC Batch:	123758	Sample Preparation:	2015-08-05	Prepared By:	AK
Prep Batch:	104646				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		5	2870	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	132	mg/Kg	5	50.0	264	70 - 130

Sample: 400821 - SB-2,5'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-08-06	Analyzed By:	AK
QC Batch:	123752	Sample Preparation:	2015-08-05	Prepared By:	AK
Prep Batch:	104611				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Je	5	847	mg/Kg	5	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			8.13	mg/Kg	5	10.0	81	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	19.3	mg/Kg	5	10.0	193	70 - 130

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Sample: 400822 - SB-2,10'

Laboratory:	Midland		
Analysis:	TPH DRO	Analytical Method:	S 8015 D
QC Batch:	123758	Date Analyzed:	2015-08-05
Prep Batch:	104646	Sample Preparation:	2015-08-05
		Prep Method:	N/A
		Analyzed By:	AK
		Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		5	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			64.6	mg/Kg	1	50.0	129	70 - 130

Sample: 400822 - SB-2,10'

Laboratory:	Midland		
Analysis:	TPH GRO	Analytical Method:	S 8015 D
QC Batch:	123752	Date Analyzed:	2015-08-06
Prep Batch:	104611	Sample Preparation:	2015-08-05
		Prep Method:	S 5035
		Analyzed By:	AK
		Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.98	mg/Kg	1	2.00	99	70 - 130
4-Bromofluorobenzene (4-BFB)			1.86	mg/Kg	1	2.00	93	70 - 130

Sample: 400823 - SB-1,5'

Laboratory:	Midland		
Analysis:	TPH DRO	Analytical Method:	S 8015 D
QC Batch:	123758	Date Analyzed:	2015-08-05
Prep Batch:	104646	Sample Preparation:	2015-08-05
		Prep Method:	N/A
		Analyzed By:	AK
		Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		5	8570	mg/Kg	10	50.0

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	294	mg/Kg	10	50.0	588	70 - 130

Sample: 400823 - SB-1,5'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 123937
Prep Batch: 104788

Analytical Method: S 8015 D
Date Analyzed: 2015-08-12
Sample Preparation: 2015-08-11

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		5	2810	mg/Kg	50	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			97.9	mg/Kg	50	100	98	70 - 130
4-Bromofluorobenzene (4-BFB)			126	mg/Kg	50	100	126	70 - 130

Sample: 400824 - SB-1,10'

Laboratory: Midland
Analysis: TPH DRO
QC Batch: 123758
Prep Batch: 104646

Analytical Method: S 8015 D
Date Analyzed: 2015-08-05
Sample Preparation: 2015-08-05

Prep Method: N/A
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		5	5900	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	218	mg/Kg	5	50.0	436	70 - 130

Sample: 400824 - SB-1,10'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 123937
Prep Batch: 104788

Analytical Method: S 8015 D
Date Analyzed: 2015-08-12
Sample Preparation: 2015-08-11

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		5	1870	mg/Kg	50	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			95.1	mg/Kg	50	100	95	70 - 130
4-Bromofluorobenzene (4-BFB)			113	mg/Kg	50	100	113	70 - 130

Sample: 400825 - SB-3,5'

Laboratory:	Midland		
Analysis:	TPH DRO	Analytical Method:	S 8015 D
QC Batch:	123758	Date Analyzed:	2015-08-05
Prep Batch:	104646	Sample Preparation:	2015-08-05
		Prep Method:	N/A
		Analyzed By:	AK
		Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		5	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			60.8	mg/Kg	1	50.0	122	70 - 130

Sample: 400825 - SB-3,5'

Laboratory:	Midland		
Analysis:	TPH GRO	Analytical Method:	S 8015 D
QC Batch:	123937	Date Analyzed:	2015-08-12
Prep Batch:	104788	Sample Preparation:	2015-08-11
		Prep Method:	S 5035
		Analyzed By:	AK
		Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.79	mg/Kg	1	2.00	90	70 - 130
4-Bromofluorobenzene (4-BFB)			1.66	mg/Kg	1	2.00	83	70 - 130

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Sample: 400826 - SB-3,10'

Laboratory:	Midland		
Analysis:	TPH DRO	Analytical Method:	S 8015 D
QC Batch:	123758	Date Analyzed:	2015-08-05
Prep Batch:	104646	Sample Preparation:	2015-08-05
		Prep Method:	N/A
		Analyzed By:	AK
		Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		5	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			57.5	mg/Kg	1	50.0	115	70 - 130

Sample: 400826 - SB-3,10'

Laboratory:	Midland		
Analysis:	TPH GRO	Analytical Method:	S 8015 D
QC Batch:	123937	Date Analyzed:	2015-08-12
Prep Batch:	104788	Sample Preparation:	2015-08-11
		Prep Method:	S 5035
		Analyzed By:	AK
		Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.82	mg/Kg	1	2.00	91	70 - 130
4-Bromofluorobenzene (4-BFB)			1.78	mg/Kg	1	2.00	89	70 - 130

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Method Blanks

Method Blank (1) QC Batch: 123752

QC Batch: 123752 Date Analyzed: 2015-08-06 Analyzed By: AK
Prep Batch: 104611 QC Preparation: 2015-08-05 Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		5	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.90	mg/Kg	1	2.00	95	70 - 130
4-Bromofluorobenzene (4-BFB)			1.81	mg/Kg	1	2.00	90	70 - 130

Method Blank (1) QC Batch: 123758

QC Batch: 123758 Date Analyzed: 2015-08-05 Analyzed By: AK
Prep Batch: 104646 QC Preparation: 2015-08-05 Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		5	<7.41	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			58.1	mg/Kg	1	50.0	116	70 - 130

Method Blank (1) QC Batch: 123882

QC Batch: 123882 Date Analyzed: 2015-08-10 Analyzed By: AK
Prep Batch: 104587 QC Preparation: 2015-08-04 Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.85	mg/Kg	4

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Method Blank (1) QC Batch: 123888

QC Batch: 123888
Prep Batch: 104752

Date Analyzed: 2015-08-10
QC Preparation: 2015-08-10

Analyzed By: AM
Prepared By: AM

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.85	mg/Kg	4

Method Blank (1) QC Batch: 123937

QC Batch: 123937
Prep Batch: 104788

Date Analyzed: 2015-08-12
QC Preparation: 2015-08-11

Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		5	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.86	mg/Kg	1	2.00	93	70 - 130
4-Bromofluorobenzene (4-BFB)			1.72	mg/Kg	1	2.00	86	70 - 130

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 123752
Prep Batch: 104611

Date Analyzed: 2015-08-06
QC Preparation: 2015-08-05

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		5	16.3	mg/Kg	1	20.0	<2.32	82	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		5	14.7	mg/Kg	1	20.0	<2.32	74	70 - 130	10	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.81	1.92	mg/Kg	1	2.00	90	96	70 - 130
4-Bromofluorobenzene (4-BFB)	1.78	1.96	mg/Kg	1	2.00	89	98	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 123758
Prep Batch: 104646

Date Analyzed: 2015-08-05
QC Preparation: 2015-08-05

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		5	231	mg/Kg	1	250	<7.41	92	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		5	208	mg/Kg	1	250	<7.41	83	70 - 130	10	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	56.0	51.1	mg/Kg	1	50.0	112	102	70 - 130

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Laboratory Control Spike (LCS-1)

QC Batch: 123882
Prep Batch: 104587

Date Analyzed: 2015-08-10
QC Preparation: 2015-08-04

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2540	mg/Kg	5	2500	<19.2	102	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2630	mg/Kg	5	2500	<19.2	105	85 - 115	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 123888
Prep Batch: 104752

Date Analyzed: 2015-08-10
QC Preparation: 2015-08-10

Analyzed By: AM
Prepared By: AM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2290	mg/Kg	5	2500	<19.2	92	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2190	mg/Kg	5	2500	<19.2	88	85 - 115	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 123937
Prep Batch: 104788

Date Analyzed: 2015-08-12
QC Preparation: 2015-08-11

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		5	14.0	mg/Kg	1	20.0	<2.32	70	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		5	15.1	mg/Kg	1	20.0	<2.32	76	70 - 130	8	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.80	1.90	mg/Kg	1	2.00	90	95	70 - 130
4-Bromofluorobenzene (4-BFB)	1.73	1.73	mg/Kg	1	2.00	86	86	70 - 130

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Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 399963

QC Batch: 123752
Prep Batch: 104611

Date Analyzed: 2015-08-06
QC Preparation: 2015-08-05

Analyzed By: AK
Prepared By: AK

Param			F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Qs	Qs	Qs	5	12.0	mg/Kg	1	20.0	<2.32	60	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param				MSD		Dil.	Spike	Matrix	Rec.		RPD	
		F	C	Result	Units		Amount	Result	Rec.	Limit	RPD	Limit
GRO	Q _s	Q _s	5	13.8	mg/Kg	1	20.0	<2.32	69	70 - 130	14	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.89	1.78	mg/Kg	1	2	94	89	70 - 130
4-Bromofluorobenzene (4-BFB)	1.86	1.86	mg/Kg	1	2	93	93	70 - 130

Matrix Spike (MS-1) Spiked Sample: 400826

QC Batch: 123758
Prep Batch: 104646

Date Analyzed: 2015-08-05
QC Preparation: 2015-08-05

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		5	310	mg/Kg	1	250	9.31	120	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		5	284	mg/Kg	1	250	9.31	110	70 - 130	9	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

			MS	MSD			Spike	MS	MSD	Rec.
Surrogate			Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	Q _{sr}	Q _{sr}	69.0	65.0	mg/Kg	1	50	138	130	70 - 130

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Matrix Spike (MS-1) Spiked Sample: 400627

QC Batch: 123882
Prep Batch: 104587

Date Analyzed: 2015-08-10
QC Preparation: 2015-08-04

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2730	mg/Kg	5	2500	293	97	78.9 - 121

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2930	mg/Kg	5	2500	293	117	78.9 - 121	7	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 400921

QC Batch: 123888
Prep Batch: 104752

Date Analyzed: 2015-08-10
QC Preparation: 2015-08-10

Analyzed By: AM
Prepared By: AM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2890	mg/Kg	5	2500	<19.2	116	78.9 - 121

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	Qs	Qs	3080	mg/Kg	5	2500	<19.2	123	78.9 - 121	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 400826

QC Batch: 123937
Prep Batch: 104788

Date Analyzed: 2015-08-12
QC Preparation: 2015-08-11

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Qs	Qs	13.2	mg/Kg	1	20.0	<2.32	66	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		5	14.6	mg/Kg	1	20.0	<2.32	73	70 - 130	10	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.80	1.89	mg/Kg	1	2	90	94	70 - 130
4-Bromofluorobenzene (4-BFB)	1.70	1.83	mg/Kg	1	2	85	92	70 - 130

Calibration Standards

Standard (CCV-2)

QC Batch: 123752

Date Analyzed: 2015-08-06

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	0.811	81	80 - 120	2015-08-06

Standard (CCV-3)

QC Batch: 123752

Date Analyzed: 2015-08-06

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	0.898	90	80 - 120	2015-08-06

Standard (CCV-4)

QC Batch: 123752

Date Analyzed: 2015-08-06

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	0.820	82	80 - 120	2015-08-06

Standard (CCV-1)

QC Batch: 123758

Date Analyzed: 2015-08-05

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		5	mg/Kg	250	265	106	80 - 120	2015-08-05

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Standard (CCV-2)

QC Batch: 123758

Date Analyzed: 2015-08-05

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		5	mg/Kg	250	236	94	80 - 120	2015-08-05

Standard (CCV-3)

QC Batch: 123758

Date Analyzed: 2015-08-05

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		5	mg/Kg	250	234	94	80 - 120	2015-08-05

Standard (ICV-1)

QC Batch: 123882

Date Analyzed: 2015-08-10

Analyzed By: AK

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2015-08-10

Standard (CCV-1)

QC Batch: 123882

Date Analyzed: 2015-08-10

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2015-08-10

Standard (ICV-1)

QC Batch: 123888

Date Analyzed: 2015-08-10

Analyzed By: AM

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Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2015-08-10

Standard (CCV-1)

QC Batch: 123888

Date Analyzed: 2015-08-10

Analyzed By: AM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2015-08-10

Standard (CCV-1)

QC Batch: 123937

Date Analyzed: 2015-08-12

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	0.953	95	80 - 120	2015-08-12

Standard (CCV-2)

QC Batch: 123937

Date Analyzed: 2015-08-12

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	0.795	80	80 - 120	2015-08-12

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	L-A-B	L2418	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	LELAP	LELAP-02003	Lubbock
4	NELAP	T104704219-15-11	Lubbock
5	NELAP	T104704392-14-8	Midland
6		2014-018	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.

F	Description
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Result Comments

1 Dilution due to surfactants.

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

WJO #15080409

CHAIN-OF-CUSTODY

507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Arson & Associates, Inc.
Environmental Consultants

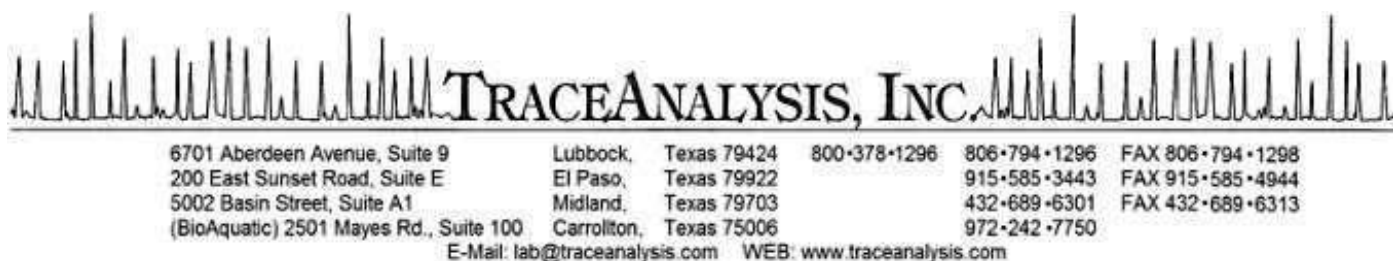
DATE: 8-3-2015 PAGE 1 OF 1
PO #: LAB WORK ORDER #:
PROJECT LOCATION OR NAME: Targe / Toward IC
LAI PROJECT #: 15-0143-01 COLLECTOR: M6/HL

Data Reported to:

TRRP report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	TIME ZONE: Time zone/State: <u>MKN / NM</u>	S=SOIL W=WATER A=AIR	P=PAINT SL=SLUDGE OT=OTHER	Date	Time	Matrix	# of Containers	PRESERVATION				ANALYSES	FIELD NOTES
								HCl	HNO ₃	H ₂ SO ₄ □ NaOH □	ICE		
	SB-5, 1d			8/3/15	13:38	S	1						400814
	SB-5, 15'				13:45	S	1						400815
	SB-5, 20'				13:50	S	1						400816
	SB-5, 25'				13:55	S	1						400817
	SB-4, 0'				14:07	S	1						400818
	SB-4, 5'				14:16	S	1						400819
	SB-4, 10'				14:20	S	1						400820
	SB-2, 5'				14:40	S	1						400821
	SB-2, 10'				14:45	S	1						400822
	SB-1, 5'				14:59	S	1						400823
	SB-1, 10'				15:04	S	1						400824
	SB-3, 5'				15:15	S	1						400825
	SB-3, 10'				15:20	S	1						400826
TOTAL													

RELINQUISHED BY: (Signature) <i>Paul Carr</i>	DATE/TIME 8/4/15 9:03	RECEIVED BY: (Signature) <i>Nancy TA</i>	DATE/TIME 8/4/15 9:00
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

LABORATORY USE ONLY:
RECEIVING TEMP: 8.3 THERM #: IR
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL # ☒ HAND DELIVERED



Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

(Corrected Report)

Mark Larson
Larson and Associates, Inc.

Report Date: October 2, 2015

P. O. Box 50685
Midland, TX, 79710

Work Order: 15092126



Project Location: Lea Co, NM
Project Name: Townsend 16"
Project Number: 15-0143-01 (2)

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
404888	Bottom 15'	soil	2015-09-21	10:45	2015-09-21
404889	West Side 12'	soil	2015-09-21	10:50	2015-09-21
404890	North Side 12'	soil	2015-09-21	10:55	2015-09-21
404891	East Side 12'	soil	2015-09-21	11:00	2015-09-21
404892	Southside (South of P/L) 9'	soil	2015-09-21	12:00	2015-09-21

Report Corrections (Work Order 15092126)

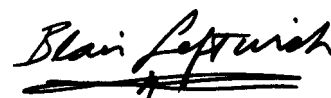
- 10/2/15: Corrected Project Name.

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company,

sampler, contacts and any special remarks.

This report consists of a total of 19 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

A handwritten signature in black ink, reading "Blair Leftwich". The signature is written in a cursive style and is underlined with a thick, dark line.

Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Brian Pellam, Operations Manager

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Case Narrative

Samples for project Townsend 16” were received by TraceAnalysis, Inc. on 2015-09-21 and assigned to work order 15092126. Samples for work order 15092126 were received intact at a temperature of 2.3 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
TPH DRO	S 8015 D	105805	2015-09-23 at 15:40	125094	2015-09-24 at 10:23
TPH DRO	S 8015 D	105856	2015-09-24 at 19:00	125166	2015-09-28 at 09:46
TPH DRO	S 8015 D	105857	2015-09-24 at 17:30	125167	2015-09-28 at 09:47
TPH GRO	S 8015 D	105739	2015-09-22 at 07:51	125059	2015-09-23 at 08:03

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 15092126 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

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Analytical Report

Sample: 404888 - Bottom 15'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-09-28	Analyzed By:	HJ
QC Batch:	125166	Sample Preparation:	2015-09-24	Prepared By:	HJ
Prep Batch:	105856				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1,2,3,4	3120	mg/Kg	1	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	3	147	mg/Kg	1	25.0	588	48.9 - 172

Sample: 404888 - Bottom 15'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-09-23	Analyzed By:	AK
QC Batch:	125059	Sample Preparation:	2015-09-22	Prepared By:	AK
Prep Batch:	105739				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		5	3920	mg/Kg	50	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			78.7	mg/Kg	50	100	79	70 - 130
4-Bromofluorobenzene (4-BFB)			128	mg/Kg	50	100	128	70 - 130

Sample: 404889 - West Side 12'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-09-24	Analyzed By:	AK
QC Batch:	125094	Sample Preparation:	2015-09-23	Prepared By:	AK
Prep Batch:	105805				

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Je	5	12500	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	350	mg/Kg	5	50.0	700	70 - 130

Sample: 404889 - West Side 12'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 125059
Prep Batch: 105739

Analytical Method: S 8015 D
Date Analyzed: 2015-09-23
Sample Preparation: 2015-09-22

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		5	5350	mg/Kg	100	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			186	mg/Kg	100	200	93	70 - 130
4-Bromofluorobenzene (4-BFB)			239	mg/Kg	100	200	120	70 - 130

Sample: 404890 - North Side 12'

Laboratory: Lubbock
Analysis: TPH DRO
QC Batch: 125166
Prep Batch: 105856

Analytical Method: S 8015 D
Date Analyzed: 2015-09-28
Sample Preparation: 2015-09-24

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	33.9	mg/Kg	1	25.0	136	48.9 - 172

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Sample: 404890 - North Side 12'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-09-23	Analyzed By:	AK
QC Batch:	125059	Sample Preparation:	2015-09-22	Prepared By:	AK
Prep Batch:	105739				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.83	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			1.72	mg/Kg	1	2.00	86	70 - 130

Sample: 404891 - East Side 12'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-09-28	Analyzed By:	HJ
QC Batch:	125166	Sample Preparation:	2015-09-24	Prepared By:	HJ
Prep Batch:	105856				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	38.9	mg/Kg	1	25.0	156	48.9 - 172

Sample: 404891 - East Side 12'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-09-23	Analyzed By:	AK
QC Batch:	125059	Sample Preparation:	2015-09-22	Prepared By:	AK
Prep Batch:	105739				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.84	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			1.72	mg/Kg	1	2.00	86	70 - 130

Sample: 404892 - Southside (South of P/L) 9'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-09-28	Analyzed By:	HJ
QC Batch:	125167	Sample Preparation:	2015-09-24	Prepared By:	HJ
Prep Batch:	105857				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	3		32.8	mg/Kg	1	25.0	131	48.9 - 172

Sample: 404892 - Southside (South of P/L) 9'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-09-23	Analyzed By:	AK
QC Batch:	125059	Sample Preparation:	2015-09-22	Prepared By:	AK
Prep Batch:	105739				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.78	mg/Kg	1	2.00	89	70 - 130
4-Bromofluorobenzene (4-BFB)			1.72	mg/Kg	1	2.00	86	70 - 130

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Method Blanks

Method Blank (1) QC Batch: 125059

QC Batch: 125059 Date Analyzed: 2015-09-23 Analyzed By: AK
Prep Batch: 105739 QC Preparation: 2015-09-22 Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		5	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.01	mg/Kg	1	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)			1.74	mg/Kg	1	2.00	87	70 - 130

Method Blank (1) QC Batch: 125094

QC Batch: 125094 Date Analyzed: 2015-09-24 Analyzed By: AK
Prep Batch: 105805 QC Preparation: 2015-09-23 Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		5	<7.41	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			57.8	mg/Kg	1	50.0	116	70 - 130

Method Blank (1) QC Batch: 125166

QC Batch: 125166 Date Analyzed: 2015-09-28 Analyzed By: HJ
Prep Batch: 105856 QC Preparation: 2015-09-24 Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1,2,3,4	<5.22	mg/Kg	50

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	35.4	mg/Kg	1	25.0	142	48.9 - 172

Method Blank (1) QC Batch: 125167

QC Batch: 125167
Prep Batch: 105857

Date Analyzed: 2015-09-28
QC Preparation: 2015-09-24

Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1,2,3,4	<5.22	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	34.5	mg/Kg	1	25.0	138	48.9 - 172

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 125059
Prep Batch: 105739

Date Analyzed: 2015-09-23
QC Preparation: 2015-09-22

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		5	16.1	mg/Kg	1	20.0	<2.32	80	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		5	19.0	mg/Kg	1	20.0	<2.32	95	70 - 130	16	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.98	1.90	mg/Kg	1	2.00	99	95	70 - 130
4-Bromofluorobenzene (4-BFB)	1.75	1.70	mg/Kg	1	2.00	88	85	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 125094
Prep Batch: 105805

Date Analyzed: 2015-09-24
QC Preparation: 2015-09-23

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		5	211	mg/Kg	1	250	<7.41	84	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		5	216	mg/Kg	1	250	<7.41	86	70 - 130	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	46.2	47.1	mg/Kg	1	50.0	92	94	70 - 130

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Laboratory Control Spike (LCS-1)

QC Batch: 125166
Prep Batch: 105856

Date Analyzed: 2015-09-28
QC Preparation: 2015-09-24

Analyzed By: HJ
Prepared By: HJ

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3,4	445	mg/Kg	1	500	<5.22	89	60.9 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3,4	511	mg/Kg	1	500	<5.22	102	60.9 - 130	14	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate		LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	3	37.0	41.7	mg/Kg	1	25.0	148	167	48.9 - 172

Laboratory Control Spike (LCS-1)

QC Batch: 125167
Prep Batch: 105857

Date Analyzed: 2015-09-28
QC Preparation: 2015-09-24

Analyzed By: HJ
Prepared By: HJ

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3,4	466	mg/Kg	1	500	<5.22	93	60.9 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3,4	480	mg/Kg	1	500	<5.22	96	60.9 - 130	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate		LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	3	37.3	40.6	mg/Kg	1	25.0	149	162	48.9 - 172

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Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 404609

QC Batch: 125059
Prep Batch: 105739

Date Analyzed: 2015-09-23
QC Preparation: 2015-09-22

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Q _s	Q _s	5	11.7	mg/Kg	1	20.0	<2.32	58 70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	Q _s	Q _s	5	12.3	mg/Kg	1	20.0	<2.32	62 70 - 130	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.62	1.74	mg/Kg	1	2	81	87	70 - 130
4-Bromofluorobenzene (4-BFB)	1.72	1.80	mg/Kg	1	2	86	90	70 - 130

Matrix Spike (xMS-1) Spiked Sample: 404905

QC Batch: 125094
Prep Batch: 105805

Date Analyzed: 2015-09-24
QC Preparation: 2015-09-23

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	Q _s	Q _s	5	2580	mg/Kg	1	250	3950	-548 70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	Q _s	Q _s	5	2140	mg/Kg	1	250	3950	-724 70 - 130	19	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	Q _{sr}	Q _{sr}	205	233	mg/Kg	1	50	410 466 70 - 130

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Matrix Spike (xMS-1) Spiked Sample: 405054

QC Batch: 125166
Prep Batch: 105856

Date Analyzed: 2015-09-28
QC Preparation: 2015-09-24

Analyzed By: HJ
Prepared By: HJ

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3,4	958	mg/Kg	1	500	598	72	47.9 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3,4	994	mg/Kg	1	500	598	79	47.9 - 130	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate				MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	Q _{SR}	Q _{SR}	3	44.1	45.3	mg/Kg	1	25	176	181	48.9 - 172

Matrix Spike (MS-1) Spiked Sample: 404892

QC Batch: 125167
Prep Batch: 105857

Date Analyzed: 2015-09-28
QC Preparation: 2015-09-24

Analyzed By: HJ
Prepared By: HJ

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3,4	446	mg/Kg	1	500	<5.22	89	47.9 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3,4	481	mg/Kg	1	500	<5.22	96	47.9 - 130	8	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate				MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane			3	34.2	37.7	mg/Kg	1	25	137	151	48.9 - 172

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Calibration Standards

Standard (CCV-1)

QC Batch: 125059

Date Analyzed: 2015-09-23

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	0.988	99	80 - 120	2015-09-23

Standard (CCV-2)

QC Batch: 125059

Date Analyzed: 2015-09-23

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	0.869	87	80 - 120	2015-09-23

Standard (CCV-3)

QC Batch: 125059

Date Analyzed: 2015-09-23

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	0.946	95	80 - 120	2015-09-23

Standard (CCV-2)

QC Batch: 125094

Date Analyzed: 2015-09-24

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		5	mg/Kg	250	209	84	80 - 120	2015-09-24

Report Date: October 2, 2015
15-0143-01 (2)

Work Order: 15092126
Townsend 16"

Page Number: 16 of 19
Lea Co, NM

Standard (CCV-3)

QC Batch: 125094

Date Analyzed: 2015-09-24

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		5	mg/Kg	250	240	96	80 - 120	2015-09-24

Standard (CCV-1)

QC Batch: 125166

Date Analyzed: 2015-09-28

Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3,4	mg/Kg	500	475	95	80 - 120	2015-09-28

Standard (CCV-2)

QC Batch: 125166

Date Analyzed: 2015-09-28

Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3,4	mg/Kg	500	487	97	80 - 120	2015-09-28

Standard (CCV-1)

QC Batch: 125167

Date Analyzed: 2015-09-28

Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3,4	mg/Kg	500	487	97	80 - 120	2015-09-28

Standard (CCV-2)

QC Batch: 125167

Date Analyzed: 2015-09-28

Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3,4	mg/Kg	500	471	94	80 - 120	2015-09-28

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	L-A-B	L2418	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	LELAP	LELAP-02003	Lubbock
4	NELAP	T104704219-15-11	Lubbock
5	NELAP	T104704392-14-8	Midland

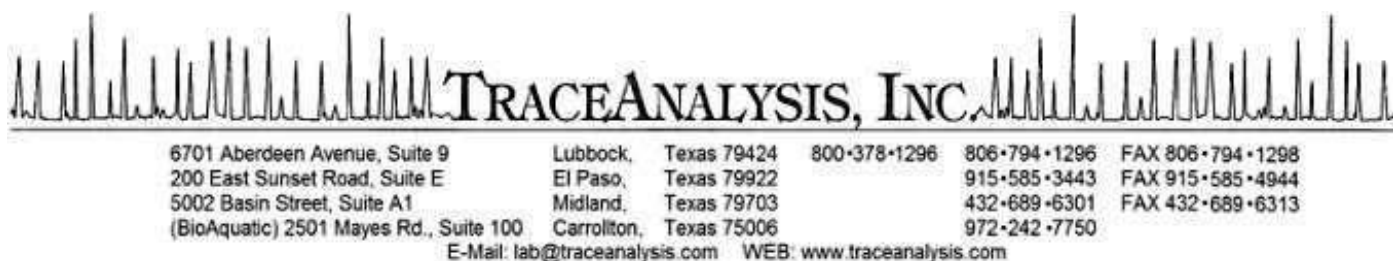
Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.

F	Description
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.



Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Mark Larson
Larson and Associates, Inc.

Report Date: September 30, 2015

P. O. Box 50685
Midland, TX, 79710

Work Order: 15092404



Project Location: Lea Co, NM
Project Name: Townsend 16"
Project Number: 15-0143-01 (2)

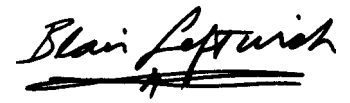
Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
405105	East Corner	soil	2015-09-22	11:36	2015-09-24
405106	8' South Vent	soil	2015-09-22	11:42	2015-09-24
405107	8' South Wall	soil	2015-09-22	11:47	2015-09-24
405108	West Under Pipe	soil	2015-09-22	13:50	2015-09-24
405109	SW Corner	soil	2015-09-22	13:58	2015-09-24

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.

This report consists of a total of 14 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

A handwritten signature in black ink, reading "Blair Leftwich". The signature is written in a cursive style and is underlined with a thick, dark line.

Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Brian Pellam, Operations Manager

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Case Narrative

Samples for project Townsend 16” were received by TraceAnalysis, Inc. on 2015-09-24 and assigned to work order 15092404. Samples for work order 15092404 were received intact at a temperature of 9.9 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
TPH DRO	S 8015 D	105909	2015-09-28 at 15:00	125211	2015-09-28 at 18:00
TPH GRO	S 8015 D	105930	2015-09-29 at 07:09	125240	2015-09-30 at 13:49

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 15092404 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Report Date: September 30, 2015
15-0143-01 (2)

Work Order: 15092404
Townsend 16"

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Lea Co, NM

Analytical Report

Sample: 405105 - East Corner

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-09-28	Analyzed By:	AK
QC Batch:	125211	Sample Preparation:	2015-09-28	Prepared By:	AK
Prep Batch:	105909				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			54.2	mg/Kg	1	50.0	108	70 - 130

Sample: 405105 - East Corner

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-09-30	Analyzed By:	AK
QC Batch:	125240	Sample Preparation:	2015-09-29	Prepared By:	AK
Prep Batch:	105930				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs,U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.90	mg/Kg	1	2.00	95	70 - 130
4-Bromofluorobenzene (4-BFB)			1.78	mg/Kg	1	2.00	89	70 - 130

Sample: 405106 - 8' South Vent

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-09-28	Analyzed By:	AK
QC Batch:	125211	Sample Preparation:	2015-09-28	Prepared By:	AK
Prep Batch:	105909				

Report Date: September 30, 2015
15-0143-01 (2)

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Townsend 16"

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Lea Co, NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	3220	mg/Kg	10	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	132	mg/Kg	10	50.0	264	70 - 130

Sample: 405106 - 8' South Vent

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 125240
Prep Batch: 105930

Analytical Method: S 8015 D
Date Analyzed: 2015-09-30
Sample Preparation: 2015-09-29

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	1420	mg/Kg	50	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			95.0	mg/Kg	50	100	95	70 - 130
4-Bromofluorobenzene (4-BFB)			107	mg/Kg	50	100	107	70 - 130

Sample: 405107 - 8' South Wall

Laboratory: Midland
Analysis: TPH DRO
QC Batch: 125211
Prep Batch: 105909

Analytical Method: S 8015 D
Date Analyzed: 2015-09-28
Sample Preparation: 2015-09-28

Prep Method: N/A
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			50.1	mg/Kg	1	50.0	100	70 - 130

Report Date: September 30, 2015
15-0143-01 (2)

Work Order: 15092404
Townsend 16"

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Lea Co, NM

Sample: 405107 - 8' South Wall

Laboratory:	Midland		
Analysis:	TPH GRO	Analytical Method:	S 8015 D
QC Batch:	125240	Date Analyzed:	2015-09-30
Prep Batch:	105930	Sample Preparation:	2015-09-29
		Prep Method:	S 5035
		Analyzed By:	AK
		Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.89	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			1.85	mg/Kg	1	2.00	92	70 - 130

Sample: 405108 - West Under Pipe

Laboratory:	Midland		
Analysis:	TPH DRO	Analytical Method:	S 8015 D
QC Batch:	125211	Date Analyzed:	2015-09-28
Prep Batch:	105909	Sample Preparation:	2015-09-28
		Prep Method:	N/A
		Analyzed By:	AK
		Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			56.9	mg/Kg	1	50.0	114	70 - 130

Sample: 405108 - West Under Pipe

Laboratory:	Midland		
Analysis:	TPH GRO	Analytical Method:	S 8015 D
QC Batch:	125240	Date Analyzed:	2015-09-30
Prep Batch:	105930	Sample Preparation:	2015-09-29
		Prep Method:	S 5035
		Analyzed By:	AK
		Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<4.00	mg/Kg	1	4.00

Report Date: September 30, 2015
15-0143-01 (2)

Work Order: 15092404
Townsend 16"

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Lea Co, NM

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.78	mg/Kg	1	2.00	89	70 - 130
4-Bromofluorobenzene (4-BFB)			1.82	mg/Kg	1	2.00	91	70 - 130

Sample: 405109 - SW Corner

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-09-28	Analyzed By:	AK
QC Batch:	125211	Sample Preparation:	2015-09-28	Prepared By:	AK
Prep Batch:	105909				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	u	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			51.4	mg/Kg	1	50.0	103	70 - 130

Sample: 405109 - SW Corner

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-09-30	Analyzed By:	AK
QC Batch:	125240	Sample Preparation:	2015-09-29	Prepared By:	AK
Prep Batch:	105930				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	u	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.74	mg/Kg	1	2.00	87	70 - 130
4-Bromofluorobenzene (4-BFB)			1.70	mg/Kg	1	2.00	85	70 - 130

Report Date: September 30, 2015
15-0143-01 (2)

Work Order: 15092404
Townsend 16"

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Lea Co, NM

Method Blanks

Method Blank (1) QC Batch: 125211

QC Batch:	125211	Date Analyzed:	2015-09-28	Analyzed By:	AK
Prep Batch:	105909	QC Preparation:	2015-09-28	Prepared By:	AK

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<7.41	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			51.0	mg/Kg	1	50.0	102	70 - 130

Method Blank (1) QC Batch: 125240

QC Batch:	125240	Date Analyzed:	2015-09-30	Analyzed By:	AK
Prep Batch:	105930	QC Preparation:	2015-09-29	Prepared By:	AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.94	mg/Kg	1	2.00	97	70 - 130
4-Bromofluorobenzene (4-BFB)			1.71	mg/Kg	1	2.00	86	70 - 130

Report Date: September 30, 2015
15-0143-01 (2)

Work Order: 15092404
Townsend 16"

Page Number: 10 of 14
Lea Co, NM

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 125211
Prep Batch: 105909

Date Analyzed: 2015-09-28
QC Preparation: 2015-09-28

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	261	mg/Kg	1	250	<7.41	104	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	256	mg/Kg	1	250	<7.41	102	70 - 130	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	56.0	55.3	mg/Kg	1	50.0	112	111	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 125240
Prep Batch: 105930

Date Analyzed: 2015-09-30
QC Preparation: 2015-09-29

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	20.0	mg/Kg	1	20.0	<2.32	100	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	22.7	mg/Kg	1	20.0	<2.32	114	70 - 130	13	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.84	1.92	mg/Kg	1	2.00	92	96	70 - 130
4-Bromofluorobenzene (4-BFB)	1.65	1.78	mg/Kg	1	2.00	82	89	70 - 130

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 405105

QC Batch: 125211
Prep Batch: 105909

Date Analyzed: 2015-09-28
QC Preparation: 2015-09-28

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	250	mg/Kg	1	250	<7.41	100	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	270	mg/Kg	1	250	<7.41	108	70 - 130	8	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	53.7	58.2	mg/Kg	1	50	107	116	70 - 130

Matrix Spike (MS-1) Spiked Sample: 405105

QC Batch: 125240
Prep Batch: 105930

Date Analyzed: 2015-09-30
QC Preparation: 2015-09-29

Analyzed By: AK
Prepared By: AK

Param			F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Qs	Qs	Qs	1	12.5	mg/Kg	1	20.0	<2.32	62	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param				MSD			Spike	Matrix		Rec.		RPD
		F	C	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO	Qs	Qs	1	10.8	mg/Kg	1	20.0	<2.32	54	70 - 130	15	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.63	1.79	mg/Kg	1	2	82	90	70 - 130
4-Bromofluorobenzene (4-BFB)	1.65	1.81	mg/Kg	1	2	82	90	70 - 130

Calibration Standards

Standard (CCV-1)

QC Batch: 125211

Date Analyzed: 2015-09-28

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	234	94	80 - 120	2015-09-28

Standard (CCV-2)

QC Batch: 125211

Date Analyzed: 2015-09-28

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	238	95	80 - 120	2015-09-28

Standard (CCV-1)

QC Batch: 125240

Date Analyzed: 2015-09-30

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.10	110	80 - 120	2015-09-30

Standard (CCV-2)

QC Batch: 125240

Date Analyzed: 2015-09-30

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.932	93	80 - 120	2015-09-30

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-14-8	Midland

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less than ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

Report Date: September 30, 2015
15-0143-01 (2)

Work Order: 15092404
Townsend 16"

Page Number: 14 of 14
Lea Co, NM

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

CHAIN-OF-CUSTODY

507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

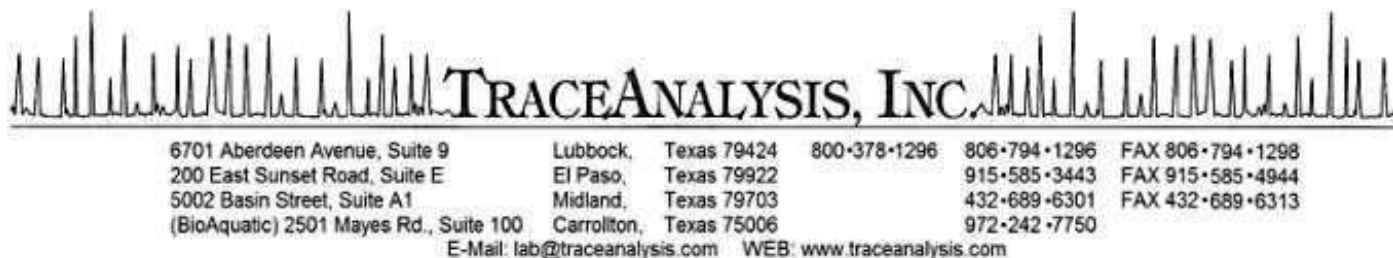
DATE: 9/22/2015

LAB WORK ORDER #:

PROJECT LOCATION OR NAME: Townsend 16" Lea Co, MN

LAI PROJECT #: S-043-61 COLLECTOR: MG

[illegible]



Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Mark Larson
Larson and Associates, Inc.

Report Date: October 22, 2015

P. O. Box 50685
Midland, TX, 79710

Work Order: 15101419



Project Location: Lea Co, NM
Project Name: Townsend 16" Pipeline
Project Number: 15-0143-01 (2)

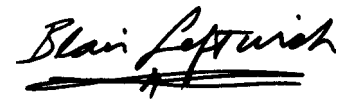
Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
406372	W Wall 12'	soil	2015-10-13	13:45	2015-10-14
406373	N P/L 18'	soil	2015-10-13	15:05	2015-10-14
406374	N P/L 20'	soil	2015-10-13	15:12	2015-10-14
406375	N P/L 22'	soil	2015-10-13	15:19	2015-10-14
406376	N P/L 24'	soil	2015-10-13	15:23	2015-10-14
406377	N P/L 26'	soil	2015-10-13	15:27	2015-10-14

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.

This report consists of a total of 25 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

A handwritten signature in black ink, reading "Blair Leftwich". The signature is written in a cursive style and is underlined with a thick, dark line.

Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Brian Pellam, Operations Manager

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Case Narrative

Samples for project Townsend 16" Pipeline were received by TraceAnalysis, Inc. on 2015-10-14 and assigned to work order 15101419. Samples for work order 15101419 were received intact at a temperature of 7.1 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	106322	2015-10-19 at 12:30	125692	2015-10-19 at 13:01
Chloride (IC)	E 300.0	106385	2015-10-21 at 13:00	125761	2015-10-21 at 14:22
TPH DRO	S 8015 D	106226	2015-10-14 at 07:16	125580	2015-10-14 at 15:30
TPH DRO	S 8015 D	106290	2015-10-16 at 14:00	125666	2015-10-19 at 10:44
TPH GRO	S 8015 D	106233	2015-10-14 at 08:29	125587	2015-10-15 at 08:30
TPH GRO	S 8015 D	106312	2015-10-19 at 10:05	125682	2015-10-19 at 10:05

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 15101419 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

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Analytical Report

Sample: 406372 - W Wall 12'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2015-10-19	Analyzed By:	RL
QC Batch:	125692	Sample Preparation:		Prepared By:	RL
Prep Batch:	106322				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 406372 - W Wall 12'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-10-14	Analyzed By:	AK
QC Batch:	125580	Sample Preparation:	2015-10-14	Prepared By:	AK
Prep Batch:	106226				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr	5	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			55.3	mg/Kg	1	50.0	111	70 - 130

Sample: 406372 - W Wall 12'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-10-15	Analyzed By:	AK
QC Batch:	125587	Sample Preparation:	2015-10-14	Prepared By:	AK
Prep Batch:	106233				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.72	mg/Kg	1	2.00	86	70 - 130

continued ...

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sample continued ...

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-Bromofluorobenzene (4-BFB)			1.93	mg/Kg	1	2.00	96	70 - 130

Sample: 406373 - N P/L 18'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2015-10-19	Analyzed By:	RL
QC Batch:	125692	Sample Preparation:		Prepared By:	RL
Prep Batch:	106322				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 406373 - N P/L 18'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-10-14	Analyzed By:	AK
QC Batch:	125580	Sample Preparation:	2015-10-14	Prepared By:	AK
Prep Batch:	106226				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Q _r	5	4640	mg/Kg	10	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	194	mg/Kg	10	50.0	388	70 - 130

Sample: 406373 - N P/L 18'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-10-15	Analyzed By:	AK
QC Batch:	125587	Sample Preparation:	2015-10-14	Prepared By:	AK
Prep Batch:	106233				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		5	4640	mg/Kg	50	4.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			84.4	mg/Kg	50	100	84	70 - 130
4-Bromofluorobenzene (4-BFB)			125	mg/Kg	50	100	125	70 - 130

Sample: 406374 - N P/L 20'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2015-10-19	Analyzed By:	RL
QC Batch:	125692	Sample Preparation:		Prepared By:	RL
Prep Batch:	106322				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 406374 - N P/L 20'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-10-14	Analyzed By:	AK
QC Batch:	125580	Sample Preparation:	2015-10-14	Prepared By:	AK
Prep Batch:	106226				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Q _r	5	8300	mg/Kg	10	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	300	mg/Kg	10	50.0	600	70 - 130

Sample: 406374 - N P/L 20'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-10-15	Analyzed By:	AK
QC Batch:	125587	Sample Preparation:	2015-10-14	Prepared By:	AK
Prep Batch:	106233				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		5	5240	mg/Kg	50	4.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			79.2	mg/Kg	50	100	79	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	136	mg/Kg	50	100	136	70 - 130

Sample: 406375 - N P/L 22'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2015-10-19	Analyzed By:	RL
QC Batch:	125692	Sample Preparation:		Prepared By:	RL
Prep Batch:	106322				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 406375 - N P/L 22'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-10-14	Analyzed By:	AK
QC Batch:	125580	Sample Preparation:	2015-10-14	Prepared By:	AK
Prep Batch:	106226				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Q _r	5	1050	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	87.1	mg/Kg	1	50.0	174	70 - 130

Sample: 406375 - N P/L 22'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-10-15	Analyzed By:	AK
QC Batch:	125587	Sample Preparation:	2015-10-14	Prepared By:	AK
Prep Batch:	106233				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		5	668	mg/Kg	50	4.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			92.1	mg/Kg	50	100	92	70 - 130
4-Bromofluorobenzene (4-BFB)			93.7	mg/Kg	50	100	94	70 - 130

Sample: 406376 - N P/L 24'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2015-10-21	Analyzed By:	RL
QC Batch:	125761	Sample Preparation:		Prepared By:	RL
Prep Batch:	106385				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 406376 - N P/L 24'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-10-19	Analyzed By:	HJ
QC Batch:	125666	Sample Preparation:	2015-10-16	Prepared By:	HJ
Prep Batch:	106290				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1,2,3,4	281	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	41.9	mg/Kg	1	25.0	168	48.9 - 172

Sample: 406376 - N P/L 24'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-10-19	Analyzed By:	JS
QC Batch:	125682	Sample Preparation:	2015-10-19	Prepared By:	JS
Prep Batch:	106312				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1,2,3,4	201	mg/Kg	5	4.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		3	2.11	mg/Kg	5	2.00	106	76.5 - 130
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	3	7.79	mg/Kg	5	2.00	390
								68.4 - 120

Sample: 406377 - N P/L 26'

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 125761 Date Analyzed: 2015-10-21 Analyzed By: RL
Prep Batch: 106385 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 406377 - N P/L 26'

Laboratory: Lubbock
Analysis: TPH DRO Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 125666 Date Analyzed: 2015-10-19 Analyzed By: HJ
Prep Batch: 106290 Sample Preparation: 2015-10-16 Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1,2,3,4	578	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	3	58.6	mg/Kg	1	25.0	234
								48.9 - 172

Sample: 406377 - N P/L 26'

Laboratory: Lubbock
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 125682 Date Analyzed: 2015-10-19 Analyzed By: JS
Prep Batch: 106312 Sample Preparation: 2015-10-19 Prepared By: JS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Q _s	1,2,3,4	86.6	mg/Kg	5	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		3	2.06	mg/Kg	5	2.00	103	76.5 - 130
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	4.40	mg/Kg	5	2.00	220	68.4 - 120

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Method Blanks

Method Blank (1) QC Batch: 125580

QC Batch: 125580 Date Analyzed: 2015-10-14 Analyzed By: AK
Prep Batch: 106226 QC Preparation: 2015-10-14 Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		5	<7.41	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			50.6	mg/Kg	1	50.0	101	70 - 130

Method Blank (1) QC Batch: 125587

QC Batch: 125587 Date Analyzed: 2015-10-15 Analyzed By: AK
Prep Batch: 106233 QC Preparation: 2015-10-14 Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		5	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.86	mg/Kg	1	2.00	93	70 - 130
4-Bromofluorobenzene (4-BFB)			1.72	mg/Kg	1	2.00	86	70 - 130

Method Blank (1) QC Batch: 125666

QC Batch: 125666 Date Analyzed: 2015-10-19 Analyzed By: HJ
Prep Batch: 106290 QC Preparation: 2015-10-16 Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1,2,3,4	<5.22	mg/Kg	50

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	33.2	mg/Kg	1	25.0	133	48.9 - 172

Method Blank (1) QC Batch: 125682

QC Batch: 125682 Date Analyzed: 2015-10-19 Analyzed By: JS
Prep Batch: 106312 QC Preparation: 2015-10-19 Prepared By: JS

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1,2,3,4	<0.641	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		3	1.88	mg/Kg	1	2.00	94	76.5 - 130
4-Bromofluorobenzene (4-BFB)		3	1.84	mg/Kg	1	2.00	92	68.4 - 120

Method Blank (1) QC Batch: 125692

QC Batch: 125692 Date Analyzed: 2015-10-19 Analyzed By: RL
Prep Batch: 106322 QC Preparation: 2015-10-19 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		3,4,6	<8.34	mg/Kg	25

Method Blank (1) QC Batch: 125761

QC Batch: 125761 Date Analyzed: 2015-10-21 Analyzed By: RL
Prep Batch: 106385 QC Preparation: 2015-10-21 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		3,4,6	<8.34	mg/Kg	25

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 125580
Prep Batch: 106226

Date Analyzed: 2015-10-14
QC Preparation: 2015-10-14

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		5	217	mg/Kg	1	250	<7.41	87	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		5	211	mg/Kg	1	250	<7.41	84	70 - 130	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	53.2	51.6	mg/Kg	1	50.0	106	103	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 125587
Prep Batch: 106233

Date Analyzed: 2015-10-15
QC Preparation: 2015-10-14

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		5	21.7	mg/Kg	1	20.0	<2.32	108	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		5	22.7	mg/Kg	1	20.0	<2.32	114	70 - 130	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.84	1.84	mg/Kg	1	2.00	92	92	70 - 130
4-Bromofluorobenzene (4-BFB)	1.72	1.75	mg/Kg	1	2.00	86	88	70 - 130

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Laboratory Control Spike (LCS-1)

QC Batch: 125666
Prep Batch: 106290

Date Analyzed: 2015-10-19
QC Preparation: 2015-10-16

Analyzed By: HJ
Prepared By: HJ

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3,4	425	mg/Kg	1	500	<5.22	85	60.9 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3,4	405	mg/Kg	1	500	<5.22	81	60.9 - 130	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate		LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	3	35.5	34.3	mg/Kg	1	25.0	142	137	48.9 - 172

Laboratory Control Spike (LCS-1)

QC Batch: 125682
Prep Batch: 106312

Date Analyzed: 2015-10-19
QC Preparation: 2015-10-19

Analyzed By: JS
Prepared By: JS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1,2,3,4	18.0	mg/Kg	1	20.0	<0.641	90	60.3 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1,2,3,4	17.4	mg/Kg	1	20.0	<0.641	87	60.3 - 120	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate		LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	3	1.94	1.86	mg/Kg	1	2.00	97	93	76.5 - 130
4-Bromofluorobenzene (4-BFB)	3	2.15	2.00	mg/Kg	1	2.00	108	100	68.4 - 120

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Laboratory Control Spike (LCS-1)

QC Batch: 125692
Prep Batch: 106322

Date Analyzed: 2015-10-19
QC Preparation: 2015-10-19

Analyzed By: RL
Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,4,6	256	mg/Kg	1	250	<8.34	102	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3,4,6	251	mg/Kg	1	250	<8.34	100	90 - 110	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 125761
Prep Batch: 106385

Date Analyzed: 2015-10-21
QC Preparation: 2015-10-21

Analyzed By: RL
Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,4,6	251	mg/Kg	1	250	<8.34	100	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3,4,6	253	mg/Kg	1	250	<8.34	101	90 - 110	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 406095

QC Batch: 125580
Prep Batch: 106226

Date Analyzed: 2015-10-14
QC Preparation: 2015-10-14

Analyzed By: AK
Prepared By: AK

Param			F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	Qs	Qs		5	166	mg/Kg	1	250	<7.41	66	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param				MSD		Dil.	Spike	Matrix	Rec.		RPD	
	F	C		Result	Units		Amount	Result	Rec.	Limit	RPD	Limit
DRO	Q _r	Q _r	5	212	mg/Kg	1	250	<7.41	85	70 - 130	24	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	44.0	56.9	mg/Kg	1	50	88	114	70 - 130

Matrix Spike (MS-1) Spiked Sample: 406088

QC Batch: 125587
Prep Batch: 106233

Date Analyzed: 2015-10-15
QC Preparation: 2015-10-14

Analyzed By: AK
Prepared By: AK

Param			F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Qs	Qs		5	12.2	mg/Kg	1	20.0	<2.32	61	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param				MSD		Dil.	Spike	Matrix	Rec.		RPD	
	F	C		Result	Units		Amount	Result	Rec.	Limit	RPD	Limit
GRO	Q _s	Q _s	5	12.7	mg/Kg	1	20.0	<2.32	64	70 - 130	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.82	1.70	mg/Kg	1	2	91	85	70 - 130
4-Bromofluorobenzene (4-BFB)	1.96	1.88	mg/Kg	1	2	98	94	70 - 130

Report Date: October 22, 2015
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Matrix Spike (xMS-1) Spiked Sample: 406110

QC Batch: 125666
Prep Batch: 106290

Date Analyzed: 2015-10-19
QC Preparation: 2015-10-16

Analyzed By: HJ
Prepared By: HJ

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3,4	2230	mg/Kg	1	500	1870	72	47.9 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3,4	2340	mg/Kg	1	500	1870	94	47.9 - 130	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate				MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	Q _{sr}	Q _{sr}	3	274	286	mg/Kg	1	25	1096	1144	48.9 - 172

Matrix Spike (MS-1) Spiked Sample: 406377

QC Batch: 125682
Prep Batch: 106312

Date Analyzed: 2015-10-19
QC Preparation: 2015-10-19

Analyzed By: JS
Prepared By: JS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Q _s	Q _s	1,2,3,4	75.6	mg/Kg	5	20.0	86.6	-55 25 - 139

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	Q _s	Q _s	1,2,3,4	81.3	mg/Kg	5	20.0	86.6	-26 25 - 139	7	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate				MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)			3	1.90	1.76	mg/Kg	5	2	95	88	76.5 - 130
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	3	3.59	3.70	mg/Kg	5	2	180	185	68.4 - 120

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Matrix Spike (MS-1) Spiked Sample: 406375

QC Batch: 125692
Prep Batch: 106322

Date Analyzed: 2015-10-19
QC Preparation: 2015-10-19

Analyzed By: RL
Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,4,6	264	mg/Kg	1	250	10.8	101	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3,4,6	260	mg/Kg	1	250	10.8	100	80 - 120	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 406567

QC Batch: 125761
Prep Batch: 106385

Date Analyzed: 2015-10-21
QC Preparation: 2015-10-21

Analyzed By: RL
Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,4,6	259	mg/Kg	1	250	10.7	99	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3,4,6	259	mg/Kg	1	250	10.7	99	80 - 120	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Calibration Standards

Standard (CCV-2)

QC Batch: 125580

Date Analyzed: 2015-10-14

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		5	mg/Kg	250	212	85	80 - 120	2015-10-14

Standard (CCV-3)

QC Batch: 125580

Date Analyzed: 2015-10-14

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		5	mg/Kg	250	226	90	80 - 120	2015-10-14

Standard (CCV-1)

QC Batch: 125587

Date Analyzed: 2015-10-15

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	1.03	103	80 - 120	2015-10-15

Standard (CCV-2)

QC Batch: 125587

Date Analyzed: 2015-10-15

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	0.824	82	80 - 120	2015-10-15

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Standard (CCV-1)

QC Batch: 125666

Date Analyzed: 2015-10-19

Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3,4	mg/Kg	500	410	82	80 - 120	2015-10-19

Standard (CCV-2)

QC Batch: 125666

Date Analyzed: 2015-10-19

Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3,4	mg/Kg	500	425	85	80 - 120	2015-10-19

Standard (CCV-1)

QC Batch: 125682

Date Analyzed: 2015-10-19

Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1,2,3,4	mg/Kg	1.00	1.11	111	80 - 120	2015-10-19

Standard (CCV-2)

QC Batch: 125682

Date Analyzed: 2015-10-19

Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1,2,3,4	mg/Kg	1.00	1.03	103	80 - 120	2015-10-19

Standard (CCV-1)

QC Batch: 125692

Date Analyzed: 2015-10-19

Analyzed By: RL

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,6	mg/Kg	25.0	25.6	102	90 - 110	2015-10-19

Standard (CCV-2)

QC Batch: 125692

Date Analyzed: 2015-10-19

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,6	mg/Kg	25.0	25.5	102	90 - 110	2015-10-19

Standard (CCV-1)

QC Batch: 125761

Date Analyzed: 2015-10-21

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,6	mg/Kg	25.0	25.0	100	90 - 110	2015-10-21

Standard (CCV-2)

QC Batch: 125761

Date Analyzed: 2015-10-21

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,6	mg/Kg	25.0	25.3	101	90 - 110	2015-10-21

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	L-A-B	L2418	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	LELAP	LELAP-02003	Lubbock
4	NELAP	T104704219-15-11	Lubbock
5	NELAP	T104704392-14-8	Midland
6		2014-018	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.

F	Description
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

CHAIN-OF-CUSTODY

507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

LA arson & associates, Inc.
Environmental Consultants

Data Reported to:

DATE: 10/13/2015 PAGE 1 OF 1

PO #: 15-0143-01 LAB WORK ORDER #:

PROJECT LOCATION OR NAME: Townsend 16 Pipeline

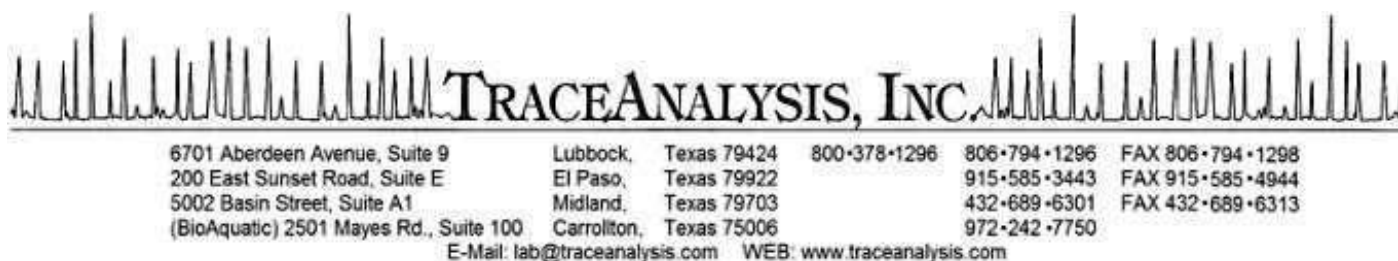
LAI PROJECT #: 15-0143-61 COLLECTOR: Michael Cant

TRRP report?		S=SOIL W=WATER A=AIR		P=PAINT SL=SLUDGE OT=OTHER		# of Containers	PRESERVATION				Matrix	Time	Date	Lab #	Field Sample I.D.	TIME ZONE: Time zone/State: MM/YY
Yes	No	HCl	HNO ₃	H ₂ SO ₄	NaOH		ICE	UNPRESERVED								
W well 12'										S	13:45	10/13				
N P/L 18'										S	15:05					
N P/L 20'										S	15:12					
N P/L 22'										S	15:19					
N P/L 24'										S	15:23					
N P/L 26'										S	15:27					
TOTAL																
RELINQUISHED BY: (Signature) DATE/TIME 10/14/15 12:50 RECEIVED BY: (Signature) 10/14/15 12:50																
RELINQUISHED BY: (Signature) DATE/TIME 10-14-15 14:01 RECEIVED BY: (Signature)																
RELINQUISHED BY: (Signature) DATE/TIME 10-14-15 14:01 RECEIVED BY: (Signature)																
Trace Analysis 10/15/15 0830																

Trace Analysis

0580

LS Z7026384



Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Mark Larson
Larson and Associates, Inc.

Report Date: October 16, 2015

P. O. Box 50685
Midland, TX, 79710

Work Order: 15101544



Project Location: Lea Co, NM
Project Name: Targa Townsend 16"
Project Number: 15-01

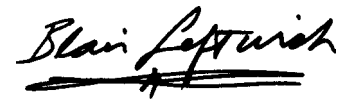
Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
406524	S P/L 18'	soil	2015-10-15	14:24	2015-10-15
406525	S P/L 20'	soil	2015-10-15	15:00	2015-10-15
406526	S P/L 22'	soil	2015-10-15	15:06	2015-10-15
406527	S P/L 24'	soil	2015-10-15	15:11	2015-10-15
406530	W N P/L 15'	soil	2015-10-15	13:37	2015-10-15

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.

This report consists of a total of 14 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

A handwritten signature in black ink, reading "Blair Leftwich". The signature is written in a cursive style and is underlined with a thick, dark line.

Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Brian Pellam, Operations Manager

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Case Narrative

Samples for project Targa Townsend 16" were received by TraceAnalysis, Inc. on 2015-10-15 and assigned to work order 15101544. Samples for work order 15101544 were received intact at a temperature of 4.5 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
TPH DRO	S 8015 D	106282	2015-10-16 at 08:15	125653	2015-10-16 at 15:47
TPH GRO	S 8015 D	106280	2015-10-16 at 14:24	125645	2015-10-16 at 14:24

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 15101544 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Report Date: October 16, 2015
15-01

Work Order: 15101544
Targa Townsend 16"

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Analytical Report

Sample: 406524 - S P/L 18'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-10-16	Analyzed By:	AK
QC Batch:	125653	Sample Preparation:	2015-10-16	Prepared By:	AK
Prep Batch:	106282				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Q _r	1	2450	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	169	mg/Kg	5	100	169	70 - 130

Sample: 406524 - S P/L 18'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-10-16	Analyzed By:	AK
QC Batch:	125645	Sample Preparation:	2015-10-16	Prepared By:	AK
Prep Batch:	106280				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	5770	mg/Kg	50	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			86.2	mg/Kg	50	100	86	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	135	mg/Kg	50	100	135	70 - 130

Sample: 406525 - S P/L 20'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-10-16	Analyzed By:	AK
QC Batch:	125653	Sample Preparation:	2015-10-16	Prepared By:	AK
Prep Batch:	106282				

Report Date: October 16, 2015
15-01

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Q _r	1	1850	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	116	mg/Kg	5	50.0	232	70 - 130

Sample: 406525 - S P/L 20'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 125645
Prep Batch: 106280

Analytical Method: S 8015 D
Date Analyzed: 2015-10-16
Sample Preparation: 2015-10-16

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	1400	mg/Kg	40	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			67.6	mg/Kg	40	80.0	84	70 - 130
4-Bromofluorobenzene (4-BFB)			79.4	mg/Kg	40	80.0	99	70 - 130

Sample: 406526 - S P/L 22'

Laboratory: Midland
Analysis: TPH DRO
QC Batch: 125653
Prep Batch: 106282

Analytical Method: S 8015 D
Date Analyzed: 2015-10-16
Sample Preparation: 2015-10-16

Prep Method: N/A
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Q _r	1	69.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			55.0	mg/Kg	1	50.0	110	70 - 130

Report Date: October 16, 2015
15-01

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Targa Townsend 16"

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Sample: 406526 - S P/L 22'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 125645
Prep Batch: 106280

Analytical Method: S 8015 D
Date Analyzed: 2015-10-16
Sample Preparation: 2015-10-16

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	11.9	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.66	mg/Kg	1	2.00	83	70 - 130
4-Bromofluorobenzene (4-BFB)			1.88	mg/Kg	1	2.00	94	70 - 130

Sample: 406527 - S P/L 24'

Laboratory: Midland
Analysis: TPH DRO
QC Batch: 125653
Prep Batch: 106282

Analytical Method: S 8015 D
Date Analyzed: 2015-10-16
Sample Preparation: 2015-10-16

Prep Method: N/A
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr,U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			55.0	mg/Kg	1	50.0	110	70 - 130

Sample: 406527 - S P/L 24'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 125645
Prep Batch: 106280

Analytical Method: S 8015 D
Date Analyzed: 2015-10-16
Sample Preparation: 2015-10-16

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<4.00	mg/Kg	1	4.00

Report Date: October 16, 2015
15-01

Work Order: 15101544
Targa Townsend 16"

Page Number: 8 of 14
Lea Co, NM

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.76	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			2.05	mg/Kg	1	2.00	102	70 - 130

Sample: 406530 - W N P/L 15'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-10-16	Analyzed By:	AK
QC Batch:	125653	Sample Preparation:	2015-10-16	Prepared By:	AK
Prep Batch:	106282				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr, Qs	1	242	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			60.6	mg/Kg	1	50.0	121	70 - 130

Sample: 406530 - W N P/L 15'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-10-16	Analyzed By:	AK
QC Batch:	125645	Sample Preparation:	2015-10-16	Prepared By:	AK
Prep Batch:	106280				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	77.3	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.62	mg/Kg	1	2.00	81	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	3.06	mg/Kg	1	2.00	153	70 - 130

Method Blanks

Method Blank (1) QC Batch: 125645

QC Batch: 125645
Prep Batch: 106280

Date Analyzed: 2015-10-16
QC Preparation: 2015-10-16

Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.77	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			1.70	mg/Kg	1	2.00	85	70 - 130

Method Blank (1) QC Batch: 125653

QC Batch: 125653
Prep Batch: 106282

Date Analyzed: 2015-10-16
QC Preparation: 2015-10-16

Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<7.41	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			47.5	mg/Kg	1	50.0	95	70 - 130

Report Date: October 16, 2015
15-01

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Targa Townsend 16"

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 125645
Prep Batch: 106280

Date Analyzed: 2015-10-16
QC Preparation: 2015-10-16

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	20.8	mg/Kg	1	20.0	<2.32	104	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	19.6	mg/Kg	1	20.0	<2.32	98	70 - 130	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.83	1.82	mg/Kg	1	2.00	92	91	70 - 130
4-Bromofluorobenzene (4-BFB)	1.83	1.77	mg/Kg	1	2.00	92	88	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 125653
Prep Batch: 106282

Date Analyzed: 2015-10-16
QC Preparation: 2015-10-16

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	225	mg/Kg	1	250	<7.41	90	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	213	mg/Kg	1	250	<7.41	85	70 - 130	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	48.9	47.2	mg/Kg	1	50.0	98	94	70 - 130

Report Date: October 16, 2015
15-01

Work Order: 15101544
Targa Townsend 16"

Page Number: 11 of 14
Lea Co, NM

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 406507

QC Batch: 125645
Prep Batch: 106280

Date Analyzed: 2015-10-16
QC Preparation: 2015-10-16

Analyzed By: AK
Prepared By: AK

			MS			Spike	Matrix		Rec.	
Param		F	C	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO	Qs	Qs	1	12.0	mg/Kg	1	20.0	<2.32	60	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param			MSD			Spike	Matrix		Rec.		RPD	
	F	C	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit	
GRO	Qs	Qs	1	12.2	mg/Kg	1	20.0	<2.32	61	70 - 130	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.64	1.66	mg/Kg	1	2	82	83	70 - 130
4-Bromofluorobenzene (4-BFB)	1.81	1.78	mg/Kg	1	2	90	89	70 - 130

Matrix Spike (MS-1) Spiked Sample: 406530

QC Batch: 125653
Prep Batch: 106282

Date Analyzed: 2015-10-16
QC Preparation: 2015-10-16

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	474	mg/Kg	1	250	242	93	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param				MSD			Spike	Matrix		Rec.		RPD
		F	C	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO	Qr, Qs	Qr, Qs	1	1040	mg/Kg	1	250	242	319	70 - 130	75	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	55.6	118	mg/Kg	1	50	111	118	70 - 130

Calibration Standards

Standard (CCV-2)

QC Batch: 125645			Date Analyzed: 2015-10-16			Analyzed By: AK		
Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.06	106	80 - 120	2015-10-16

Standard (CCV-3)

QC Batch: 125645			Date Analyzed: 2015-10-16			Analyzed By: AK		
Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.828	83	80 - 120	2015-10-16

Standard (CCV-1)

QC Batch: 125653			Date Analyzed: 2015-10-16			Analyzed By: AK		
Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	234	94	80 - 120	2015-10-16

Standard (CCV-2)

QC Batch: 125653			Date Analyzed: 2015-10-16			Analyzed By: AK		
Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	206	82	80 - 120	2015-10-16

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-14-8	Midland

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

Report Date: October 16, 2015
15-01

Work Order: 15101544
Targa Townsend 16"

Page Number: 14 of 14
Lea Co, NM

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

Trace Analysis, Inc.

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Fax (806) 794-1298
1 (800) 378-1296

200 East Sunset Rd., Suite E
El Paso, Texas 79922
Tel (915) 585-3443
Fax (915) 585-4944
1 (888) 588-3443

BioAquatic Testing
2501 Mayes Rd., Ste 100
Carrollton, Texas 75006
Tel (972) 242-7750
Fax (972) 242-7750

Brandon & Clark
3403 Industrial Blvd.
Hobbs, NM 88240
Tel (575) 392-7561
Fax (575) 392-4508

email: lab@traceanalysis.com

Company Name: Larson Associates, Inc. Phone #: (432) 687-0901
Address: (Street, City, Zip)
4501 N. Flowerfield, Midland, TX (432) 687-0456
Contact Person: Mark Larson E-mail: mark@larsonenvironmental.com
Invoice to: Targa Townsend
(If different from above)
Project #: 15-01
Project Name: Targa Townsend

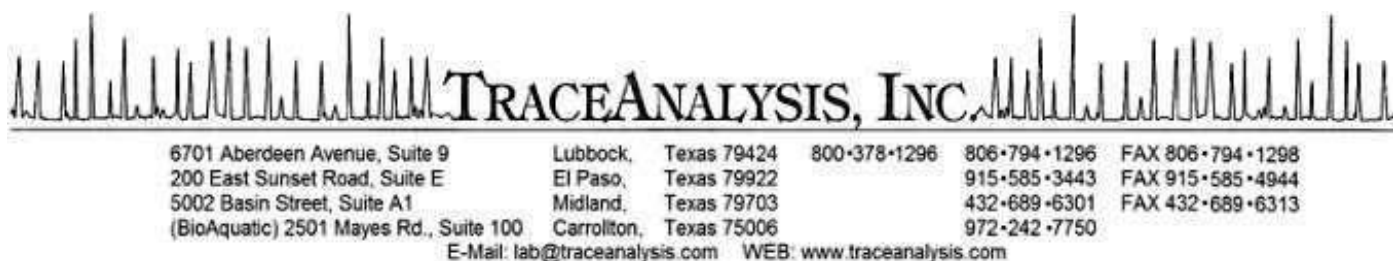
Project Location (including state): Lea County, NM
Sampler Signature: [Signature]

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX			PRESERVATIVE METHOD				SAMPLING	
				WATER	SOIL	AIR	SLUDGE	HCl	HNO ₃	H ₂ SO ₄	NaOH	ICE
406522	N 1/L 28'	1	4oz	✓								✓
406523	N 1/L 30'	1	"	✓								✓
406524	S 1/L 18'	1	"	✓								✓
406525	S 1/L 20'	1	"	✓								✓
406526	S 1/L 22'	1	"	✓								✓
406527	S 1/L 24'	1	"	✓								✓
406528	S 1/L 26'	1	"	✓								✓
406529	S 1/L 28'	1	"	✓								✓
406530	N 1/L 15'	1	"	✓								✓

Relinquished by: [Signature] Company: LAI Date: 10/15/15 Time: 16:40
Relinquished by: [Signature] Company: Valley TA Date: 10-15-15 Time: 16:40
Relinquished by: [Signature] Company: Valley TA Date: 10-15-15 Time: 16:40

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LAB USE ONLY
INST 12
OBS 4.5°C
COR 4.9°C
INST 12
OBS 4.5°C
COR 4.9°C
INST 12
OBS 4.5°C
COR 4.9°C
INST 12
OBS 4.5°C
COR 4.9°C
INST 12
OBS 4.5°C
COR 4.9°C



Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Mark Larson
Larson and Associates, Inc.

Report Date: October 22, 2015

P. O. Box 50685
Midland, TX, 79710

Work Order: 15101611



Project Location: Lea Co, NM
Project Name: Townsend 16" Pipeline
Project Number: 15-0143-01 (2)

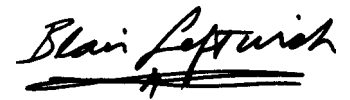
Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
406565	W. Side SP/L 15'	soil	2015-10-15	13:51	2015-10-16
406566	W. Side SP/L 18'	soil	2015-10-15	14:43	2015-10-16
406567	W. Side NP/L 18'	soil	2015-10-15	14:49	2015-10-16

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.

This report consists of a total of 17 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

A handwritten signature in black ink, reading "Blair Leftwich". The signature is written in a cursive style and is underlined with a thick, dark line.

Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Brian Pellam, Operations Manager

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Case Narrative

Samples for project Townsend 16" Pipeline were received by TraceAnalysis, Inc. on 2015-10-16 and assigned to work order 15101611. Samples for work order 15101611 were received intact at a temperature of 0.8 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	106385	2015-10-21 at 13:00	125761	2015-10-21 at 14:22
TPH DRO	S 8015 D	106358	2015-10-20 at 13:00	125744	2015-10-21 at 13:33
TPH GRO	S 8015 D	106344	2015-10-20 at 14:45	125722	2015-10-20 at 14:45

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 15101611 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Report Date: October 22, 2015
15-0143-01 (2)

Work Order: 15101611
Townsend 16" Pipeline

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Lea Co, NM

Analytical Report

Sample: 406565 - W. Side SP/L 15'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2015-10-21	Analyzed By:	RL
QC Batch:	125761	Sample Preparation:		Prepared By:	RL
Prep Batch:	106385				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,5	<25.0	mg/Kg	1	25.0

Sample: 406565 - W. Side SP/L 15'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-10-21	Analyzed By:	HJ
QC Batch:	125744	Sample Preparation:	2015-10-20	Prepared By:	HJ
Prep Batch:	106358				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	38.5	mg/Kg	1	25.0	154	48.9 - 172

Sample: 406565 - W. Side SP/L 15'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-10-20	Analyzed By:	JS
QC Batch:	125722	Sample Preparation:	2015-10-20	Prepared By:	JS
Prep Batch:	106344				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1,2,3,4	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Q _{sr}	Q _{sr}	3	1.47 mg/Kg	1	2.00	74	76.5 - 130

continued ...

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Townsend 16" Pipeline

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sample continued ...

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-Bromofluorobenzene (4-BFB)		3	1.67	mg/Kg	1	2.00	84	68.4 - 120

Sample: 406566 - W. Side SP/L 18'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2015-10-21	Analyzed By:	RL
QC Batch:	125761	Sample Preparation:		Prepared By:	RL
Prep Batch:	106385				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,5	<25.0	mg/Kg	1	25.0

Sample: 406566 - W. Side SP/L 18'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-10-21	Analyzed By:	HJ
QC Batch:	125744	Sample Preparation:	2015-10-20	Prepared By:	HJ
Prep Batch:	106358				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	38.5	mg/Kg	1	25.0	154	48.9 - 172

Sample: 406566 - W. Side SP/L 18'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-10-20	Analyzed By:	JS
QC Batch:	125722	Sample Preparation:	2015-10-20	Prepared By:	JS
Prep Batch:	106344				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1,2,3,4	<4.00	mg/Kg	1	4.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits	
Trifluorotoluene (TFT)	Q _{sr}	Q _{sr}	3	1.50	mg/Kg	1	2.00	75	76.5 - 130
4-Bromofluorobenzene (4-BFB)			3	1.76	mg/Kg	1	2.00	88	68.4 - 120

Sample: 406567 - W. Side NP/L 18'

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 125761 Date Analyzed: 2015-10-21 Analyzed By: RL
Prep Batch: 106385 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,5	<25.0	mg/Kg	1	25.0

Sample: 406567 - W. Side NP/L 18'

Laboratory: Lubbock
Analysis: TPH DRO Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 125744 Date Analyzed: 2015-10-21 Analyzed By: HJ
Prep Batch: 106358 Sample Preparation: 2015-10-20 Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	38.6	mg/Kg	1	25.0	154	48.9 - 172

Sample: 406567 - W. Side NP/L 18'

Laboratory: Lubbock
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 125722 Date Analyzed: 2015-10-20 Analyzed By: JS
Prep Batch: 106344 Sample Preparation: 2015-10-20 Prepared By: JS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1,2,3,4	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		3	1.75	mg/Kg	1	2.00	88	76.5 - 130
4-Bromofluorobenzene (4-BFB)		3	1.77	mg/Kg	1	2.00	88	68.4 - 120

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Method Blanks

Method Blank (1) QC Batch: 125722

QC Batch: 125722 Date Analyzed: 2015-10-20 Analyzed By: JS
Prep Batch: 106344 QC Preparation: 2015-10-20 Prepared By: JS

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1,2,3,4	<0.641	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		3	1.98	mg/Kg	1	2.00	99	76.5 - 130
4-Bromofluorobenzene (4-BFB)		3	1.86	mg/Kg	1	2.00	93	68.4 - 120

Method Blank (1) QC Batch: 125744

QC Batch: 125744 Date Analyzed: 2015-10-21 Analyzed By: HJ
Prep Batch: 106358 QC Preparation: 2015-10-20 Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1,2,3,4	<5.22	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	30.6	mg/Kg	1	25.0	122	48.9 - 172

Method Blank (1) QC Batch: 125761

QC Batch: 125761 Date Analyzed: 2015-10-21 Analyzed By: RL
Prep Batch: 106385 QC Preparation: 2015-10-21 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		3,4,5	<8.34	mg/Kg	25

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 125722
Prep Batch: 106344

Date Analyzed: 2015-10-20
QC Preparation: 2015-10-20

Analyzed By: JS
Prepared By: JS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1,2,3,4	16.8	mg/Kg	1	20.0	<0.641	84	60.3 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1,2,3,4	16.6	mg/Kg	1	20.0	<0.641	83	60.3 - 120	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate			LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)		3	1.72	1.87	mg/Kg	1	2.00	86	94	76.5 - 130
4-Bromofluorobenzene (4-BFB)		3	1.83	1.89	mg/Kg	1	2.00	92	94	68.4 - 120

Laboratory Control Spike (LCS-1)

QC Batch: 125744
Prep Batch: 106358

Date Analyzed: 2015-10-21
QC Preparation: 2015-10-20

Analyzed By: HJ
Prepared By: HJ

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3,4	429	mg/Kg	1	500	<5.22	86	60.9 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3,4	512	mg/Kg	1	500	<5.22	102	60.9 - 130	18	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate			LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane		3	35.2	39.5	mg/Kg	1	25.0	141	158	48.9 - 172

Report Date: October 22, 2015
15-0143-01 (2)

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Laboratory Control Spike (LCS-1)

QC Batch: 125761
Prep Batch: 106385

Date Analyzed: 2015-10-21
QC Preparation: 2015-10-21

Analyzed By: RL
Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,4,5	251	mg/Kg	1	250	<8.34	100	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3,4,5	253	mg/Kg	1	250	<8.34	101	90 - 110	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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Townsend 16" Pipeline

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Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 406567

QC Batch: 125722
Prep Batch: 106344

Date Analyzed: 2015-10-20
QC Preparation: 2015-10-20

Analyzed By: JS
Prepared By: JS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1,2,3,4	14.8	mg/Kg	1	20.0	<0.641	74	25 - 139

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1,2,3,4	16.8	mg/Kg	1	20.0	<0.641	84	25 - 139	13	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate		MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	3	1.57	1.82	mg/Kg	1	2	78	91	76.5 - 130
4-Bromofluorobenzene (4-BFB)	3	1.76	1.87	mg/Kg	1	2	88	94	68.4 - 120

Matrix Spike (xMS-1) Spiked Sample: 406657

QC Batch: 125744
Prep Batch: 106358

Date Analyzed: 2015-10-21
QC Preparation: 2015-10-20

Analyzed By: HJ
Prepared By: HJ

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3,4	433	mg/Kg	1	500	8.25	85	47.9 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3,4	399	mg/Kg	1	500	8.25	78	47.9 - 130	8	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate		MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	3	35.0	28.5	mg/Kg	1	25	140	114	48.9 - 172

Matrix Spike (MS-1) Spiked Sample: 406567

QC Batch: 125761
Prep Batch: 106385

Date Analyzed: 2015-10-21
QC Preparation: 2015-10-21

Analyzed By: RL
Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,4,5	259	mg/Kg	1	250	10.7	99	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3,4,5	259	mg/Kg	1	250	10.7	99	80 - 120	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Calibration Standards

Standard (CCV-1)

QC Batch: 125722

Date Analyzed: 2015-10-20

Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1,2,3,4	mg/Kg	1.00	0.999	100	80 - 120	2015-10-20

Standard (CCV-2)

QC Batch: 125722

Date Analyzed: 2015-10-20

Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1,2,3,4	mg/Kg	1.00	0.887	89	80 - 120	2015-10-20

Standard (CCV-1)

QC Batch: 125744

Date Analyzed: 2015-10-21

Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3,4	mg/Kg	500	496	99	80 - 120	2015-10-21

Standard (CCV-2)

QC Batch: 125744

Date Analyzed: 2015-10-21

Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3,4	mg/Kg	500	402	80	80 - 120	2015-10-21

Standard (CCV-1)

QC Batch: 125761				Date Analyzed: 2015-10-21			Analyzed By: RL	
Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,5	mg/Kg	25.0	25.0	100	90 - 110	2015-10-21

Standard (CCV-2)

QC Batch: 125761				Date Analyzed: 2015-10-21			Analyzed By: RL	
Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,5	mg/Kg	25.0	25.3	101	90 - 110	2015-10-21

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	L-A-B	L2418	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	LELAP	LELAP-02003	Lubbock
4	NELAP	T104704219-15-11	Lubbock
5		2014-018	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.

F	Description
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

200# 15101611

CHAIN-OF-CUSTODY

Arson & Associates, Inc.
Environmental Consultants

507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

DATE: 10/15/2015 PAGE 1 OF 1
LAB WORK ORDER #:
PROJECT LOCATION OR NAME: Townsend 16" Pipeline
LAI PROJECT # 15-0143-01 COLLECTOR: Michael Goyat

Data Reported to:

TRRP report?
☐ Yes ☒ No

TIME ZONE:
Time zone/State:
AST / NM

Field
Sample I.D.

S=SOIL
W=WATER
A=AIR

P=PAINT
SL=SLUDGE
OT=OTHER

of Containers

Matrix

Date

Time

PRESERVATION

HCl
HNO₃
H₂SO₄ □ NaOH
ICE
UNRESERVED

ANALYSES
BTX □ MTBE □
TPH 418.1 □ TPH 1005 □ TPH 1006 □
DIESEL - MOD 8015 □
VOC 8260 □
SVOC 8270 □ PAH 8270 □ PAH 8270 □ HOLDPAH □
TCPP - METALS (RCRA) 8151 HERBICIDES □
TOTAL METALS (RCRA) 8151 HERBICIDES □
LEAD - TOTAL □ HERB □ SEMI-VOC □
RCL □ TOX □ FLASHPOINT □ TOLP □
PH □ HEXAVALENT CHROMIUM □
EXPLOSIVES □ PESTICIDES □
CHLORIDES □ ANIONS □ ALKALINITY □

FIELD NOTES

406565
406566
406567

TOTAL

RELINQUISHED BY: (Signature)

DATE/TIME
10/17/15 11:05

RECEIVED BY: (Signature)

DATE/TIME
10-16-15 12:20

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:

RELINQUISHED BY: (Signature)

DATE/TIME
10-16-15 12:20

RECEIVED BY: (Signature)

DATE/TIME
10-26-15

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:

RELINQUISHED BY: (Signature)

DATE/TIME
10-16-15 12:20

RECEIVED BY: (Signature)

DATE/TIME
10-26-15

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:

RELINQUISHED BY: (Signature)

DATE/TIME
10-16-15 12:20

RECEIVED BY: (Signature)

DATE/TIME
10-26-15

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:

RELINQUISHED BY: (Signature)

DATE/TIME
10-16-15 12:20

RECEIVED BY: (Signature)

DATE/TIME
10-26-15

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:

RELINQUISHED BY: (Signature)

DATE/TIME
10-16-15 12:20

RECEIVED BY: (Signature)

DATE/TIME
10-26-15

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:

RELINQUISHED BY: (Signature)

DATE/TIME
10-16-15 12:20

RECEIVED BY: (Signature)

DATE/TIME
10-26-15

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

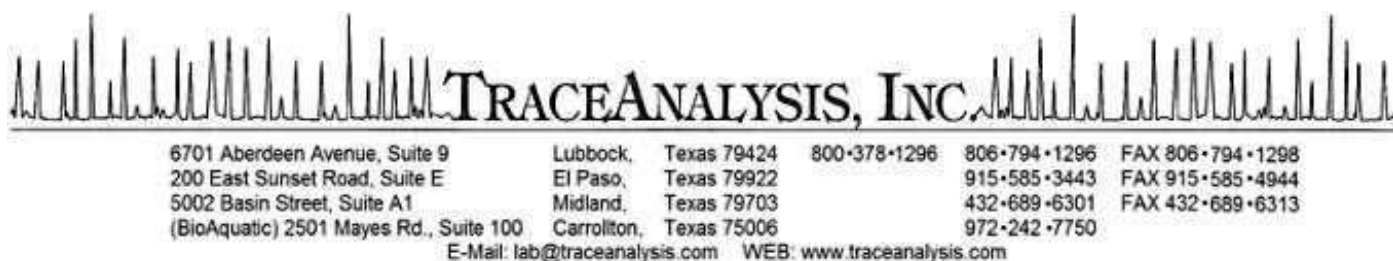
LABORATORY USE ONLY:

HAND DELIVERED

RECEIVING TEMP: 0.8 THERM #: IR-1

CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED

CARRIER BILL # LS 27041394



Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Mark Larson
Larson and Associates, Inc.

Report Date: November 3, 2015

P. O. Box 50685
Midland, TX, 79710

Work Order: 15102023



Project Location: Lea Co, NM
Project Name: Townsend 16" Pipeline
Project Number: 15-0143-01 (2)

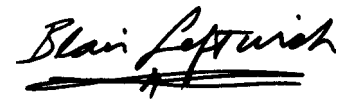
Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
406695	Ramp	soil	2015-10-19	14:52	2015-10-20

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.

This report consists of a total of 15 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

A handwritten signature in black ink, reading "Blair Leftwich". The signature is written in a cursive style and is underlined with a thick, dark line.

Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Brian Pellam, Operations Manager

Report Contents

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Case Narrative

Samples for project Townsend 16" Pipeline were received by TraceAnalysis, Inc. on 2015-10-20 and assigned to work order 15102023. Samples for work order 15102023 were received intact at a temperature of 5.1 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	106633	2015-11-02 at 16:00	126045	2015-11-02 at 22:54
TPH DRO	S 8015 D	106379	2015-10-21 at 08:00	125762	2015-10-22 at 11:15
TPH GRO	S 8015 D	106375	2015-10-21 at 13:55	125755	2015-10-21 at 13:55

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 15102023 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

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Analytical Report

Sample: 406695 - Ramp

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2015-11-02	Analyzed By:	RL
QC Batch:	126045	Sample Preparation:		Prepared By:	RL
Prep Batch:	106633				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,5	<25.0	mg/Kg	1	25.0

Sample: 406695 - Ramp

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-10-22	Analyzed By:	HJ
QC Batch:	125762	Sample Preparation:	2015-10-21	Prepared By:	HJ
Prep Batch:	106379				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1,2,3,4	72.9	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	27.9	mg/Kg	1	25.0	112	48.9 - 172

Sample: 406695 - Ramp

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-10-21	Analyzed By:	JS
QC Batch:	125755	Sample Preparation:	2015-10-21	Prepared By:	JS
Prep Batch:	106375				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1,2,3,4	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qsr	Qsr	3	1.31 mg/Kg	1	2.00	66	76.5 - 130

continued ...

sample continued ...

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-Bromofluorobenzene (4-BFB)		3	1.74	mg/Kg	1	2.00	87	68.4 - 120

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Method Blanks

Method Blank (1) QC Batch: 125755

QC Batch: 125755 Date Analyzed: 2015-10-21 Analyzed By: JS
Prep Batch: 106375 QC Preparation: 2015-10-21 Prepared By: JS

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1,2,3,4	<0.641	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		3	1.84	mg/Kg	1	2.00	92	76.5 - 130
4-Bromofluorobenzene (4-BFB)		3	1.77	mg/Kg	1	2.00	88	68.4 - 120

Method Blank (1) QC Batch: 125762

QC Batch: 125762 Date Analyzed: 2015-10-22 Analyzed By: HJ
Prep Batch: 106379 QC Preparation: 2015-10-21 Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1,2,3,4	<5.22	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	31.0	mg/Kg	1	25.0	124	48.9 - 172

Method Blank (1) QC Batch: 126045

QC Batch: 126045 Date Analyzed: 2015-11-02 Analyzed By: RL
Prep Batch: 106633 QC Preparation: 2015-11-02 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		3,4,5	<8.34	mg/Kg	25

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 125755
Prep Batch: 106375

Date Analyzed: 2015-10-21
QC Preparation: 2015-10-21

Analyzed By: JS
Prepared By: JS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1,2,3,4	16.1	mg/Kg	1	20.0	<0.641	80	60.3 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1,2,3,4	18.0	mg/Kg	1	20.0	<0.641	90	60.3 - 120	11	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate			LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)		3	1.77	1.77	mg/Kg	1	2.00	88	89	76.5 - 130
4-Bromofluorobenzene (4-BFB)		3	1.87	1.90	mg/Kg	1	2.00	94	95	68.4 - 120

Laboratory Control Spike (LCS-1)

QC Batch: 125762
Prep Batch: 106379

Date Analyzed: 2015-10-22
QC Preparation: 2015-10-21

Analyzed By: HJ
Prepared By: HJ

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3,4	440	mg/Kg	1	500	<5.22	88	60.9 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3,4	448	mg/Kg	1	500	<5.22	90	60.9 - 130	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate			LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane		3	32.0	32.4	mg/Kg	1	25.0	128	130	48.9 - 172

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Laboratory Control Spike (LCS-1)

QC Batch: 126045
Prep Batch: 106633

Date Analyzed: 2015-11-02
QC Preparation: 2015-11-02

Analyzed By: RL
Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,4,5	254	mg/Kg	1	250	<8.34	102	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3,4,5	256	mg/Kg	1	250	<8.34	102	90 - 110	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 406674

QC Batch: 125755
Prep Batch: 106375

Date Analyzed: 2015-10-21
QC Preparation: 2015-10-21

Analyzed By: JS
Prepared By: JS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1,2,3,4	15.2	mg/Kg	1	20.0	<0.641	76	25 - 139

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1,2,3,4	14.3	mg/Kg	1	20.0	<0.641	72	25 - 139	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate			MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)		3	1.58	1.50	mg/Kg	1	2	79	75	76.5 - 130
4-Bromofluorobenzene (4-BFB)		3	1.80	1.72	mg/Kg	1	2	90	86	68.4 - 120

Matrix Spike (xMS-1) Spiked Sample: 406730

QC Batch: 125762
Prep Batch: 106379

Date Analyzed: 2015-10-22
QC Preparation: 2015-10-21

Analyzed By: HJ
Prepared By: HJ

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3,4	1660	mg/Kg	1	500	1200	92	47.9 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3,4	1650	mg/Kg	1	500	1200	90	47.9 - 130	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

				MS	MSD				Spike	MS	MSD	Rec.
Surrogate				Result	Result	Units	Dil.		Amount	Rec.	Rec.	Limit
n-Tricosane	Q _{sr}	Q _{sr}	3	75.5	72.1	mg/Kg	1		25	302	288	48.9 - 172

Matrix Spike (MS-1) Spiked Sample: 406904

QC Batch: 126045
Prep Batch: 106633

Date Analyzed: 2015-11-02
QC Preparation: 2015-11-02

Analyzed By: RL
Prepared By: RL

Param	F		C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	Qs	Qs	3,4,5	590	mg/Kg	50	250	538	21	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F		C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	Qs	Qs	3,4,5	593	mg/Kg	50	250	538	22	80 - 120	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Calibration Standards

Standard (CCV-1)

QC Batch: 125755

Date Analyzed: 2015-10-21

Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1,2,3,4	mg/Kg	1.00	0.912	91	80 - 120	2015-10-21

Standard (CCV-2)

QC Batch: 125755

Date Analyzed: 2015-10-21

Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1,2,3,4	mg/Kg	1.00	0.945	94	80 - 120	2015-10-21

Standard (CCV-1)

QC Batch: 125762

Date Analyzed: 2015-10-22

Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3,4	mg/Kg	500	426	85	80 - 120	2015-10-22

Standard (CCV-2)

QC Batch: 125762

Date Analyzed: 2015-10-22

Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3,4	mg/Kg	500	423	85	80 - 120	2015-10-22

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Standard (CCV-1)

QC Batch: 126045

Date Analyzed: 2015-11-02

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,5	mg/Kg	25.0	25.4	102	90 - 110	2015-11-02

Standard (CCV-2)

QC Batch: 126045

Date Analyzed: 2015-11-02

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,5	mg/Kg	25.0	25.7	103	90 - 110	2015-11-02

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	L-A-B	L2418	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	LELAP	LELAP-02003	Lubbock
4	NELAP	T104704219-15-11	Lubbock
5		2014-018	Lubbock

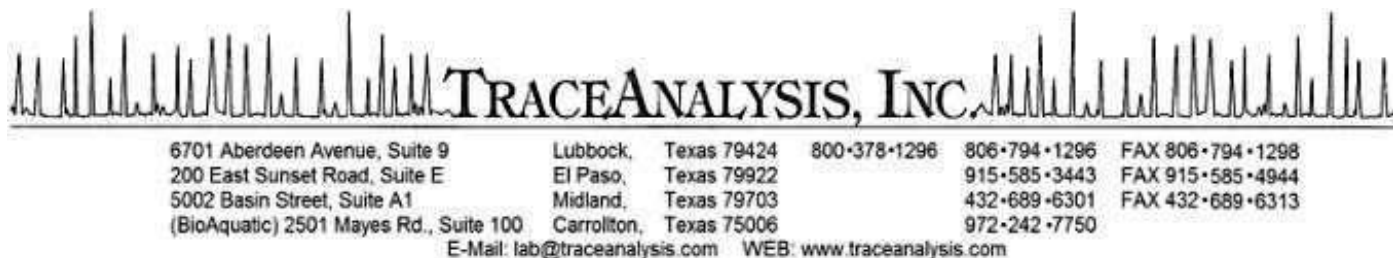
Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.

F	Description
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.



Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Mark Larson
Larson and Associates, Inc.

Report Date: October 28, 2015

P. O. Box 50685
Midland, TX, 79710

Work Order: 15102313



Project Location: Lea Co, NM
Project Name: Townsend 16" Pipeline
Project Number: 15-0143-01 (2)

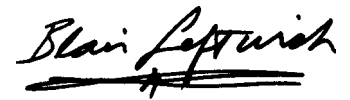
Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
406933	East Wall 23'	soil	2015-10-22	10:35	2015-10-23
406934	Mid SP/L 21'	soil	2015-10-22	10:38	2015-10-23
406935	West Wall 21'	soil	2015-10-22	13:21	2015-10-23

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.

This report consists of a total of 17 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

A handwritten signature in black ink, reading "Blair Leftwich". The signature is written in a cursive style and is underlined with a thick, dark line.

Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Brian Pellam, Operations Manager

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Case Narrative

Samples for project Townsend 16" Pipeline were received by TraceAnalysis, Inc. on 2015-10-23 and assigned to work order 15102313. Samples for work order 15102313 were received intact at a temperature of 3.1 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	106539	2015-10-28 at 08:30	125928	2015-10-28 at 09:30
TPH DRO	S 8015 D	106478	2015-10-26 at 08:03	125860	2015-10-27 at 08:24
TPH GRO	S 8015 D	106509	2015-10-27 at 15:15	125893	2015-10-28 at 07:33

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 15102313 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

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Analytical Report

Sample: 406933 - East Wall 23'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2015-10-28	Analyzed By:	RL
QC Batch:	125928	Sample Preparation:		Prepared By:	RL
Prep Batch:	106539				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	110	mg/Kg	1	25.0

Sample: 406933 - East Wall 23'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-10-27	Analyzed By:	AK
QC Batch:	125860	Sample Preparation:	2015-10-26	Prepared By:	AK
Prep Batch:	106478				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr,U	5	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			42.7	mg/Kg	1	50.0	85	70 - 130

Sample: 406933 - East Wall 23'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-10-28	Analyzed By:	AK
QC Batch:	125893	Sample Preparation:	2015-10-27	Prepared By:	AK
Prep Batch:	106509				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qr,U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.80	mg/Kg	1	2.00	90	70 - 130

continued ...

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sample continued ...

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-Bromofluorobenzene (4-BFB)			1.87	mg/Kg	1	2.00	94	70 - 130

Sample: 406934 - Mid SP/L 21'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2015-10-28	Analyzed By:	RL
QC Batch:	125928	Sample Preparation:		Prepared By:	RL
Prep Batch:	106539				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	183	mg/Kg	1	25.0

Sample: 406934 - Mid SP/L 21'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-10-27	Analyzed By:	AK
QC Batch:	125860	Sample Preparation:	2015-10-26	Prepared By:	AK
Prep Batch:	106478				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr	5	171	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			43.6	mg/Kg	1	50.0	87	70 - 130

Sample: 406934 - Mid SP/L 21'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-10-28	Analyzed By:	AK
QC Batch:	125893	Sample Preparation:	2015-10-27	Prepared By:	AK
Prep Batch:	106509				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qr,U	5	<4.00	mg/Kg	1	4.00

Report Date: October 28, 2015
15-0143-01 (2)

Work Order: 15102313
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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.87	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			1.84	mg/Kg	1	2.00	92	70 - 130

Sample: 406935 - West Wall 21'

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 125928 Date Analyzed: 2015-10-28 Analyzed By: RL
Prep Batch: 106539 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	112	mg/Kg	1	25.0

Sample: 406935 - West Wall 21'

Laboratory: Midland
Analysis: TPH DRO Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 125860 Date Analyzed: 2015-10-27 Analyzed By: AK
Prep Batch: 106478 Sample Preparation: 2015-10-26 Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr,U	5	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			46.6	mg/Kg	1	50.0	93	70 - 130

Sample: 406935 - West Wall 21'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 125893 Date Analyzed: 2015-10-28 Analyzed By: AK
Prep Batch: 106509 Sample Preparation: 2015-10-27 Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qr,Qs,U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.73	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			1.78	mg/Kg	1	2.00	89	70 - 130

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Method Blanks

Method Blank (1) QC Batch: 125860

QC Batch: 125860 Date Analyzed: 2015-10-27 Analyzed By: AK
Prep Batch: 106478 QC Preparation: 2015-10-26 Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		5	<6.88	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			44.0	mg/Kg	1	50.0	88	70 - 130

Method Blank (1) QC Batch: 125893

QC Batch: 125893 Date Analyzed: 2015-10-28 Analyzed By: AK
Prep Batch: 106509 QC Preparation: 2015-10-27 Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		5	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.80	mg/Kg	1	2.00	90	70 - 130
4-Bromofluorobenzene (4-BFB)			1.77	mg/Kg	1	2.00	88	70 - 130

Method Blank (1) QC Batch: 125928

QC Batch: 125928 Date Analyzed: 2015-10-28 Analyzed By: RL
Prep Batch: 106539 QC Preparation: 2015-10-28 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		3,4,6	<8.34	mg/Kg	25

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 125860
Prep Batch: 106478

Date Analyzed: 2015-10-27
QC Preparation: 2015-10-26

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		5	209	mg/Kg	1	250	<6.88	84	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		5	200	mg/Kg	1	250	<6.88	80	70 - 130	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	43.7	44.2	mg/Kg	1	50.0	87	88	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 125893
Prep Batch: 106509

Date Analyzed: 2015-10-28
QC Preparation: 2015-10-27

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		5	23.3	mg/Kg	1	20.0	<2.32	116	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		5	21.7	mg/Kg	1	20.0	<2.32	108	70 - 130	7	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.94	1.88	mg/Kg	1	2.00	97	94	70 - 130
4-Bromofluorobenzene (4-BFB)	1.97	1.89	mg/Kg	1	2.00	98	94	70 - 130

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Laboratory Control Spike (LCS-1)

QC Batch: 125928
Prep Batch: 106539

Date Analyzed: 2015-10-28
QC Preparation: 2015-10-28

Analyzed By: RL
Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,4,6	248	mg/Kg	1	250	<8.34	99	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3,4,6	249	mg/Kg	1	250	<8.34	100	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 406935

QC Batch: 125860
Prep Batch: 106478

Date Analyzed: 2015-10-27
QC Preparation: 2015-10-26

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		5	313	mg/Kg	1	250	<6.88	125	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param				MSD		Dil.	Spike	Matrix	Rec.		RPD	
	F	C		Result	Units		Amount	Result	Rec.	Limit	RPD	Limit
DRO	Q _r	Q _r	5	214	mg/Kg	1	250	<6.88	86	70 - 130	38	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	51.7	42.3	mg/Kg	1	50	103	85	70 - 130

Matrix Spike (MS-1) Spiked Sample: 406935

QC Batch: 125893
Prep Batch: 106509

Date Analyzed: 2015-10-28
QC Preparation: 2015-10-27

Analyzed By: AK
Prepared By: AK

Param			F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Qs	Qs	Qs	5	9.71	mg/Kg	1	20.0	<2.32	48	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param			MSD		Dil.	Spike	Matrix			Rec.	RPD	
	F	C	Result	Units		Amount	Result	Rec.	Limit			
GRO	Q _r , Q _s	Q _r , Q _s	5	13.5	mg/Kg	1	20.0	<2.32	68	70 - 130	33	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.59	1.90	mg/Kg	1	2	80	95	70 - 130
4-Bromofluorobenzene (4-BFB)	1.78	1.99	mg/Kg	1	2	89	100	70 - 130

Matrix Spike (MS-1) Spiked Sample: 406935

QC Batch: 125928
Prep Batch: 106539

Date Analyzed: 2015-10-28
QC Preparation: 2015-10-28

Analyzed By: RL
Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,4,6	349	mg/Kg	1	250	112	95	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3,4,6	353	mg/Kg	1	250	112	96	80 - 120	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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Calibration Standards

Standard (CCV-1)

QC Batch: 125860

Date Analyzed: 2015-10-27

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		5	mg/Kg	250	225	90	80 - 120	2015-10-27

Standard (CCV-2)

QC Batch: 125860

Date Analyzed: 2015-10-27

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		5	mg/Kg	250	200	80	80 - 120	2015-10-27

Standard (CCV-1)

QC Batch: 125893

Date Analyzed: 2015-10-28

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	1.12	112	80 - 120	2015-10-28

Standard (CCV-2)

QC Batch: 125893

Date Analyzed: 2015-10-28

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	0.883	88	80 - 120	2015-10-28

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Standard (CCV-1)

QC Batch: 125928

Date Analyzed: 2015-10-28

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,6	mg/Kg	25.0	24.8	99	90 - 110	2015-10-28

Standard (CCV-2)

QC Batch: 125928

Date Analyzed: 2015-10-28

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,6	mg/Kg	25.0	25.1	100	90 - 110	2015-10-28

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	L-A-B	L2418	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	LELAP	LELAP-02003	Lubbock
4	NELAP	T104704219-15-11	Lubbock
5	NELAP	T104704392-14-8	Midland
6		2014-018	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.

F	Description
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

CHAIN-OF-CUSTODY

Arson & Associates, Inc.
Environmental Consultants

507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

DATE: 10/22/2015

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LAB WORK ORDER #:

PO#

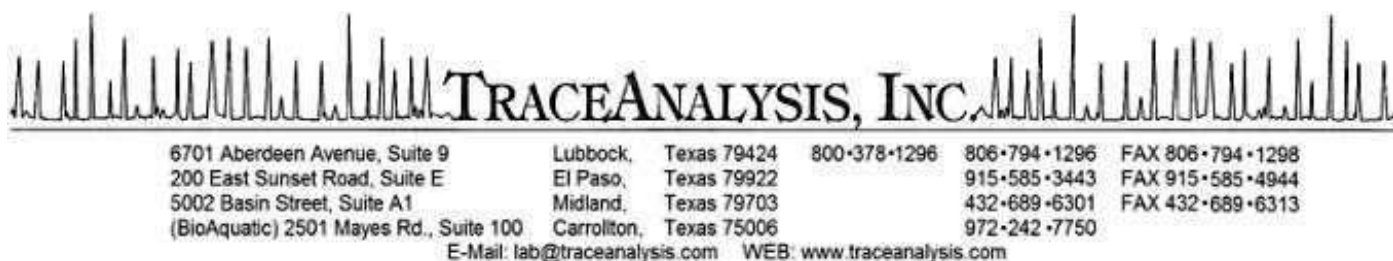
PROJECT LOCATION OR NAME: Townsend 16" Pipeline

Data Reported to:

LAI PROJECT #: 15-0143-01

COLLECTOR: Michael Cant

[illegible]



Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Mark Larson
Larson and Associates, Inc.

Report Date: October 29, 2015

P. O. Box 50685
Midland, TX, 79710

Work Order: 15102703



Project Location: Lea Co, NM
Project Name: Townsend 16" Pipeline
Project Number: 15-0143-01 (2)

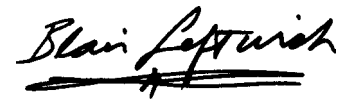
Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
407044	S. Wall 21'	soil	2015-10-23	11:23	2015-10-27

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.

This report consists of a total of 15 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

A handwritten signature in black ink, reading "Blair Leftwich". The signature is written in a cursive style and is underlined with a thick, dark line.

Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Brian Pellam, Operations Manager

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Case Narrative

Samples for project Townsend 16" Pipeline were received by TraceAnalysis, Inc. on 2015-10-27 and assigned to work order 15102703. Samples for work order 15102703 were received intact at a temperature of 4.4 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	106572	2015-10-29 at 08:30	125965	2015-10-29 at 09:33
TPH DRO	S 8015 D	106548	2015-10-28 at 11:00	125951	2015-10-29 at 12:49
TPH GRO	S 8015 D	106509	2015-10-27 at 15:15	125893	2015-10-28 at 07:33

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 15102703 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

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Analytical Report

Sample: 407044 - S. Wall 21'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2015-10-29	Analyzed By:	RL
QC Batch:	125965	Sample Preparation:		Prepared By:	RL
Prep Batch:	106572				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		5,7,9	<25.0	mg/Kg	1	25.0

Sample: 407044 - S. Wall 21'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-10-29	Analyzed By:	HJ
QC Batch:	125951	Sample Preparation:	2015-10-28	Prepared By:	HJ
Prep Batch:	106548				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	2,3,5,7	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		5	40.2	mg/Kg	1	25.0	161	48.9 - 172

Sample: 407044 - S. Wall 21'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-10-28	Analyzed By:	AK
QC Batch:	125893	Sample Preparation:	2015-10-27	Prepared By:	AK
Prep Batch:	106509				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qr,U	8	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.82	mg/Kg	1	2.00	91	70 - 130

continued ...

sample continued ...

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-Bromofluorobenzene (4-BFB)			1.78	mg/Kg	1	2.00	89	70 - 130

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Method Blanks

Method Blank (1) QC Batch: 125893

QC Batch: 125893 Date Analyzed: 2015-10-28 Analyzed By: AK
Prep Batch: 106509 QC Preparation: 2015-10-27 Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		s	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.80	mg/Kg	1	2.00	90	70 - 130
4-Bromofluorobenzene (4-BFB)			1.77	mg/Kg	1	2.00	88	70 - 130

Method Blank (1) QC Batch: 125951

QC Batch: 125951 Date Analyzed: 2015-10-29 Analyzed By: HJ
Prep Batch: 106548 QC Preparation: 2015-10-28 Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		2,3,5,7	<5.22	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		5	34.5	mg/Kg	1	25.0	138	48.9 - 172

Method Blank (1) QC Batch: 125965

QC Batch: 125965 Date Analyzed: 2015-10-29 Analyzed By: RL
Prep Batch: 106572 QC Preparation: 2015-10-29 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		5,7,9	<8.34	mg/Kg	25

Report Date: October 29, 2015
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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 125893
Prep Batch: 106509

Date Analyzed: 2015-10-28
QC Preparation: 2015-10-27

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		s	23.3	mg/Kg	1	20.0	<2.32	116	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		s	21.7	mg/Kg	1	20.0	<2.32	108	70 - 130	7	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.94	1.88	mg/Kg	1	2.00	97	94	70 - 130
4-Bromofluorobenzene (4-BFB)	1.97	1.89	mg/Kg	1	2.00	98	94	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 125951
Prep Batch: 106548

Date Analyzed: 2015-10-29
QC Preparation: 2015-10-28

Analyzed By: HJ
Prepared By: HJ

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2,3,5,7	553	mg/Kg	1	500	<5.22	111	60.9 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		2,3,5,7	617	mg/Kg	1	500	<5.22	123	60.9 - 130	11	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate		LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	5	35.1	38.6	mg/Kg	1	25.0	140	154	48.9 - 172

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Laboratory Control Spike (LCS-1)

QC Batch: 125965
Prep Batch: 106572

Date Analyzed: 2015-10-29
QC Preparation: 2015-10-29

Analyzed By: RL
Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		5,7,9	247	mg/Kg	1	250	<8.34	99	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		5,7,9	247	mg/Kg	1	250	<8.34	99	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Report Date: October 29, 2015
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Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 406935

QC Batch: 125893
Prep Batch: 106509

Date Analyzed: 2015-10-28
QC Preparation: 2015-10-27

Analyzed By: AK
Prepared By: AK

Param			MS			Spike	Matrix		Rec.	
	F	C	Result	Units	Dil.	Amount	Result	Rec.	Limit	
GRO	Qs	Qs	s	9.71	mg/Kg	1	20.0	<2.32	48	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param			MSD		Dil.	Spike	Matrix			Rec.	RPD	
	F	C	Result	Units		Amount	Result	Rec.	Limit	RPD	Limit	
GRO	Q _r , Q _s	Q _r , Q _s	8	13.5	mg/Kg	1	20.0	<2.32	68	70 - 130	33	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.59	1.90	mg/Kg	1	2	80	95	70 - 130
4-Bromofluorobenzene (4-BFB)	1.78	1.99	mg/Kg	1	2	89	100	70 - 130

Matrix Spike (MS-1) Spiked Sample: 407044

QC Batch: 125951
Prep Batch: 106548

Date Analyzed: 2015-10-29
QC Preparation: 2015-10-28

Analyzed By: HJ
Prepared By: HJ

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2,3,5,7	552	mg/Kg	1	500	<5.22	110	47.9 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		2,3,5,7	607	mg/Kg	1	500	<5.22	121	47.9 - 130	10	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

		MS	MSD			Spike	MS	MSD	Rec.
Surrogate		Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	5	36.4	40.5	mg/Kg	1	25	146	162	48.9 - 172

Matrix Spike (MS-1) Spiked Sample: 407044

QC Batch: 125965
Prep Batch: 106572

Date Analyzed: 2015-10-29
QC Preparation: 2015-10-29

Analyzed By: RL
Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		5,7,9	268	mg/Kg	1	250	20.5	99	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		5,7,9	266	mg/Kg	1	250	20.5	98	80 - 120	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Report Date: October 29, 2015
15-0143-01 (2)

Work Order: 15102703
Townsend 16" Pipeline

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Lea Co, NM

Calibration Standards

Standard (CCV-1)

QC Batch: 125893

Date Analyzed: 2015-10-28

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		s	mg/Kg	1.00	1.12	112	80 - 120	2015-10-28

Standard (CCV-2)

QC Batch: 125893

Date Analyzed: 2015-10-28

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		s	mg/Kg	1.00	0.883	88	80 - 120	2015-10-28

Standard (CCV-1)

QC Batch: 125951

Date Analyzed: 2015-10-29

Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2,3,5,7	mg/Kg	500	544	109	80 - 120	2015-10-29

Standard (CCV-2)

QC Batch: 125951

Date Analyzed: 2015-10-29

Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2,3,5,7	mg/Kg	500	533	107	80 - 120	2015-10-29

Report Date: October 29, 2015
15-0143-01 (2)

Work Order: 15102703
Townsend 16" Pipeline

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Lea Co, NM

Standard (CCV-1)

QC Batch: 125965

Date Analyzed: 2015-10-29

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		5,7,9	mg/Kg	25.0	25.0	100	90 - 110	2015-10-29

Standard (CCV-2)

QC Batch: 125965

Date Analyzed: 2015-10-29

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		5,7,9	mg/Kg	25.0	24.8	99	90 - 110	2015-10-29

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	L-A-B	L2418.01	El Paso
2	L-A-B	L2418	Lubbock
3	Kansas	Kansas E-10317	Lubbock
4	LELAP	LELAP-02002	El Paso
5	LELAP	LELAP-02003	Lubbock
6	NELAP	T104704221-15-6	El Paso
7	NELAP	T104704219-15-11	Lubbock
8	NELAP	T104704392-14-8	Midland
9		2014-018	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction

F	Description
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

W00#15102703



507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

CHAIN-OF-CUSTODY

DATE: 10/23/2015 PAGE 1 OF 1
LAB WORK ORDER #:
PROJECT LOCATION OR NAME: Townsend 16" Pipeline
LAI PROJECT #: 15-0143-01 COLLECTOR: Michael Gant

Data Reported to:

TRRP report?
☐ Yes ☐ No

TIME ZONE:
Time zone/State:

INSTA

Field
Sample I.D.

S. Wall 21

S=SOIL
W=WATER
A=AIR

P=PAINT
SL=SLUDGE
OT=OTHER

Lab #

Date

Time

Matrix

of Containers

PRESERVATION

HCl
HNO₃
H₂SO₄ ☐ NaOH ☐
ICE
UNPRESERVED

ANALYSES
BTEX ☐ MTBE ☐
TPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐
DIESEL - MOD 8015 ☐
VOC 8280 ☐
SVOC 8270 ☐ PAH 8270 ☐ PAH 8270 ☐ HOLDPAH ☐
TCPP - METALS (RCRA) ☐ 8151 HERBICIDES ☐
TCPP - PEST ☐ HERB ☐ TCPP VOC ☐
LEAD - TOTAL ☐ D.W. 200.8 ☐ TCPP ☐
TDS ☐ TOX ☐ FLASHPOINT ☐ TCPP ☐
PH ☐ HEXVALENT CHROMIUM ☐
EXPLOSIVES ☐ PESTICIDES ☐
CHLORIDES ☐ ANIONS ☐ ALKALINITY ☐

FIELD NOTES

407044

TOTAL

RELINQUISHED BY: (Signature)

DATE/TIME

RECEIVED BY: (Signature)

10/27/15 8:50

TURN AROUND TIME

LABORATORY USE ONLY:

RELINQUISHED BY: (Signature)

DATE/TIME

RECEIVED BY: (Signature)

10/27/15 8:50

TURN AROUND TIME

RECEIVING TEMP: 44 THERM #: FL

RELINQUISHED BY: (Signature)

DATE/TIME

RECEIVED BY: (Signature)

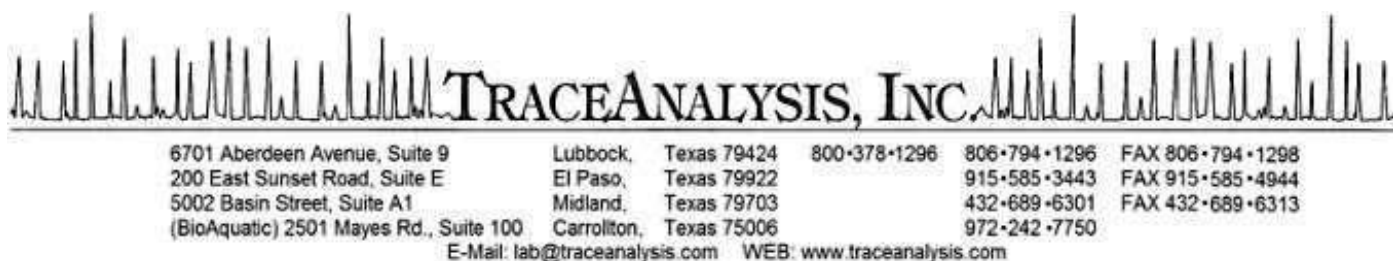
10/27/15 8:50

TURN AROUND TIME

CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED

CARRIER BILL #

HAND DELIVERED



Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Mark Larson
Larson and Associates, Inc.

Report Date: November 4, 2015

P. O. Box 50685
Midland, TX, 79710

Work Order: 15110202



Project Location: Lea Co, NM
Project Name: Townsend 16" Pipeline
Project Number: 15-0143-01 (2)

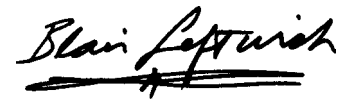
Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
407383	W. Side 21'	soil	2015-10-30	11:25	2015-11-02

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.

This report consists of a total of 15 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

A handwritten signature in black ink, reading "Blair Leftwich". The signature is written in a cursive style and is underlined with a thick, dark line.

Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Brian Pellam, Operations Manager

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Case Narrative

Samples for project Townsend 16" Pipeline were received by TraceAnalysis, Inc. on 2015-11-02 and assigned to work order 15110202. Samples for work order 15110202 were received intact at a temperature of 2.8 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	106670	2015-11-03 at 08:15	126078	2015-11-04 at 09:01
TPH DRO	S 8015 D	106653	2015-11-03 at 12:00	126062	2015-11-04 at 05:52
TPH GRO	S 8015 D	106654	2015-11-03 at 07:16	126064	2015-11-04 at 07:58

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 15110202 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Report Date: November 4, 2015
15-0143-01 (2)

Work Order: 15110202
Townsend 16" Pipeline

Page Number: 5 of 15
Lea Co, NM

Analytical Report

Sample: 407383 - W. Side 21'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2015-11-04	Analyzed By:	RL
QC Batch:	126078	Sample Preparation:		Prepared By:	RL
Prep Batch:	106670				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 407383 - W. Side 21'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2015-11-04	Analyzed By:	HJ
QC Batch:	126062	Sample Preparation:	2015-11-03	Prepared By:	HJ
Prep Batch:	106653				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	28.3	mg/Kg	1	25.0	113	48.9 - 172

Sample: 407383 - W. Side 21'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2015-11-04	Analyzed By:	AK
QC Batch:	126064	Sample Preparation:	2015-11-03	Prepared By:	AK
Prep Batch:	106654				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.85	mg/Kg	1	2.00	92	70 - 130

continued ...

sample continued ...

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-Bromofluorobenzene (4-BFB)			1.82	mg/Kg	1	2.00	91	70 - 130

Method Blanks

Method Blank (1) QC Batch: 126062

QC Batch: 126062 Date Analyzed: 2015-11-04 Analyzed By: HJ
Prep Batch: 106653 QC Preparation: 2015-11-03 Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1,2,3,4	<5.22	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	38.2	mg/Kg	1	25.0	153	48.9 - 172

Method Blank (1) QC Batch: 126064

QC Batch: 126064 Date Analyzed: 2015-11-04 Analyzed By: AK
Prep Batch: 106654 QC Preparation: 2015-11-03 Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		5	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.00	mg/Kg	1	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)			1.83	mg/Kg	1	2.00	92	70 - 130

Method Blank (1) QC Batch: 126078

QC Batch: 126078 Date Analyzed: 2015-11-04 Analyzed By: RL
Prep Batch: 106670 QC Preparation: 2015-11-03 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		3,4,6	<8.34	mg/Kg	25

Report Date: November 4, 2015
15-0143-01 (2)

Work Order: 15110202
Townsend 16" Pipeline

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 126062
Prep Batch: 106653

Date Analyzed: 2015-11-04
QC Preparation: 2015-11-03

Analyzed By: HJ
Prepared By: HJ

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3,4	407	mg/Kg	1	500	<5.22	81	60.9 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3,4	427	mg/Kg	1	500	<5.22	85	60.9 - 130	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate		LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	3	29.5	29.5	mg/Kg	1	25.0	118	118	48.9 - 172

Laboratory Control Spike (LCS-1)

QC Batch: 126064
Prep Batch: 106654

Date Analyzed: 2015-11-04
QC Preparation: 2015-11-03

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		5	23.9	mg/Kg	1	20.0	<2.32	120	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		5	25.2	mg/Kg	1	20.0	<2.32	126	70 - 130	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate		LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)		1.90	1.99	mg/Kg	1	2.00	95	100	70 - 130
4-Bromofluorobenzene (4-BFB)		1.77	1.87	mg/Kg	1	2.00	88	94	70 - 130

Report Date: November 4, 2015
15-0143-01 (2)

Work Order: 15110202
Townsend 16" Pipeline

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Lea Co, NM

Laboratory Control Spike (LCS-1)

QC Batch: 126078
Prep Batch: 106670

Date Analyzed: 2015-11-04
QC Preparation: 2015-11-03

Analyzed By: RL
Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,4,6	251	mg/Kg	1	250	<8.34	100	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3,4,6	249	mg/Kg	1	250	<8.34	100	90 - 110	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Report Date: November 4, 2015
15-0143-01 (2)

Work Order: 15110202
Townsend 16" Pipeline

Page Number: 10 of 15
Lea Co, NM

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 407383

QC Batch: 126062
Prep Batch: 106653

Date Analyzed: 2015-11-04
QC Preparation: 2015-11-03

Analyzed By: HJ
Prepared By: HJ

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3,4	362	mg/Kg	1	500	<5.22	72	47.9 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3,4	377	mg/Kg	1	500	<5.22	75	47.9 - 130	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate		MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	3	28.7	28.9	mg/Kg	1	25	115	116	48.9 - 172

Matrix Spike (MS-1) Spiked Sample: 407381

QC Batch: 126064
Prep Batch: 106654

Date Analyzed: 2015-11-04
QC Preparation: 2015-11-03

Analyzed By: AK
Prepared By: AK

Param			F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Qs	Qs	Qs	5	12.8	mg/Kg	1	20.0	<2.32	64	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		5	14.2	mg/Kg	1	20.0	<2.32	71	70 - 130	10	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.83	1.81	mg/Kg	1	2	92	90	70 - 130
4-Bromofluorobenzene (4-BFB)	1.84	1.83	mg/Kg	1	2	92	92	70 - 130

Matrix Spike (MS-1) Spiked Sample: 407383

QC Batch: 126078
Prep Batch: 106670

Date Analyzed: 2015-11-04
QC Preparation: 2015-11-03

Analyzed By: RL
Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,4,6	253	mg/Kg	1	250	8.68	98	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3,4,6	254	mg/Kg	1	250	8.68	98	80 - 120	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Report Date: November 4, 2015
15-0143-01 (2)

Work Order: 15110202
Townsend 16" Pipeline

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Lea Co, NM

Calibration Standards

Standard (CCV-1)

QC Batch: 126062

Date Analyzed: 2015-11-04

Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3,4	mg/Kg	500	409	82	80 - 120	2015-11-04

Standard (CCV-2)

QC Batch: 126062

Date Analyzed: 2015-11-04

Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3,4	mg/Kg	500	417	83	80 - 120	2015-11-04

Standard (CCV-1)

QC Batch: 126064

Date Analyzed: 2015-11-04

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	1.04	104	80 - 120	2015-11-04

Standard (CCV-2)

QC Batch: 126064

Date Analyzed: 2015-11-04

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	1.08	108	80 - 120	2015-11-04

Standard (CCV-1)

QC Batch: 126078				Date Analyzed: 2015-11-04			Analyzed By: RL	
Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,6	mg/Kg	25.0	25.1	100	90 - 110	2015-11-04

Standard (CCV-2)

QC Batch: 126078				Date Analyzed: 2015-11-04			Analyzed By: RL	
Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,6	mg/Kg	25.0	25.0	100	90 - 110	2015-11-04

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	L-A-B	L2418	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	LELAP	LELAP-02003	Lubbock
4	NELAP	T104704219-15-11	Lubbock
5	NELAP	T104704392-14-8	Midland
6		2015-066	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.

F	Description
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

15110202

CHAIN-OF-CUSTODY



507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 10/30/2015

PAGE 1 OF 1

PO #: LAB WORK ORDER #:

PROJECT LOCATION OR NAME: TOWNSEND 16"

LAI PROJECT #: 15-0143-01

COLLECTOR: Michael Cant

TRRP report?

☐ Yes ☐ No

TIME ZONE:

Time zone/State:

MST/ NM

Field

Sample I.D.

W. Side 21'

Lab #

10/30

Date

11:25

Time

S

Matrix

S

of Containers

1

PRESERVATION

HCl

HNO₃H₂SO₄ ☐ NaOH ☐

UNRESERVED

X

ANALYSES

BTX ☐ MTBE ☐GASOLINE MOD 8015 ☐DIESEL MOD 8015 ☐TRPH 418.1 ☐ TPH 1005 ☐VOC 8260 ☐SVOC 8270 ☐PAH 8270 ☐8082 PESTICIDES ☐8082 PCBS ☐TCLP - METALS (RCRA) ☐TCLP - PEST ☐TOTAL METALS (RCRA) ☐LEAD - TOTAL ☐RCL ☐TDS ☐TOX ☐TSS ☐FLASHPOINT ☐% MOISTURE ☐OTHER LIST ☐TCLP VOC ☐Semi-VOC ☐D.W. 200.8 ☐CYANIDE ☐EXPLOSIVES ☐HEXAVALENT CHROMIUM ☐PECHLORATE ☐ANIONS ☐ALKALINITY ☐

FIELD NOTES

407383

TOTAL

RELINQUISHED BY: (Signature)

11/2/15 8:52

RECEIVED BY: (Signature)

11/2/15 8:52

RELINQUISHED BY: (Signature)

11/2/15 15:30

RECEIVED BY: (Signature)

11/3/15 9:30

RECEIVED BY: (Signature)

11/2/15 8:52

RECEIVED BY: (Signature)

11/2/15 15:30

RECEIVED BY: (Signature)

11/3/15 9:30

RECEIVED BY: (Signature)

11/3/15 9:30

TURN AROUND TIME

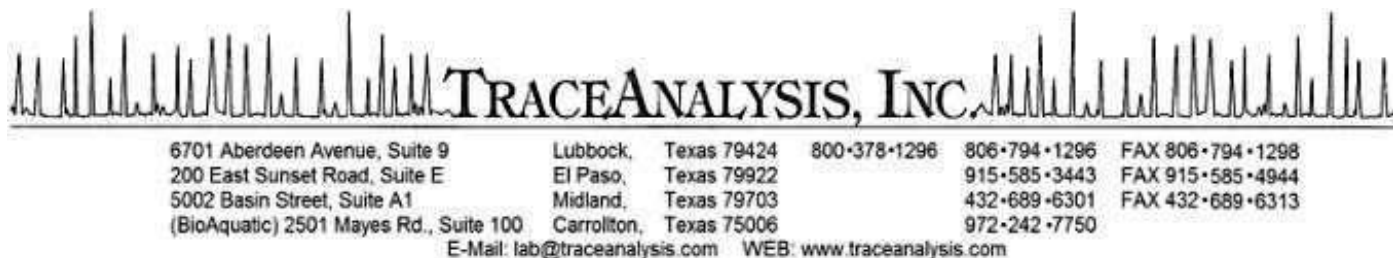
NORMAL ☐1 DAY ☐2 DAY ☒OTHER ☐

LABORATORY USE ONLY:

RECEIVING TEMP: 2.9

THERM #: 18-1

CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED☐ CARRIER BILL # 2527088973☒ HAND DELIVERED



Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Michael Gant
Larson and Associates, Inc.

Report Date: May 18, 2016

P. O. Box 50685
Midland, TX, 79710

Work Order: 16051615



Project Location: Lea Co, NM
 Project Name: Townsend 16" Pipeline
 Project Number: 15-0143-01

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

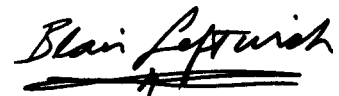
Sample	Description	Matrix	Date Taken	Time Taken	Date Received
419207	N Wall E 4'	soil	2016-05-13	11:20	2016-05-16
419208	N Wall E 8'	soil	2016-05-13	11:15	2016-05-16
419209	N Wall E 10'	soil	2016-05-13	11:10	2016-05-16
419210	N Wall E 14'	soil	2016-05-13	11:06	2016-05-16
419211	N Wall E 18'	soil	2016-05-13	12:55	2016-05-16
419212	N Wall W 4'	soil	2016-05-13	10:57	2016-05-16
419213	N Wall W 8'	soil	2016-05-13	10:53	2016-05-16
419214	N Wall W 10'	soil	2016-05-13	10:44	2016-05-16
419215	N Wall W 14'	soil	2016-05-13	10:45	2016-05-16
419216	N Wall W 18'	soil	2016-05-13	10:40	2016-05-16
419217	S Wall E 4'	soil	2016-05-13	13:24	2016-05-16
419218	S Wall E 8'	soil	2016-05-13	13:12	2016-05-16
419219	S Wall E 10'	soil	2016-05-13	12:32	2016-05-16
419220	S Wall E 14'	soil	2016-05-13	12:28	2016-05-16
419221	S Wall E 18'	soil	2016-05-13	12:24	2016-05-16
419222	S Wall W 4'	soil	2016-05-13	13:40	2016-05-16
419223	S Wall W 8'	soil	2016-05-13	13:31	2016-05-16

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
419224	S Wall W 10'	soil	2016-05-13	12:48	2016-05-16
419225	S Wall W 14'	soil	2016-05-13	12:43	2016-05-16
419226	S Wall W 18'	soil	2016-05-13	12:40	2016-05-16
419227	E Wall 4'	soil	2016-05-13	12:05	2016-05-16
419228	E Wall 8'	soil	2016-05-13	11:57	2016-05-16
419229	E Wall 10'	soil	2016-05-13	11:50	2016-05-16
419230	E Wall 14'	soil	2016-05-13	11:42	2016-05-16
419231	E Wall 18'	soil	2016-05-13	11:35	2016-05-16
419232	W Wall 4'	soil	2016-05-13	14:04	2016-05-16
419233	W Wall 8'	soil	2016-05-13	14:01	2016-05-16
419234	W Wall 10'	soil	2016-05-13	13:58	2016-05-16
419235	W Wall 14'	soil	2016-05-13	13:44	2016-05-16
419236	W Wall 18'	soil	2016-05-13	13:48	2016-05-16
419237	Bottom 24'	soil	2016-05-13	13:20	2016-05-16

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.

This report consists of a total of 70 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.



Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Johnny Grindstaff, Operations Manager

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Case Narrative

Samples for project Townsend 16" Pipeline were received by TraceAnalysis, Inc. on 2016-05-16 and assigned to work order 16051615. Samples for work order 16051615 were received intact at a temperature of -3.1 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	110258	2016-05-17 at 09:30	130148	2016-05-17 at 10:34
Chloride (IC)	E 300.0	110271	2016-05-17 at 14:00	130164	2016-05-17 at 15:43
Chloride (IC)	E 300.0	110272	2016-05-17 at 14:00	130165	2016-05-17 at 15:43
Chloride (IC)	E 300.0	110273	2016-05-17 at 14:00	130166	2016-05-17 at 15:43
TPH DRO	S 8015 D	110264	2016-05-17 at 15:00	130157	2016-05-18 at 09:07
TPH DRO	S 8015 D	110266	2016-05-17 at 16:00	130159	2016-05-18 at 09:10
TPH GRO	S 8015 D	110233	2016-05-16 at 14:00	130118	2016-05-17 at 08:20
TPH GRO	S 8015 D	110234	2016-05-17 at 08:59	130152	2016-05-18 at 07:28
TPH ORO	S 8015 D	110265	2016-05-17 at 15:00	130158	2016-05-18 at 09:09
TPH ORO	S 8015 D	110267	2016-05-17 at 16:00	130160	2016-05-18 at 09:11

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 16051615 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Report Date: May 18, 2016
15-0143-01

Work Order: 16051615
Townsend 16" Pipeline

Page Number: 6 of 70
Lea Co, NM

Analytical Report

Sample: 419207 - N Wall E 4'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2016-05-17	Analyzed By:	RL
QC Batch:	130148	Sample Preparation:	2016-05-17	Prepared By:	RL
Prep Batch:	110258				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	89.9	mg/Kg	1	25.0

Sample: 419207 - N Wall E 4'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2016-05-18	Analyzed By:	HJ
QC Batch:	130157	Sample Preparation:	2016-05-17	Prepared By:	HJ
Prep Batch:	110264				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	28.7	mg/Kg	1	25.0	115	58.2 - 150

Sample: 419207 - N Wall E 4'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2016-05-17	Analyzed By:	AK
QC Batch:	130118	Sample Preparation:	2016-05-16	Prepared By:	AK
Prep Batch:	110233				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.00	mg/Kg	1	2.00	100	70 - 130

continued ...

Report Date: May 18, 2016
15-0143-01

Work Order: 16051615
Townsend 16" Pipeline

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Lea Co, NM

sample continued ...

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-Bromofluorobenzene (4-BFB)			1.98	mg/Kg	1	2.00	99	70 - 130

Sample: 419207 - N Wall E 4'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130158
Prep Batch: 110265

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	u		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			28.7	mg/Kg	1	25.0	115	70 - 130
n-Triacontane			31.1	mg/Kg	1	25.0	124	70 - 130

Sample: 419208 - N Wall E 8'

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 130148
Prep Batch: 110258

Analytical Method: E 300.0
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	32.5	mg/Kg	1	25.0

Sample: 419208 - N Wall E 8'

Laboratory: Lubbock
Analysis: TPH DRO
QC Batch: 130157
Prep Batch: 110264

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	u	1,2,3,4	<50.0	mg/Kg	1	50.0

Report Date: May 18, 2016
15-0143-01

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Townsend 16" Pipeline

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	25.1	mg/Kg	1	25.0	100	58.2 - 150

Sample: 419208 - N Wall E 8'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 130118
Prep Batch: 110233

Analytical Method: S 8015 D
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-16

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.98	mg/Kg	1	2.00	99	70 - 130
4-Bromofluorobenzene (4-BFB)			1.89	mg/Kg	1	2.00	94	70 - 130

Sample: 419208 - N Wall E 8'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130158
Prep Batch: 110265

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	MDL	PQL Result	PQL	RL Result	RL	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	<50.0		mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			25.1	mg/Kg	1	25.0	100	70 - 130
n-Triacontane			27.8	mg/Kg	1	25.0	111	70 - 130

Sample: 419209 - N Wall E 10'

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 130148
Prep Batch: 110258

Analytical Method: E 300.0
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

Report Date: May 18, 2016
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Townsend 16" Pipeline

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Lea Co, NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	36.6	mg/Kg	1	25.0

Sample: 419209 - N Wall E 10'

Laboratory: Lubbock
Analysis: TPH DRO
QC Batch: 130157
Prep Batch: 110264

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	25.4	mg/Kg	1	25.0	102	58.2 - 150

Sample: 419209 - N Wall E 10'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 130118
Prep Batch: 110233

Analytical Method: S 8015 D
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-16

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.99	mg/Kg	1	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)			1.87	mg/Kg	1	2.00	94	70 - 130

Sample: 419209 - N Wall E 10'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130158
Prep Batch: 110265

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

continued ...

Report Date: May 18, 2016
15-0143-01

Work Order: 16051615
Townsend 16" Pipeline

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Lea Co, NM

sample 419209 continued ...

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			25.4	mg/Kg	1	25.0	102	70 - 130
n-Triacontane			28.0	mg/Kg	1	25.0	112	70 - 130

Sample: 419210 - N Wall E 14'

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 130148 Date Analyzed: 2016-05-17 Analyzed By: RL
Prep Batch: 110258 Sample Preparation: 2016-05-17 Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	31.1	mg/Kg	1	25.0

Sample: 419210 - N Wall E 14'

Laboratory: Lubbock
Analysis: TPH DRO Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 130157 Date Analyzed: 2016-05-18 Analyzed By: HJ
Prep Batch: 110264 Sample Preparation: 2016-05-17 Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1,2,3,4	320	mg/Kg	1	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	3	49.8	mg/Kg	1	25.0	199	58.2 - 150

Report Date: May 18, 2016
15-0143-01

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Sample: 419210 - N Wall E 14'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2016-05-17	Analyzed By:	AK
QC Batch:	130118	Sample Preparation:	2016-05-16	Prepared By:	AK
Prep Batch:	110233				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.85	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			1.82	mg/Kg	1	2.00	91	70 - 130

Sample: 419210 - N Wall E 14'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH ORO	Date Analyzed:	2016-05-18	Analyzed By:	HJ
QC Batch:	130158	Sample Preparation:	2016-05-17	Prepared By:	HJ
Prep Batch:	110265				

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	49.8	mg/Kg	1	25.0	199	70 - 130
n-Triacontane	Qsr	Qsr	47.2	mg/Kg	1	25.0	189	70 - 130

Sample: 419211 - N Wall E 18'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2016-05-17	Analyzed By:	RL
QC Batch:	130148	Sample Preparation:	2016-05-17	Prepared By:	RL
Prep Batch:	110258				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

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Sample: 419211 - N Wall E 18'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2016-05-18	Analyzed By:	HJ
QC Batch:	130157	Sample Preparation:	2016-05-17	Prepared By:	HJ
Prep Batch:	110264				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	25.6	mg/Kg	1	25.0	102	58.2 - 150

Sample: 419211 - N Wall E 18'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2016-05-17	Analyzed By:	AK
QC Batch:	130118	Sample Preparation:	2016-05-16	Prepared By:	AK
Prep Batch:	110233				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.84	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			1.83	mg/Kg	1	2.00	92	70 - 130

Sample: 419211 - N Wall E 18'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH ORO	Date Analyzed:	2016-05-18	Analyzed By:	HJ
QC Batch:	130158	Sample Preparation:	2016-05-17	Prepared By:	HJ
Prep Batch:	110265				

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			25.6	mg/Kg	1	25.0	102	70 - 130

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane			28.1	mg/Kg	1	25.0	112	70 - 130

Sample: 419212 - N Wall W 4'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2016-05-17	Analyzed By:	RL
QC Batch:	130148	Sample Preparation:	2016-05-17	Prepared By:	RL
Prep Batch:	110258				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 419212 - N Wall W 4'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2016-05-18	Analyzed By:	HJ
QC Batch:	130157	Sample Preparation:	2016-05-17	Prepared By:	HJ
Prep Batch:	110264				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	30.8	mg/Kg	1	25.0	123	58.2 - 150

Sample: 419212 - N Wall W 4'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2016-05-17	Analyzed By:	AK
QC Batch:	130118	Sample Preparation:	2016-05-16	Prepared By:	AK
Prep Batch:	110233				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.87	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			1.77	mg/Kg	1	2.00	88	70 - 130

Sample: 419212 - N Wall W 4'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130158
Prep Batch: 110265

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			30.8	mg/Kg	1	25.0	123	70 - 130
n-Triacontane	Qsr	Qsr	34.1	mg/Kg	1	25.0	136	70 - 130

Sample: 419213 - N Wall W 8'

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 130148
Prep Batch: 110258

Analytical Method: E 300.0
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 419213 - N Wall W 8'

Laboratory: Lubbock
Analysis: TPH DRO
QC Batch: 130157
Prep Batch: 110264

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	27.1	mg/Kg	1	25.0	108	58.2 - 150

Sample: 419213 - N Wall W 8'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 130118
Prep Batch: 110233

Analytical Method: S 8015 D
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-16

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.96	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			1.86	mg/Kg	1	2.00	93	70 - 130

Sample: 419213 - N Wall W 8'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130158
Prep Batch: 110265

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	MDL	PQL Result	PQL	RL Result	RL	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	<50.0		mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			27.1	mg/Kg	1	25.0	108	70 - 130
n-Triacontane			30.0	mg/Kg	1	25.0	120	70 - 130

Sample: 419214 - N Wall W 10'

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 130148
Prep Batch: 110258

Analytical Method: E 300.0
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	97.9	mg/Kg	1	25.0

Sample: 419214 - N Wall W 10'

Laboratory: Lubbock
Analysis: TPH DRO
QC Batch: 130157
Prep Batch: 110264

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	27.9	mg/Kg	1	25.0	112	58.2 - 150

Sample: 419214 - N Wall W 10'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 130118
Prep Batch: 110233

Analytical Method: S 8015 D
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-16

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.91	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			1.87	mg/Kg	1	2.00	94	70 - 130

Sample: 419214 - N Wall W 10'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130158
Prep Batch: 110265

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

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Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	Qs,U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			27.9	mg/Kg	1	25.0	112	70 - 130
n-Triacontane			31.2	mg/Kg	1	25.0	125	70 - 130

Sample: 419215 - N Wall W 14'

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 130148 Date Analyzed: 2016-05-17 Analyzed By: RL
Prep Batch: 110258 Sample Preparation: 2016-05-17 Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 419215 - N Wall W 14'

Laboratory: Lubbock
Analysis: TPH DRO Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 130157 Date Analyzed: 2016-05-18 Analyzed By: HJ
Prep Batch: 110264 Sample Preparation: 2016-05-17 Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	25.3	mg/Kg	1	25.0	101	58.2 - 150

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Sample: 419215 - N Wall W 14'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 130118
Prep Batch: 110233

Analytical Method: S 8015 D
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-16

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.89	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			1.82	mg/Kg	1	2.00	91	70 - 130

Sample: 419215 - N Wall W 14'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130158
Prep Batch: 110265

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			25.3	mg/Kg	1	25.0	101	70 - 130
n-Triacontane			27.5	mg/Kg	1	25.0	110	70 - 130

Sample: 419216 - N Wall W 18'

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 130164
Prep Batch: 110271

Analytical Method: E 300.0
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	25.5	mg/Kg	1	25.0

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Sample: 419216 - N Wall W 18'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2016-05-18	Analyzed By:	HJ
QC Batch:	130157	Sample Preparation:	2016-05-17	Prepared By:	HJ
Prep Batch:	110264				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	26.8	mg/Kg	1	25.0	107	58.2 - 150

Sample: 419216 - N Wall W 18'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2016-05-17	Analyzed By:	AK
QC Batch:	130118	Sample Preparation:	2016-05-16	Prepared By:	AK
Prep Batch:	110233				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.00	mg/Kg	1	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)			1.86	mg/Kg	1	2.00	93	70 - 130

Sample: 419216 - N Wall W 18'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH ORO	Date Analyzed:	2016-05-18	Analyzed By:	HJ
QC Batch:	130158	Sample Preparation:	2016-05-17	Prepared By:	HJ
Prep Batch:	110265				

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			26.8	mg/Kg	1	25.0	107	70 - 130

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane			29.8	mg/Kg	1	25.0	119	70 - 130

Sample: 419217 - S Wall E 4'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2016-05-17	Analyzed By:	RL
QC Batch:	130164	Sample Preparation:	2016-05-17	Prepared By:	RL
Prep Batch:	110271				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 419217 - S Wall E 4'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2016-05-18	Analyzed By:	HJ
QC Batch:	130157	Sample Preparation:	2016-05-17	Prepared By:	HJ
Prep Batch:	110264				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	22.9	mg/Kg	1	25.0	92	58.2 - 150

Sample: 419217 - S Wall E 4'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2016-05-17	Analyzed By:	AK
QC Batch:	130118	Sample Preparation:	2016-05-16	Prepared By:	AK
Prep Batch:	110233				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.89	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			1.76	mg/Kg	1	2.00	88	70 - 130

Sample: 419217 - S Wall E 4'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130158
Prep Batch: 110265

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	u		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			22.9	mg/Kg	1	25.0	92	70 - 130
n-Triacontane			25.5	mg/Kg	1	25.0	102	70 - 130

Sample: 419218 - S Wall E 8'

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 130164
Prep Batch: 110271

Analytical Method: E 300.0
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 419218 - S Wall E 8'

Laboratory: Lubbock
Analysis: TPH DRO
QC Batch: 130157
Prep Batch: 110264

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	u	1,2,3,4	<50.0	mg/Kg	1	50.0

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	24.5	mg/Kg	1	25.0	98	58.2 - 150

Sample: 419218 - S Wall E 8'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 130118
Prep Batch: 110233

Analytical Method: S 8015 D
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-16

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.96	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			1.87	mg/Kg	1	2.00	94	70 - 130

Sample: 419218 - S Wall E 8'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130158
Prep Batch: 110265

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	MDL	PQL Result	PQL	RL Result	RL	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	<50.0		mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			24.5	mg/Kg	1	25.0	98	70 - 130
n-Triacontane			27.1	mg/Kg	1	25.0	108	70 - 130

Sample: 419219 - S Wall E 10'

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 130164
Prep Batch: 110271

Analytical Method: E 300.0
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 419219 - S Wall E 10'

Laboratory: Lubbock
Analysis: TPH DRO
QC Batch: 130157
Prep Batch: 110264

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	23.0	mg/Kg	1	25.0	92	58.2 - 150

Sample: 419219 - S Wall E 10'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 130118
Prep Batch: 110233

Analytical Method: S 8015 D
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-16

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.90	mg/Kg	1	2.00	95	70 - 130
4-Bromofluorobenzene (4-BFB)			1.85	mg/Kg	1	2.00	92	70 - 130

Sample: 419219 - S Wall E 10'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130158
Prep Batch: 110265

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

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Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			23.0	mg/Kg	1	25.0	92	70 - 130
n-Triacontane			25.8	mg/Kg	1	25.0	103	70 - 130

Sample: 419220 - S Wall E 14'

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 130164 Date Analyzed: 2016-05-17 Analyzed By: RL
Prep Batch: 110271 Sample Preparation: 2016-05-17 Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 419220 - S Wall E 14'

Laboratory: Lubbock
Analysis: TPH DRO Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 130157 Date Analyzed: 2016-05-18 Analyzed By: HJ
Prep Batch: 110264 Sample Preparation: 2016-05-17 Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	24.9	mg/Kg	1	25.0	100	58.2 - 150

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Sample: 419220 - S Wall E 14'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 130152
Prep Batch: 110234

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.02	mg/Kg	1	2.00	101	70 - 130
4-Bromofluorobenzene (4-BFB)			1.68	mg/Kg	1	2.00	84	70 - 130

Sample: 419220 - S Wall E 14'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130158
Prep Batch: 110265

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			24.9	mg/Kg	1	25.0	100	70 - 130
n-Triacontane			28.1	mg/Kg	1	25.0	112	70 - 130

Sample: 419221 - S Wall E 18'

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 130164
Prep Batch: 110271

Analytical Method: E 300.0
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	25.0	mg/Kg	1	25.0

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Sample: 419221 - S Wall E 18'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2016-05-18	Analyzed By:	HJ
QC Batch:	130157	Sample Preparation:	2016-05-17	Prepared By:	HJ
Prep Batch:	110264				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	23.0	mg/Kg	1	25.0	92	58.2 - 150

Sample: 419221 - S Wall E 18'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2016-05-18	Analyzed By:	AK
QC Batch:	130152	Sample Preparation:	2016-05-17	Prepared By:	AK
Prep Batch:	110234				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.88	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			1.77	mg/Kg	1	2.00	88	70 - 130

Sample: 419221 - S Wall E 18'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH ORO	Date Analyzed:	2016-05-18	Analyzed By:	HJ
QC Batch:	130158	Sample Preparation:	2016-05-17	Prepared By:	HJ
Prep Batch:	110265				

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			23.0	mg/Kg	1	25.0	92	70 - 130

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane			25.3	mg/Kg	1	25.0	101	70 - 130

Sample: 419222 - S Wall W 4'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2016-05-17	Analyzed By:	RL
QC Batch:	130164	Sample Preparation:	2016-05-17	Prepared By:	RL
Prep Batch:	110271				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	25.0	mg/Kg	1	25.0

Sample: 419222 - S Wall W 4'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2016-05-18	Analyzed By:	HJ
QC Batch:	130157	Sample Preparation:	2016-05-17	Prepared By:	HJ
Prep Batch:	110264				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1,2,3,4	69.8	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	36.5	mg/Kg	1	25.0	146	58.2 - 150

Sample: 419222 - S Wall W 4'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2016-05-18	Analyzed By:	AK
QC Batch:	130152	Sample Preparation:	2016-05-17	Prepared By:	AK
Prep Batch:	110234				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.93	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			1.71	mg/Kg	1	2.00	86	70 - 130

Sample: 419222 - S Wall W 4'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130158
Prep Batch: 110265

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	36.5	mg/Kg	1	25.0	146	70 - 130
n-Triacontane	Q _{sr}	Q _{sr}	41.9	mg/Kg	1	25.0	168	70 - 130

Sample: 419223 - S Wall W 8'

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 130164
Prep Batch: 110271

Analytical Method: E 300.0
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 419223 - S Wall W 8'

Laboratory: Lubbock
Analysis: TPH DRO
QC Batch: 130157
Prep Batch: 110264

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	25.5	mg/Kg	1	25.0	102	58.2 - 150

Sample: 419223 - S Wall W 8'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 130152
Prep Batch: 110234

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.91	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			1.85	mg/Kg	1	2.00	92	70 - 130

Sample: 419223 - S Wall W 8'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130158
Prep Batch: 110265

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	MDL	PQL Result	PQL	RL Result	RL	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	<50.0		mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			25.5	mg/Kg	1	25.0	102	70 - 130
n-Triacontane			28.4	mg/Kg	1	25.0	114	70 - 130

Sample: 419224 - S Wall W 10'

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 130164
Prep Batch: 110271

Analytical Method: E 300.0
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 419224 - S Wall W 10'

Laboratory: Lubbock
Analysis: TPH DRO
QC Batch: 130159
Prep Batch: 110266

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	24.8	mg/Kg	1	25.0	99	58.2 - 150

Sample: 419224 - S Wall W 10'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 130152
Prep Batch: 110234

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.99	mg/Kg	1	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)			1.99	mg/Kg	1	2.00	100	70 - 130

Sample: 419224 - S Wall W 10'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130160
Prep Batch: 110267

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

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Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	Qs,U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			24.8	mg/Kg	1	25.0	99	70 - 130
n-Triacontane			27.0	mg/Kg	1	25.0	108	70 - 130

Sample: 419225 - S Wall W 14'

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 130164 Date Analyzed: 2016-05-17 Analyzed By: RL
Prep Batch: 110271 Sample Preparation: 2016-05-17 Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	124	mg/Kg	1	25.0

Sample: 419225 - S Wall W 14'

Laboratory: Lubbock
Analysis: TPH DRO Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 130159 Date Analyzed: 2016-05-18 Analyzed By: HJ
Prep Batch: 110266 Sample Preparation: 2016-05-17 Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	24.6	mg/Kg	1	25.0	98	58.2 - 150

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Sample: 419225 - S Wall W 14'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 130152
Prep Batch: 110234

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.86	mg/Kg	1	2.00	93	70 - 130
4-Bromofluorobenzene (4-BFB)			1.62	mg/Kg	1	2.00	81	70 - 130

Sample: 419225 - S Wall W 14'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130160
Prep Batch: 110267

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	MDL Result	PQL Result	RL Result	Units	Dilution	MDL	MDL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			24.6	mg/Kg	1	25.0	98	70 - 130
n-Triacontane			26.7	mg/Kg	1	25.0	107	70 - 130

Sample: 419226 - S Wall W 18'

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 130165
Prep Batch: 110272

Analytical Method: E 300.0
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	120	mg/Kg	1	25.0

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Sample: 419226 - S Wall W 18'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2016-05-18	Analyzed By:	HJ
QC Batch:	130159	Sample Preparation:	2016-05-17	Prepared By:	HJ
Prep Batch:	110266				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	23.2	mg/Kg	1	25.0	93	58.2 - 150

Sample: 419226 - S Wall W 18'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2016-05-18	Analyzed By:	AK
QC Batch:	130152	Sample Preparation:	2016-05-17	Prepared By:	AK
Prep Batch:	110234				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.86	mg/Kg	1	2.00	93	70 - 130
4-Bromofluorobenzene (4-BFB)			1.65	mg/Kg	1	2.00	82	70 - 130

Sample: 419226 - S Wall W 18'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH ORO	Date Analyzed:	2016-05-18	Analyzed By:	HJ
QC Batch:	130160	Sample Preparation:	2016-05-17	Prepared By:	HJ
Prep Batch:	110267				

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			23.2	mg/Kg	1	25.0	93	70 - 130

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane			25.1	mg/Kg	1	25.0	100	70 - 130

Sample: 419227 - E Wall 4'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2016-05-17	Analyzed By:	RL
QC Batch:	130165	Sample Preparation:	2016-05-17	Prepared By:	RL
Prep Batch:	110272				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 419227 - E Wall 4'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2016-05-18	Analyzed By:	HJ
QC Batch:	130159	Sample Preparation:	2016-05-17	Prepared By:	HJ
Prep Batch:	110266				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	26.8	mg/Kg	1	25.0	107	58.2 - 150

Sample: 419227 - E Wall 4'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2016-05-18	Analyzed By:	AK
QC Batch:	130152	Sample Preparation:	2016-05-17	Prepared By:	AK
Prep Batch:	110234				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.92	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			1.82	mg/Kg	1	2.00	91	70 - 130

Sample: 419227 - E Wall 4'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130160
Prep Batch: 110267

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	u		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			26.8	mg/Kg	1	25.0	107	70 - 130
n-Triacontane			28.6	mg/Kg	1	25.0	114	70 - 130

Sample: 419228 - E Wall 8'

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 130165
Prep Batch: 110272

Analytical Method: E 300.0
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 419228 - E Wall 8'

Laboratory: Lubbock
Analysis: TPH DRO
QC Batch: 130159
Prep Batch: 110266

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	u	1,2,3,4	<50.0	mg/Kg	1	50.0

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	23.3	mg/Kg	1	25.0	93	58.2 - 150

Sample: 419228 - E Wall 8'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 130152
Prep Batch: 110234

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.91	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			1.74	mg/Kg	1	2.00	87	70 - 130

Sample: 419228 - E Wall 8'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130160
Prep Batch: 110267

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	MDL	PQL Result	PQL	RL Result	RL	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	<50.0		mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			23.3	mg/Kg	1	25.0	93	70 - 130
n-Triacontane			25.9	mg/Kg	1	25.0	104	70 - 130

Sample: 419229 - E Wall 10'

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 130165
Prep Batch: 110272

Analytical Method: E 300.0
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 419229 - E Wall 10'

Laboratory: Lubbock
Analysis: TPH DRO
QC Batch: 130159
Prep Batch: 110266

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	26.5	mg/Kg	1	25.0	106	58.2 - 150

Sample: 419229 - E Wall 10'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 130152
Prep Batch: 110234

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.82	mg/Kg	1	2.00	91	70 - 130
4-Bromofluorobenzene (4-BFB)			1.68	mg/Kg	1	2.00	84	70 - 130

Sample: 419229 - E Wall 10'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130160
Prep Batch: 110267

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

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Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			26.5	mg/Kg	1	25.0	106	70 - 130
n-Triacontane			28.6	mg/Kg	1	25.0	114	70 - 130

Sample: 419230 - E Wall 14'

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	130165	Date Analyzed:	2016-05-17	Analyzed By:	RL
Prep Batch:	110272	Sample Preparation:	2016-05-17	Prepared By:	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 419230 - E Wall 14'

Laboratory:	Lubbock				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	130159	Date Analyzed:	2016-05-18	Analyzed By:	HJ
Prep Batch:	110266	Sample Preparation:	2016-05-17	Prepared By:	HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	22.5	mg/Kg	1	25.0	90	58.2 - 150

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Sample: 419230 - E Wall 14'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 130152
Prep Batch: 110234

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.84	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			1.75	mg/Kg	1	2.00	88	70 - 130

Sample: 419230 - E Wall 14'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130160
Prep Batch: 110267

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			22.5	mg/Kg	1	25.0	90	70 - 130
n-Triacontane			24.6	mg/Kg	1	25.0	98	70 - 130

Sample: 419231 - E Wall 18'

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 130165
Prep Batch: 110272

Analytical Method: E 300.0
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

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Sample: 419231 - E Wall 18'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2016-05-18	Analyzed By:	HJ
QC Batch:	130159	Sample Preparation:	2016-05-17	Prepared By:	HJ
Prep Batch:	110266				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	26.6	mg/Kg	1	25.0	106	58.2 - 150

Sample: 419231 - E Wall 18'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2016-05-18	Analyzed By:	AK
QC Batch:	130152	Sample Preparation:	2016-05-17	Prepared By:	AK
Prep Batch:	110234				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.97	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			1.86	mg/Kg	1	2.00	93	70 - 130

Sample: 419231 - E Wall 18'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH ORO	Date Analyzed:	2016-05-18	Analyzed By:	HJ
QC Batch:	130160	Sample Preparation:	2016-05-17	Prepared By:	HJ
Prep Batch:	110267				

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			26.6	mg/Kg	1	25.0	106	70 - 130

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane			29.0	mg/Kg	1	25.0	116	70 - 130

Sample: 419232 - W Wall 4'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2016-05-17	Analyzed By:	RL
QC Batch:	130165	Sample Preparation:	2016-05-17	Prepared By:	RL
Prep Batch:	110272				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 419232 - W Wall 4'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2016-05-18	Analyzed By:	HJ
QC Batch:	130159	Sample Preparation:	2016-05-17	Prepared By:	HJ
Prep Batch:	110266				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1,2,3,4	4870	mg/Kg	2	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	217	mg/Kg	2	25.0	868	58.2 - 150

Sample: 419232 - W Wall 4'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2016-05-18	Analyzed By:	AK
QC Batch:	130152	Sample Preparation:	2016-05-17	Prepared By:	AK
Prep Batch:	110234				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		5	248	mg/Kg	10	4.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			18.0	mg/Kg	10	20.0	90	70 - 130
4-Bromofluorobenzene (4-BFB)			22.8	mg/Kg	10	20.0	114	70 - 130

Sample: 419232 - W Wall 4'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130160
Prep Batch: 110267

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO			1080	1080	1080	1080	mg/Kg	2	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	217	mg/Kg	2	25.0	868	70 - 130
n-Triacontane	Q _{sr}	Q _{sr}	168	mg/Kg	2	25.0	672	70 - 130

Sample: 419233 - W Wall 8'

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 130165
Prep Batch: 110272

Analytical Method: E 300.0
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	25.9	mg/Kg	1	25.0

Sample: 419233 - W Wall 8'

Laboratory: Lubbock
Analysis: TPH DRO
QC Batch: 130159
Prep Batch: 110266

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	23.2	mg/Kg	1	25.0	93	58.2 - 150

Sample: 419233 - W Wall 8'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 130152
Prep Batch: 110234

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.89	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			1.74	mg/Kg	1	2.00	87	70 - 130

Sample: 419233 - W Wall 8'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130160
Prep Batch: 110267

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			23.2	mg/Kg	1	25.0	93	70 - 130
n-Triacontane			25.2	mg/Kg	1	25.0	101	70 - 130

Sample: 419234 - W Wall 10'

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 130165
Prep Batch: 110272

Analytical Method: E 300.0
Date Analyzed: 2016-05-17
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 419234 - W Wall 10'

Laboratory: Lubbock
Analysis: TPH DRO
QC Batch: 130159
Prep Batch: 110266

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	23.7	mg/Kg	1	25.0	95	58.2 - 150

Sample: 419234 - W Wall 10'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 130152
Prep Batch: 110234

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.97	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			1.86	mg/Kg	1	2.00	93	70 - 130

Sample: 419234 - W Wall 10'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130160
Prep Batch: 110267

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

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Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			23.7	mg/Kg	1	25.0	95	70 - 130
n-Triacontane			26.0	mg/Kg	1	25.0	104	70 - 130

Sample: 419235 - W Wall 14'

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 130165 Date Analyzed: 2016-05-17 Analyzed By: RL
Prep Batch: 110272 Sample Preparation: 2016-05-17 Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 419235 - W Wall 14'

Laboratory: Lubbock
Analysis: TPH DRO Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 130159 Date Analyzed: 2016-05-18 Analyzed By: HJ
Prep Batch: 110266 Sample Preparation: 2016-05-17 Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	25.3	mg/Kg	1	25.0	101	58.2 - 150

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Sample: 419235 - W Wall 14'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2016-05-18	Analyzed By:	AK
QC Batch:	130152	Sample Preparation:	2016-05-17	Prepared By:	AK
Prep Batch:	110234				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.89	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			1.64	mg/Kg	1	2.00	82	70 - 130

Sample: 419235 - W Wall 14'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH ORO	Date Analyzed:	2016-05-18	Analyzed By:	HJ
QC Batch:	130160	Sample Preparation:	2016-05-17	Prepared By:	HJ
Prep Batch:	110267				

Parameter	Flag	Cert	MDL Result	MDL Result	PQL Result	RL Result	Units	Dilution	MDL	MDL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			25.3	mg/Kg	1	25.0	101	70 - 130
n-Triacontane			26.9	mg/Kg	1	25.0	108	70 - 130

Sample: 419236 - W Wall 18'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2016-05-17	Analyzed By:	RL
QC Batch:	130166	Sample Preparation:	2016-05-17	Prepared By:	RL
Prep Batch:	110273				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	89.5	mg/Kg	1	25.0

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Sample: 419236 - W Wall 18'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2016-05-18	Analyzed By:	HJ
QC Batch:	130159	Sample Preparation:	2016-05-17	Prepared By:	HJ
Prep Batch:	110266				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	28.0	mg/Kg	1	25.0	112	58.2 - 150

Sample: 419236 - W Wall 18'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2016-05-18	Analyzed By:	AK
QC Batch:	130152	Sample Preparation:	2016-05-17	Prepared By:	AK
Prep Batch:	110234				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.91	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			1.78	mg/Kg	1	2.00	89	70 - 130

Sample: 419236 - W Wall 18'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH ORO	Date Analyzed:	2016-05-18	Analyzed By:	HJ
QC Batch:	130160	Sample Preparation:	2016-05-17	Prepared By:	HJ
Prep Batch:	110267				

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			28.0	mg/Kg	1	25.0	112	70 - 130

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sample continued ...

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane			30.7	mg/Kg	1	25.0	123	70 - 130

Sample: 419237 - Bottom 24'

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2016-05-17	Analyzed By:	RL
QC Batch:	130166	Sample Preparation:	2016-05-17	Prepared By:	RL
Prep Batch:	110273				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	57.5	mg/Kg	1	25.0

Sample: 419237 - Bottom 24'

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2016-05-18	Analyzed By:	HJ
QC Batch:	130159	Sample Preparation:	2016-05-17	Prepared By:	HJ
Prep Batch:	110266				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	25.3	mg/Kg	1	25.0	101	58.2 - 150

Sample: 419237 - Bottom 24'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2016-05-18	Analyzed By:	AK
QC Batch:	130152	Sample Preparation:	2016-05-17	Prepared By:	AK
Prep Batch:	110234				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.84	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			1.71	mg/Kg	1	2.00	86	70 - 130

Sample: 419237 - Bottom 24'

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130160
Prep Batch: 110267

Analytical Method: S 8015 D
Date Analyzed: 2016-05-18
Sample Preparation: 2016-05-17

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	MDL	MDL	MDL	Units	Dilution	MDL	MDL	MDL	MDL
ORO	u		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			25.3	mg/Kg	1	25.0	101	70 - 130
n-Triacontane			27.5	mg/Kg	1	25.0	110	70 - 130

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Method Blanks

Method Blank (1) QC Batch: 130118

QC Batch: 130118 Date Analyzed: 2016-05-17 Analyzed By: AK
Prep Batch: 110233 QC Preparation: 2016-05-16 Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		5	<1.76	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.97	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			1.56	mg/Kg	1	2.00	78	70 - 130

Method Blank (1) QC Batch: 130148

QC Batch: 130148 Date Analyzed: 2016-05-17 Analyzed By: RL
Prep Batch: 110258 QC Preparation: 2016-05-17 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		3,4,6	<4.44	mg/Kg	25

Method Blank (1) QC Batch: 130152

QC Batch: 130152 Date Analyzed: 2016-05-18 Analyzed By: AK
Prep Batch: 110234 QC Preparation: 2016-05-17 Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		5	<1.76	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.99	mg/Kg	1	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)			1.59	mg/Kg	1	2.00	80	70 - 130

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Method Blank (1) QC Batch: 130157

QC Batch: 130157
Prep Batch: 110264

Date Analyzed: 2016-05-18
QC Preparation: 2016-05-17

Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1,2,3,4	<8.47	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	24.8	mg/Kg	1	25.0	99	58.2 - 150

Method Blank (1) QC Batch: 130158

QC Batch: 130158
Prep Batch: 110265

Date Analyzed: 2016-05-18
QC Preparation: 2016-05-17

Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
ORO			<7.48	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			24.8	mg/Kg	1	25.0	99	70 - 130
n-Triacontane			26.6	mg/Kg	1	25.0	106	70 - 130

Method Blank (1) QC Batch: 130159

QC Batch: 130159
Prep Batch: 110266

Date Analyzed: 2016-05-18
QC Preparation: 2016-05-17

Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1,2,3,4	<8.47	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	21.0	mg/Kg	1	25.0	84	58.2 - 150

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Method Blank (1) QC Batch: 130160

QC Batch: 130160
Prep Batch: 110267

Date Analyzed: 2016-05-18
QC Preparation: 2016-05-17

Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
ORO			<7.48	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			21.0	mg/Kg	1	25.0	84	70 - 130
n-Triacontane			22.7	mg/Kg	1	25.0	91	70 - 130

Method Blank (1) QC Batch: 130164

QC Batch: 130164
Prep Batch: 110271

Date Analyzed: 2016-05-17
QC Preparation: 2016-05-17

Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		3,4,6	<4.44	mg/Kg	25

Method Blank (1) QC Batch: 130165

QC Batch: 130165
Prep Batch: 110272

Date Analyzed: 2016-05-17
QC Preparation: 2016-05-17

Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		3,4,6	<4.44	mg/Kg	25

Method Blank (1) QC Batch: 130166

QC Batch: 130166
Prep Batch: 110273

Date Analyzed: 2016-05-17
QC Preparation: 2016-05-17

Analyzed By: RL
Prepared By: RL

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Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		3,4,6	<4.44	mg/Kg	25

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 130118
Prep Batch: 110233

Date Analyzed: 2016-05-17
QC Preparation: 2016-05-16

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		5	22.3	mg/Kg	1	20.0	<1.76	112	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		5	22.0	mg/Kg	1	20.0	<1.76	110	70 - 130	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.96	1.94	mg/Kg	1	2.00	98	97	70 - 130
4-Bromofluorobenzene (4-BFB)	1.80	1.76	mg/Kg	1	2.00	90	88	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 130148
Prep Batch: 110258

Date Analyzed: 2016-05-17
QC Preparation: 2016-05-17

Analyzed By: RL
Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,4,6	244	mg/Kg	1	250	<4.44	98	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3,4,6	244	mg/Kg	1	250	<4.44	98	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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Laboratory Control Spike (LCS-1)

QC Batch: 130152
Prep Batch: 110234

Date Analyzed: 2016-05-18
QC Preparation: 2016-05-17

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		5	22.0	mg/Kg	1	20.0	<1.76	110	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		5	22.5	mg/Kg	1	20.0	<1.76	112	70 - 130	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.92	1.96	mg/Kg	1	2.00	96	98	70 - 130
4-Bromofluorobenzene (4-BFB)	1.79	1.84	mg/Kg	1	2.00	90	92	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 130157
Prep Batch: 110264

Date Analyzed: 2016-05-18
QC Preparation: 2016-05-17

Analyzed By: HJ
Prepared By: HJ

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3,4	535	mg/Kg	1	500	<8.47	107	68.5 - 136

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3,4	584	mg/Kg	1	500	<8.47	117	68.5 - 136	9	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

		LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate		Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	3	23.0	24.1	mg/Kg	1	25.0	92	96	58.2 - 150

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Laboratory Control Spike (LCS-1)

QC Batch: 130158
Prep Batch: 110265

Date Analyzed: 2016-05-18
QC Preparation: 2016-05-17

Analyzed By: HJ
Prepared By: HJ

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	23.0	23.0	mg/Kg	1	25.0	92	92	70 - 130
n-Triacontane	21.5	22.0	mg/Kg	1	25.0	86	88	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 130159
Prep Batch: 110266

Date Analyzed: 2016-05-18
QC Preparation: 2016-05-17

Analyzed By: HJ
Prepared By: HJ

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3,4	555	mg/Kg	1	500	<8.47	111	68.5 - 136

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3,4	550	mg/Kg	1	500	<8.47	110	68.5 - 136	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate		LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	3	24.1	23.5	mg/Kg	1	25.0	96	94	58.2 - 150

Laboratory Control Spike (LCS-1)

QC Batch: 130160
Prep Batch: 110267

Date Analyzed: 2016-05-18
QC Preparation: 2016-05-17

Analyzed By: HJ
Prepared By: HJ

Surrogate		LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane		24.1	23.5	mg/Kg	1	25.0	96	94	70 - 130
n-Triacontane		21.5	21.0	mg/Kg	1	25.0	86	84	70 - 130

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Laboratory Control Spike (LCS-1)

QC Batch: 130164
Prep Batch: 110271

Date Analyzed: 2016-05-17
QC Preparation: 2016-05-17

Analyzed By: RL
Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,4,6	248	mg/Kg	1	250	<4.44	99	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3,4,6	249	mg/Kg	1	250	<4.44	100	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 130165
Prep Batch: 110272

Date Analyzed: 2016-05-17
QC Preparation: 2016-05-17

Analyzed By: RL
Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,4,6	248	mg/Kg	1	250	<4.44	99	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3,4,6	263	mg/Kg	1	250	<4.44	105	90 - 110	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 130166
Prep Batch: 110273

Date Analyzed: 2016-05-17
QC Preparation: 2016-05-17

Analyzed By: RL
Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,4,6	246	mg/Kg	1	250	<4.44	98	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3,4,6	249	mg/Kg	1	250	<4.44	100	90 - 110	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 419152

QC Batch: 130118
Prep Batch: 110233

Date Analyzed: 2016-05-17
QC Preparation: 2016-05-16

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		5	18.0	mg/Kg	2	20.0	<3.52	90	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		5	20.6	mg/Kg	2	20.0	<3.52	103	70 - 130	14	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	3.83	4.01	mg/Kg	2	4	96	100	70 - 130
4-Bromofluorobenzene (4-BFB)	3.88	4.11	mg/Kg	2	4	97	103	70 - 130

Matrix Spike (MS-1) Spiked Sample: 419212

QC Batch: 130148
Prep Batch: 110258

Date Analyzed: 2016-05-17
QC Preparation: 2016-05-17

Analyzed By: RL
Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,4,6	264	mg/Kg	1	250	7.13	103	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3,4,6	256	mg/Kg	1	250	7.13	100	80 - 120	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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Matrix Spike (MS-1) Spiked Sample: 419220

QC Batch: 130152
Prep Batch: 110234

Date Analyzed: 2016-05-18
QC Preparation: 2016-05-17

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		5	17.6	mg/Kg	1	20.0	<1.76	88	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		5	15.2	mg/Kg	1	20.0	<1.76	76	70 - 130	15	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.77	1.80	mg/Kg	1	2	88	90	70 - 130
4-Bromofluorobenzene (4-BFB)	1.80	1.83	mg/Kg	1	2	90	92	70 - 130

Matrix Spike (MS-1) Spiked Sample: 419214

QC Batch: 130157
Prep Batch: 110264

Date Analyzed: 2016-05-18
QC Preparation: 2016-05-17

Analyzed By: HJ
Prepared By: HJ

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3,4	610	mg/Kg	1	500	<8.47	122	49.3 - 138

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3,4	585	mg/Kg	1	500	<8.47	117	49.3 - 138	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

		MS	MSD			Spike	MS	MSD	Rec.
Surrogate		Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	3	32.6	33.0	mg/Kg	1	25	130	132	58.2 - 150

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Matrix Spike (MS-1) Spiked Sample: 419214

QC Batch: 130158
Prep Batch: 110265

Date Analyzed: 2016-05-18
QC Preparation: 2016-05-17

Analyzed By: HJ
Prepared By: HJ

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	30.9	30.6	mg/Kg	1	25	124	122	70 - 130
n-Triacontane	29.7	27.6	mg/Kg	1	25	119	110	70 - 130

Matrix Spike (MS-1) Spiked Sample: 419224

QC Batch: 130159
Prep Batch: 110266

Date Analyzed: 2016-05-18
QC Preparation: 2016-05-17

Analyzed By: HJ
Prepared By: HJ

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3,4	672	mg/Kg	1	500	<8.47	134	49.3 - 138

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3,4	690	mg/Kg	1	500	<8.47	138	49.3 - 138	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate		MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	3	32.9	35.6	mg/Kg	1	25	132	142	58.2 - 150

Matrix Spike (MS-1) Spiked Sample: 419224

QC Batch: 130160
Prep Batch: 110267

Date Analyzed: 2016-05-18
QC Preparation: 2016-05-17

Analyzed By: HJ
Prepared By: HJ

Surrogate		MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane		25.1	28.1	mg/Kg	1	25	100	112	70 - 130
n-Triacontane		23.5	24.3	mg/Kg	1	25	94	97	70 - 130

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Matrix Spike (MS-1) Spiked Sample: 419225

QC Batch: 130164
Prep Batch: 110271

Date Analyzed: 2016-05-17
QC Preparation: 2016-05-17

Analyzed By: RL
Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,4,6	380	mg/Kg	1	250	124	102	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3,4,6	382	mg/Kg	1	250	124	103	80 - 120	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 419235

QC Batch: 130165
Prep Batch: 110272

Date Analyzed: 2016-05-17
QC Preparation: 2016-05-17

Analyzed By: RL
Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,4,6	229	mg/Kg	1	250	19.3	84	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3,4,6	274	mg/Kg	1	250	19.3	102	80 - 120	18	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 419237

QC Batch: 130166
Prep Batch: 110273

Date Analyzed: 2016-05-17
QC Preparation: 2016-05-17

Analyzed By: RL
Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,4,6	313	mg/Kg	1	250	57.5	102	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3,4,6	324	mg/Kg	1	250	57.5	107	80 - 120	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Calibration Standards

Standard (CCV-1)

QC Batch: 130118

Date Analyzed: 2016-05-17

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	1.14	114	80 - 120	2016-05-17

Standard (CCV-2)

QC Batch: 130118

Date Analyzed: 2016-05-17

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	0.993	99	80 - 120	2016-05-17

Standard (CCV-3)

QC Batch: 130118

Date Analyzed: 2016-05-17

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	0.972	97	80 - 120	2016-05-17

Standard (CCV-1)

QC Batch: 130148

Date Analyzed: 2016-05-17

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,6	mg/Kg	25.0	25.5	102	90 - 110	2016-05-17

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Standard (CCV-2)

QC Batch: 130148

Date Analyzed: 2016-05-17

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,6	mg/Kg	25.0	24.3	97	90 - 110	2016-05-17

Standard (CCV-1)

QC Batch: 130152

Date Analyzed: 2016-05-18

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	0.972	97	80 - 120	2016-05-18

Standard (CCV-2)

QC Batch: 130152

Date Analyzed: 2016-05-18

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	0.984	98	80 - 120	2016-05-18

Standard (CCV-3)

QC Batch: 130152

Date Analyzed: 2016-05-18

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	0.945	94	80 - 120	2016-05-18

Standard (CCV-1)

QC Batch: 130157

Date Analyzed: 2016-05-18

Analyzed By: HJ

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3,4	mg/Kg	500	561	112	80 - 120	2016-05-18

Standard (CCV-2)

QC Batch: 130157

Date Analyzed: 2016-05-18

Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3,4	mg/Kg	500	582	116	80 - 120	2016-05-18

Standard (CCV-1)

QC Batch: 130159

Date Analyzed: 2016-05-18

Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3,4	mg/Kg	500	582	116	80 - 120	2016-05-18

Standard (CCV-2)

QC Batch: 130159

Date Analyzed: 2016-05-18

Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3,4	mg/Kg	500	523	105	80 - 120	2016-05-18

Standard (CCV-1)

QC Batch: 130164

Date Analyzed: 2016-05-17

Analyzed By: RL

Report Date: May 18, 2016
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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,6	mg/Kg	25.0	25.0	100	90 - 110	2016-05-17

Standard (CCV-2)

QC Batch: 130164

Date Analyzed: 2016-05-17

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,6	mg/Kg	25.0	25.0	100	90 - 110	2016-05-17

Standard (CCV-1)

QC Batch: 130165

Date Analyzed: 2016-05-17

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,6	mg/Kg	25.0	25.0	100	90 - 110	2016-05-17

Standard (CCV-2)

QC Batch: 130165

Date Analyzed: 2016-05-17

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,6	mg/Kg	25.0	24.6	98	90 - 110	2016-05-17

Standard (CCV-1)

QC Batch: 130166

Date Analyzed: 2016-05-17

Analyzed By: RL

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,6	mg/Kg	25.0	24.6	98	90 - 110	2016-05-17

Standard (CCV-2)

QC Batch: 130166

Date Analyzed: 2016-05-17

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,6	mg/Kg	25.0	24.9	100	90 - 110	2016-05-17

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	L-A-B	L2418	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	LELAP	LELAP-02003	Lubbock
4	NELAP	T104704219-16-12	Lubbock
5	NELAP	T104704392-14-8	Midland
6		2015-066	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less than ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.

F	Description
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

WO#: 16051615



507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

CHAIN-OF-CUSTODY

DATE: 5/16/2016 PAGE 1 OF 3
LAB WORK ORDER #:
PROJECT LOCATION OR NAME: Townsend 16" Lovington, NM
LAI PROJECT #: 15-0143-01 COLLECTOR: Michael Gant

Data Reported to:

TRRP report? <input type="checkbox"/> Yes <input type="checkbox"/> No		TIME ZONE: Time zone/State:	S=SOIL W=WATER A=AIR		P=PAINT SL=SLUDGE OT=OTHER		Matrix	# of Containers	PRESERVATION				ANALYSES																									FIELD NOTES																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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RELINQUISHED BY: (Signature) <i>Michael Gant</i>	DATE/TIME 5/16/16 10:06	RECEIVED BY: (Signature) <i>Wendy Ward</i>	DATE/TIME 5/16/16 10:06	TURN AROUND TIME NORMAL <input type="checkbox"/> 1 DAY <input type="checkbox"/> 2 DAY <input checked="" type="checkbox"/> OTHER <input type="checkbox"/>	LABORATORY USE ONLY: RECEIVING TEMP: 3.1 THERM #: IR-1
RELINQUISHED BY: (Signature) <i>Wendy Ward</i>	DATE/TIME 5/16/16 11:19	RECEIVED BY: (Signature) <i>Wendy Ward</i>	DATE/TIME 5/16/16 11:19	CUSTODY SEALS - <input type="checkbox"/> BROKEN <input type="checkbox"/> INTACT <input type="checkbox"/> NOT USED	CARRIER BILL # 25 ZT 742941
RELINQUISHED BY: (Signature) <i>Wendy Ward</i>	DATE/TIME 5/17/16	RECEIVED BY: (Signature) <i>Wendy Ward</i>	DATE/TIME 5/17/16	HAND DELIVERED <input checked="" type="checkbox"/>	

AT

CHAIN-OF-CUSTODY

507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 5/16/2016

PAGE 3 OF 3

LAB WORK ORDER #:

PO #:

PROJECT LOCATION OR NAME: Townsend¹⁶ Lovington, NM

LAI PROJECT #: S-0143-01 COLLECTOR: Michael CarH

TRRP report? ☐ Yes ☐ No

TIME ZONE:
Time zone/State:

S=SOIL
W=WATER
A=AIR
P=PAINT
SL=SLUDGE
OT=OTHER

P=PAINT
SL=SLUDGE
OT=OTHER

DECEP/ATION

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Lab #

Time

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FIELD NOTES

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DATE/TIME

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DATE/TIME:

RECEIVED BY: (Signature)

TURN AROUND TIME

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1 DAY ☐

1 DAY ☐ 2 DAY ☒

2 DAY ☒

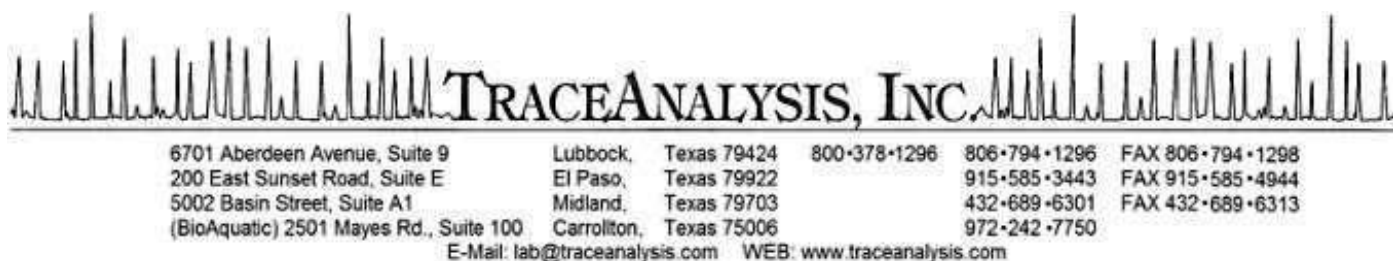
LABORATORY USE ONLY:

22

RECEIVING TEMP: 53.1 THERM #: 15
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED

☐ Carried Bill #

☒ HAND DELIVERED



Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Michael Gant
Larson and Associates, Inc.

Report Date: October 5, 2016

P. O. Box 50685
Midland, TX, 79710

Work Order: 16100304



Project Name: Townsend 16" Pipeline
Project Number: 15-0143-01

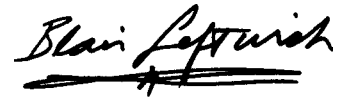
Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
429494	SP-1	soil	2016-09-30	10:00	2016-09-30
429495	SP-2	soil	2016-09-30	10:05	2016-09-30
429496	SP-3	soil	2016-09-30	10:10	2016-09-30
429497	SP-4	soil	2016-09-30	10:15	2016-09-30

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.

This report consists of a total of 20 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

A handwritten signature in black ink, reading "Blair Leftwich". The signature is written in a cursive style and is underlined with a thick, dark stroke.

Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Johnny Grindstaff, Operations Manager

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Case Narrative

Samples for project Townsend 16" Pipeline were received by TraceAnalysis, Inc. on 2016-09-30 and assigned to work order 16100304. Samples for work order 16100304 were received intact at a temperature of 14.8 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	112843	2016-10-04 at 08:00	133117	2016-10-04 at 10:27
TPH DRO	S 8015 D	112824	2016-10-03 at 14:00	133096	2016-10-04 at 12:28
TPH GRO	S 8015 D	112848	2016-10-04 at 13:00	133124	2016-10-04 at 13:48
TPH ORO	S 8015 D	112824	2016-10-03 at 14:00	133097	2016-10-04 at 12:29

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 16100304 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 429494 - SP-1

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2016-10-04	Analyzed By:	RL
QC Batch:	133117	Sample Preparation:	2016-10-04	Prepared By:	RL
Prep Batch:	112843				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		5,6	<25.0	mg/Kg	1	25.0

Sample: 429494 - SP-1

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2016-10-04	Analyzed By:	HJ
QC Batch:	133096	Sample Preparation:	2016-10-03	Prepared By:	HJ
Prep Batch:	112824				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	2,3,5	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			23.5	mg/Kg	1	25.0	94	58.2 - 150

Sample: 429494 - SP-1

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2016-10-04	Analyzed By:	MT
QC Batch:	133124	Sample Preparation:	2016-10-04	Prepared By:	MT
Prep Batch:	112848				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	2,3,5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.86	mg/Kg	1	2.00	93	76.4 - 123

continued ...

Report Date: October 5, 2016
15-0143-01

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Townsend 16" Pipeline

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sample continued ...

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-Bromofluorobenzene (4-BFB)			1.79	mg/Kg	1	2.00	90	69.4 - 120

Sample: 429494 - SP-1

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH ORO	Date Analyzed:	2016-10-04	Analyzed By:	HJ
QC Batch:	133097	Sample Preparation:	2016-10-03	Prepared By:	HJ
Prep Batch:	112824				

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	u		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			23.5	mg/Kg	1	25.0	94	70 - 130

Sample: 429495 - SP-2

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2016-10-04	Analyzed By:	RL
QC Batch:	133117	Sample Preparation:	2016-10-04	Prepared By:	RL
Prep Batch:	112843				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		5,6	<25.0	mg/Kg	1	25.0

Sample: 429495 - SP-2

Laboratory:	Lubbock	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO	Date Analyzed:	2016-10-04	Analyzed By:	HJ
QC Batch:	133096	Sample Preparation:	2016-10-03	Prepared By:	HJ
Prep Batch:	112824				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	u	2,3,5	<50.0	mg/Kg	1	50.0

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			20.5	mg/Kg	1	25.0	82	58.2 - 150

Sample: 429495 - SP-2

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 133124
Prep Batch: 112848

Analytical Method: S 8015 D
Date Analyzed: 2016-10-04
Sample Preparation: 2016-10-04

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	2,3,5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.99	mg/Kg	1	2.00	100	76.4 - 123
4-Bromofluorobenzene (4-BFB)			1.97	mg/Kg	1	2.00	98	69.4 - 120

Sample: 429495 - SP-2

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 133097
Prep Batch: 112824

Analytical Method: S 8015 D
Date Analyzed: 2016-10-04
Sample Preparation: 2016-10-03

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	MDL	PQL Result	PQL	RL Result	RL	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	<50.0		mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			20.5	mg/Kg	1	25.0	82	70 - 130

Sample: 429496 - SP-3

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 133117
Prep Batch: 112843

Analytical Method: E 300.0
Date Analyzed: 2016-10-04
Sample Preparation: 2016-10-04

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

Report Date: October 5, 2016
15-0143-01

Work Order: 16100304
Townsend 16" Pipeline

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		5,6	<25.0	mg/Kg	1	25.0

Sample: 429496 - SP-3

Laboratory: Lubbock
Analysis: TPH DRO
QC Batch: 133096
Prep Batch: 112824

Analytical Method: S 8015 D
Date Analyzed: 2016-10-04
Sample Preparation: 2016-10-03

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		2,3,5	162	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			37.3	mg/Kg	1	25.0	149	58.2 - 150

Sample: 429496 - SP-3

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 133124
Prep Batch: 112848

Analytical Method: S 8015 D
Date Analyzed: 2016-10-04
Sample Preparation: 2016-10-04

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	2,3,5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.86	mg/Kg	1	2.00	93	76.4 - 123
4-Bromofluorobenzene (4-BFB)			1.89	mg/Kg	1	2.00	94	69.4 - 120

Sample: 429496 - SP-3

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 133097
Prep Batch: 112824

Analytical Method: S 8015 D
Date Analyzed: 2016-10-04
Sample Preparation: 2016-10-03

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

continued ...

Report Date: October 5, 2016
15-0143-01

Work Order: 16100304
Townsend 16" Pipeline

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sample 429496 continued ...

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	u		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0
Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits			
n-Tricosane	Q _{sr}	Q _{sr}		37.3	mg/Kg	1	25.0	149	70 - 130			

Sample: 429497 - SP-4

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 133117 Date Analyzed: 2016-10-04 Analyzed By: RL
Prep Batch: 112843 Sample Preparation: 2016-10-04 Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		5,6	<25.0	mg/Kg	1	25.0

Sample: 429497 - SP-4

Laboratory: Lubbock
Analysis: TPH DRO Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 133096 Date Analyzed: 2016-10-04 Analyzed By: HJ
Prep Batch: 112824 Sample Preparation: 2016-10-03 Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	2,3,5	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			20.9	mg/Kg	1	25.0	84	58.2 - 150

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15-0143-01

Work Order: 16100304
Townsend 16" Pipeline

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Sample: 429497 - SP-4

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 133124
Prep Batch: 112848

Analytical Method: S 8015 D
Date Analyzed: 2016-10-04
Sample Preparation: 2016-10-04

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	2,3,5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.05	mg/Kg	1	2.00	102	76.4 - 123
4-Bromofluorobenzene (4-BFB)			2.02	mg/Kg	1	2.00	101	69.4 - 120

Sample: 429497 - SP-4

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 133097
Prep Batch: 112824

Analytical Method: S 8015 D
Date Analyzed: 2016-10-04
Sample Preparation: 2016-10-03

Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	MDL Result	PQL Result	RL Result	Units	Dilution	MDL	MDL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			20.9	mg/Kg	1	25.0	84	70 - 130

Method Blanks

Method Blank (1) QC Batch: 133096

QC Batch: 133096 Date Analyzed: 2016-10-04 Analyzed By: HJ
Prep Batch: 112824 QC Preparation: 2016-10-03 Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		2,3,5	<8.47	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			20.5	mg/Kg	1	25.0	82	58.2 - 150

Method Blank (1) QC Batch: 133097

QC Batch: 133097 Date Analyzed: 2016-10-04 Analyzed By: HJ
Prep Batch: 112824 QC Preparation: 2016-10-03 Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
ORO			<7.48	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			23.6	mg/Kg	1	25.0	94	70 - 130

Method Blank (1) QC Batch: 133117

QC Batch: 133117 Date Analyzed: 2016-10-04 Analyzed By: RL
Prep Batch: 112843 QC Preparation: 2016-10-04 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		5,6	<4.44	mg/Kg	25

Method Blank (1) QC Batch: 133124

QC Batch: 133124
Prep Batch: 112848

Date Analyzed: 2016-10-04
QC Preparation: 2016-10-04

Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		2,3,5	<0.271	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.03	mg/Kg	1	2.00	102	76.4 - 123
4-Bromofluorobenzene (4-BFB)			2.04	mg/Kg	1	2.00	102	69.4 - 120

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 133096
Prep Batch: 112824

Date Analyzed: 2016-10-04
QC Preparation: 2016-10-03

Analyzed By: HJ
Prepared By: HJ

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2,3,5	438	mg/Kg	1	500	<8.47	88	68.5 - 136

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		2,3,5	423	mg/Kg	1	500	<8.47	85	68.5 - 136	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	26.8	25.0	mg/Kg	1	25.0	107	100	58.2 - 150

Laboratory Control Spike (LCS-1)

QC Batch: 133097
Prep Batch: 112824

Date Analyzed: 2016-10-04
QC Preparation: 2016-10-03

Analyzed By: HJ
Prepared By: HJ

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	30.6	28.6	mg/Kg	1	25.0	122	114	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 133117
Prep Batch: 112843

Date Analyzed: 2016-10-04
QC Preparation: 2016-10-04

Analyzed By: RL
Prepared By: RL

continued ...

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control spikes continued ...

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		5,6	234	mg/Kg	1	250	<4.44	94	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		5,6	235	mg/Kg	1	250	<4.44	94	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 133124
Prep Batch: 112848

Date Analyzed: 2016-10-04
QC Preparation: 2016-10-04

Analyzed By: MT
Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		2,3,5	16.1	mg/Kg	1	20.0	<0.271	80	64.2 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		2,3,5	16.9	mg/Kg	1	20.0	<0.271	84	64.2 - 120	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.05	1.66	mg/Kg	1	2.00	102	83	76.4 - 123
4-Bromofluorobenzene (4-BFB)	2.26	2.10	mg/Kg	1	2.00	113	105	69.4 - 120

Matrix Spikes

Matrix Spike (xMS-1) Spiked Sample: 429469

QC Batch: 133096
Prep Batch: 112824

Date Analyzed: 2016-10-04
QC Preparation: 2016-10-03

Analyzed By: HJ
Prepared By: HJ

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2,3,5	423	mg/Kg	1	500	<8.47	85	49.3 - 138

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		2,3,5	420	mg/Kg	1	500	<8.47	84	49.3 - 138	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	26.1	25.8	mg/Kg	1	25	104	103	58.2 - 150

Matrix Spike (xMS-1) Spiked Sample: 429469

QC Batch: 133097
Prep Batch: 112824

Date Analyzed: 2016-10-04
QC Preparation: 2016-10-03

Analyzed By: HJ
Prepared By: HJ

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	26.1	25.8	mg/Kg	1	25	104	103	70 - 130

Matrix Spike (MS-1) Spiked Sample: 429497

QC Batch: 133117
Prep Batch: 112843

Date Analyzed: 2016-10-04
QC Preparation: 2016-10-04

Analyzed By: RL
Prepared By: RL

continued ...

matrix spikes continued ...

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		5,6	245	mg/Kg	1	250	9.71	94	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		5,6	240	mg/Kg	1	250	9.71	92	80 - 120	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 429342

QC Batch: 133124
Prep Batch: 112848

Date Analyzed: 2016-10-04
QC Preparation: 2016-10-04

Analyzed By: MT
Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		2,3,5	12.6	mg/Kg	1	20.0	<0.271	63	35.3 - 129

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		2,3,5	14.2	mg/Kg	1	20.0	<0.271	71	35.3 - 129	12	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.73	1.68	mg/Kg	1	2	86	84	76.4 - 123
4-Bromofluorobenzene (4-BFB)	2.02	2.15	mg/Kg	1	2	101	108	69.4 - 120

Calibration Standards

Standard (CCV-1)

QC Batch: 133096

Date Analyzed: 2016-10-04

Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2,3,5	mg/Kg	500	480	96	80 - 120	2016-10-04

Standard (CCV-2)

QC Batch: 133096

Date Analyzed: 2016-10-04

Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2,3,5	mg/Kg	500	491	98	80 - 120	2016-10-04

Standard (CCV-1)

QC Batch: 133117

Date Analyzed: 2016-10-04

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		5,6	mg/Kg	25.0	23.9	96	90 - 110	2016-10-04

Standard (CCV-2)

QC Batch: 133117

Date Analyzed: 2016-10-04

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		5,6	mg/Kg	25.0	23.3	93	90 - 110	2016-10-04

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Standard (CCV-1)

QC Batch: 133124

Date Analyzed: 2016-10-04

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		2,3,5	mg/Kg	1.00	1.00	100	80 - 120	2016-10-04

Standard (CCV-2)

QC Batch: 133124

Date Analyzed: 2016-10-04

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		2,3,5	mg/Kg	1.00	0.923	92	80 - 120	2016-10-04

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	L-A-B	L2418.01	El Paso
2	L-A-B	L2418	Lubbock
3	Kansas	Kansas E-10317	Lubbock
4	NELAP	T104704221-15-6	El Paso
5	NELAP	T104704219-16-12	Lubbock
6		2015-066	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less than ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.

F	Description
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

Appendix F

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

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

RECEIVED

By JKeyes at 8:30 am, Jun 20, 2016

accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	Targa Midstream Services, LLC	Contact	Ralph England
Address	P.O. Box 1689, Lovington, NM 88260	Telephone No.	575-441-4653
Facility Name	Townsend 16" Pipeline	Facility Type	Natural Gas Pipeline
Surface Owner	Dan Fields	Mineral Owner	
		API No.	

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
I	3	16S	35E	1360	South	682	East	Lea

Latitude 32°56'51.14"N Longitude 103°26'20.45"W

NATURE OF RELEASE

Type of Release	Natural Gas Condensate	Volume of Release	Unknown	Volume Recovered	0 bbl
Source of Release	16" Steel Line	Date and Hour of Occurrence	Unknown	Date and Hour of Discovery	7/14/15 10:00am
Was Immediate Notice Given?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?			
By Whom?	Date and Hour				
Was a Watercourse Reached?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.			

If a Watercourse was Impacted, Describe Fully.*
N/A

Describe Cause of Problem and Remedial Action Taken.*

The release was caused by corrosion of a 16" steel line transporting natural gas. Release area was sampled on Thursday, July 16, 2015 by Larson & Associates, Inc. to delineate horizontal and vertical impacts. Scarborough Drilling Company, Inc., under supervision from Larson & Associates, Inc., drilled 5 borings (SB-1 to SB-5) down to 10 feet and 25 feet, respectively. Soil samples were collected every 5 feet. Lab results indicated contamination down to about 15 feet bgs. The remaining soil was excavated to about 25 feet bgs.

Describe Area Affected and Cleanup Action Taken.*

Contaminated soil was excavated down to approximately 25 feet bgs and disposed at J Dan Landfarm (NM1-45-0). Please see attached lab results from samples collected on May 13, 2016 and samples location map (Figure 3). Lab results show residual hydrocarbons above the RRAL (1,000 mg/Kg) beneath the pipe on the west side of the excavation that will be removed following backfilling the main excavation to provide support for the exposed pipe.

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

Signature: <i>Ralph England</i>		OIL CONSERVATION DIVISION	
Printed Name: Ralph England		Approved by Environmental Specialist: <i>Jane Keyes</i>	
Title: Field Supervisor		Approval Date: 06/20/2016	Expiration Date: 08/20/2016
E-mail Address: REngland@targaresources.com		Conditions of Approval: Discrete samples only. Delineate and remediate per NMOCD guidelines.	
Date: 6/7/2016 Phone: 575-441-4653		Attached <input type="checkbox"/> IRP 4312	

Attach Additional Sheets If Necessary

nJXK1617230387
pJXK1617230580

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised August 8, 2011

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	Targa Midstream Services, LLC	Contact	Ralph England
Address	P.O. Box 1689, Lovington, NM 88260	Telephone No.	575-441-4653
Facility Name	Townsend 16" Pipeline	Facility Type	Natural Gas Pipeline
Surface Owner	Dan Fields	Mineral Owner	API No.

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
I	3	16S	35E	1360	South	682	East	Lea

Latitude 32°56'51.14"N Longitude 103°26'20.45"W

NATURE OF RELEASE

Type of Release	Natural Gas Condensate	Volume of Release	Unknown	Volume Recovered	0 bbl
Source of Release	16" Steel Line	Date and Hour of Occurrence		Date and Hour of Discovery	
Was Immediate Notice Given?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?			
By Whom?		Date and Hour			
Was a Watercourse Reached?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.			

If a Watercourse was Impacted, Describe Fully.*
N/A

Describe Cause of Problem and Remedial Action Taken.*

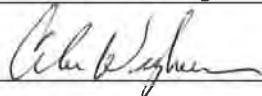
The release was caused by corrosion of a 16" steel line transporting natural gas. Release area was sampled on Thursday, July 16, 2015 by Larson & Associates, Inc. to delineate horizontal and vertical impacts. Scarborough Drilling Company, Inc., under supervision from Larson & Associates, Inc., drilled 5 borings (SB-1 to SB-5) down to 10 feet and 25 feet, respectively. Soil samples were collected every 5 feet. Lab results indicated contamination down to about 15 feet bgs. The remaining soil was excavated to about 25 feet bgs.

Describe Area Affected and Cleanup Action Taken.*

Contaminated soil was excavated down to approximately 25 feet bgs and disposed at J Dan Landfarm (NM1-45-0) and Gandy Marley Landfill (NM-711-1-0019). Please see attached lab results from samples collected on May 13, 2016 and samples location map (Figure 3). Partial backfilling was performed between September 19-20, 2016 to allow safe collection of soil samples at the west side of the excavation after the residual staining was removed. Confirmation samples were collected on September 30, 2016; please see attached lab results (Figure 3).

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

OIL CONSERVATION DIVISION

Signature: 	Approved by Environmental Specialist:		
Printed Name: Cal Wrangham			
Title: Manager, Environmental, Safety & Health	Approval Date:	Expiration Date:	
E-mail Address: CalvinWrangham@targaresources.com	Conditions of Approval:		Attached <input type="checkbox"/>
Date: 12/1/2016	Phone: 432-688-0542		

* Attach Additional Sheets If Necessary