

Analytical Report

Report Summary

Client: Logos Operating, LLC

Samples Received: 4/5/2019

Job Number: 12035-0114

Work Order: P904022

Project Name/Location: Ignacio 33-8 2

Report Reviewed By:



Date: 5/14/19

Walter Hinchman, Laboratory Director

Supplement to analytical report generated on: 4/23/19 10:41 am



Envirotech Inc. certifies the test results meet all requirements of TNI unless footnoted otherwise.
Statement of Data Authenticity: Envirotech, Inc, attests the data reported has not been altered in any way.
Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc.
Envirotech, Inc, currently holds the appropriate and available Utah TNI certification NM009792018-1 for the data reported.

Logos Operating, LLC
 PO Box 18
 Flora Vista NM, 87415

 Project Name: Ignacio 33-8 2
 Project Number: 12035-0114
 Project Manager: Larissa Farrell

Reported:
 05/14/19 12:35

Analytical Report for Samples

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
Bottom	P904022-01A	Soil	04/05/19	04/05/19	Glass Jar, 4 oz.
	P904022-01B	Soil	04/05/19	04/05/19	Glass Jar, 4 oz.
	P904022-01C	Soil	04/05/19	04/05/19	Glass Jar, 4 oz.
Walls	P904022-02A	Soil	04/05/19	04/05/19	Glass Jar, 4 oz.
	P904022-02B	Soil	04/05/19	04/05/19	Glass Jar, 4 oz.
	P904022-02C	Soil	04/05/19	04/05/19	Glass Jar, 4 oz.
Background - Arsenic	P904022-03A	Solid	04/05/19	04/05/19	Glass Jar, 4 oz.

Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc.

Logos Operating, LLC
 PO Box 18
 Flora Vista NM, 87415

 Project Name: Ignacio 33-8 2
 Project Number: 12035-0114
 Project Manager: Larissa Farrell

Reported:
 05/14/19 12:35

Bottom
P904022-01 (Solid)

Reporting									
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Volatile Organic Compounds by 8260

Benzene	ND	0.0250	mg/kg	1	1915001	04/08/19	04/10/19	EPA 8260B	
Toluene	ND	0.0250	mg/kg	1	1915001	04/08/19	04/10/19	EPA 8260B	
Ethylbenzene	ND	0.0250	mg/kg	1	1915001	04/08/19	04/10/19	EPA 8260B	
p,m-Xylene	ND	0.0500	mg/kg	1	1915001	04/08/19	04/10/19	EPA 8260B	
o-Xylene	ND	0.0250	mg/kg	1	1915001	04/08/19	04/10/19	EPA 8260B	
Total Xylenes	ND	0.0250	mg/kg	1	1915001	04/08/19	04/10/19	EPA 8260B	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		100 %		70-130	1915001	04/08/19	04/10/19	EPA 8260B	
<i>Surrogate: Toluene-d8</i>		98.4 %		70-130	1915001	04/08/19	04/10/19	EPA 8260B	
<i>Surrogate: Bromofluorobenzene</i>		94.1 %		70-130	1915001	04/08/19	04/10/19	EPA 8260B	

Nonhalogenated Organics by 8015

Gasoline Range Organics (C6-C10)	ND	20.0	mg/kg	1	1915001	04/08/19	04/10/19	EPA 8015D	
Diesel Range Organics (C10-C28)	ND	25.0	mg/kg	1	1915005	04/09/19	04/10/19	EPA 8015D	
Oil Range Organics (C28-C40)	ND	50.0	mg/kg	1	1915005	04/09/19	04/10/19	EPA 8015D	
<i>Surrogate: n-Nonane</i>		89.3 %		50-200	1915005	04/09/19	04/10/19	EPA 8015D	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		100 %		70-130	1915001	04/08/19	04/10/19	EPA 8015D	
<i>Surrogate: Toluene-d8</i>		98.4 %		70-130	1915001	04/08/19	04/10/19	EPA 8015D	
<i>Surrogate: Bromofluorobenzene</i>		94.1 %		70-130	1915001	04/08/19	04/10/19	EPA 8015D	

Total Metals by 6010

Arsenic	1.44	0.500	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	
Barium	320	6.25	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	
Cadmium	1.35	0.250	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	
Chromium	9.09	0.500	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	
Copper	21.4	0.500	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	
Lead	9.07	0.250	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	
Mercury	ND	0.250	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	
Nickel	17.1	1.25	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	
Selenium	ND	1.25	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	
Silver	ND	0.250	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	
Zinc	61.8	2.50	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	

Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc.

Logos Operating, LLC
 PO Box 18
 Flora Vista NM, 87415

 Project Name: Ignacio 33-8 2
 Project Number: 12035-0114
 Project Manager: Larissa Farrell

Reported:
 05/14/19 12:35

Bottom
P904022-01 (Solid)

Reporting									
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Cation/Anion 10:1 Leach Procedure

Sodium Absorption Ratio	1.66		N/A	1	1916007	04/15/19	04/15/19	[CALC]	
Calcium	2.26	1.00	mg/L	1	1915035	04/12/19	04/15/19	EPA 6010C	
Magnesium	ND	1.00	mg/L	1	1915035	04/12/19	04/15/19	EPA 6010C	
Sodium	10.3	2.00	mg/L	1	1915035	04/12/19	04/15/19	EPA 6010C	

Boron-Hot Water Soluble by EPA 6010

Boron	ND	2.00	mg/L	1	1916006	04/15/19	04/16/19	EPA 6010C	
-------	----	------	------	---	---------	----------	----------	-----------	--

Wet Chemistry

pH @25°C	8.72		pH Units	1	1916034	04/18/19	04/18/19	EPA 9045D	
Specific Conductance (@ 25 C)	204	10.0	uS/cm	1	1917006	04/22/19	04/22/19	9050A/2510 B	

Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc.

Logos Operating, LLC
 PO Box 18
 Flora Vista NM, 87415

 Project Name: Ignacio 33-8 2
 Project Number: 12035-0114
 Project Manager: Larissa Farrell

Reported:
 05/14/19 12:35

Walls
P904022-02 (Solid)

Reporting									
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Volatile Organic Compounds by 8260

Benzene	ND	0.0250	mg/kg	1	1915001	04/08/19	04/10/19	EPA 8260B	
Toluene	ND	0.0250	mg/kg	1	1915001	04/08/19	04/10/19	EPA 8260B	
Ethylbenzene	ND	0.0250	mg/kg	1	1915001	04/08/19	04/10/19	EPA 8260B	
p,m-Xylene	ND	0.0500	mg/kg	1	1915001	04/08/19	04/10/19	EPA 8260B	
o-Xylene	ND	0.0250	mg/kg	1	1915001	04/08/19	04/10/19	EPA 8260B	
Total Xylenes	ND	0.0250	mg/kg	1	1915001	04/08/19	04/10/19	EPA 8260B	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		98.2 %		70-130	1915001	04/08/19	04/10/19	EPA 8260B	
<i>Surrogate: Toluene-d8</i>		98.7 %		70-130	1915001	04/08/19	04/10/19	EPA 8260B	
<i>Surrogate: Bromofluorobenzene</i>		95.2 %		70-130	1915001	04/08/19	04/10/19	EPA 8260B	

Nonhalogenated Organics by 8015

Gasoline Range Organics (C6-C10)	ND	20.0	mg/kg	1	1915001	04/08/19	04/10/19	EPA 8015D	
Diesel Range Organics (C10-C28)	ND	25.0	mg/kg	1	1915005	04/09/19	04/10/19	EPA 8015D	
Oil Range Organics (C28-C40)	ND	50.0	mg/kg	1	1915005	04/09/19	04/10/19	EPA 8015D	
<i>Surrogate: n-Nonane</i>		93.8 %		50-200	1915005	04/09/19	04/10/19	EPA 8015D	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		98.2 %		70-130	1915001	04/08/19	04/10/19	EPA 8015D	
<i>Surrogate: Toluene-d8</i>		98.7 %		70-130	1915001	04/08/19	04/10/19	EPA 8015D	
<i>Surrogate: Bromofluorobenzene</i>		95.2 %		70-130	1915001	04/08/19	04/10/19	EPA 8015D	

Total Metals by 6010

Arsenic	0.948	0.500	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	
Barium	342	6.25	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	
Cadmium	ND	0.250	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	
Chromium	8.62	0.500	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	
Copper	6.85	0.500	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	
Lead	6.69	0.250	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	
Mercury	ND	0.250	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	
Nickel	9.17	1.25	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	
Selenium	ND	1.25	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	
Silver	ND	0.250	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	
Zinc	37.1	2.50	mg/kg	1	1916005	04/15/19	04/16/19	EPA 6010C	

Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc.

Logos Operating, LLC
 PO Box 18
 Flora Vista NM, 87415

 Project Name: Ignacio 33-8 2
 Project Number: 12035-0114
 Project Manager: Larissa Farrell

Reported:
 05/14/19 12:35

Walls
P904022-02 (Solid)

Reporting									
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Cation/Anion 10:1 Leach Procedure

Sodium Absorption Ratio	1.19		N/A	1	1916007	04/15/19	04/15/19	[CALC]	
Calcium	4.23	1.00	mg/L	1	1915035	04/12/19	04/15/19	EPA 6010C	
Magnesium	ND	1.00	mg/L	1	1915035	04/12/19	04/15/19	EPA 6010C	
Sodium	10.2	2.00	mg/L	1	1915035	04/12/19	04/15/19	EPA 6010C	

Boron-Hot Water Soluble by EPA 6010

Boron	ND	2.00	mg/L	1	1916006	04/15/19	04/16/19	EPA 6010C	
-------	----	------	------	---	---------	----------	----------	-----------	--

Wet Chemistry

pH @25°C	8.55		pH Units	1	1916034	04/18/19	04/18/19	EPA 9045D	
Specific Conductance (@ 25 C)	233	10.0	uS/cm	1	1917006	04/22/19	04/22/19	9050A/2510 B	

Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc.

Logos Operating, LLC
 PO Box 18
 Flora Vista NM, 87415

Project Name: Ignacio 33-8 2
 Project Number: 12035-0114
 Project Manager: Larissa Farrell

Reported:
 05/14/19 12:35

Background - Arsenic
P904022-03 (Solid)

Reporting									
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Total Metals by 6010

Arsenic	2.04	0.500	mg/kg	1	1919018	05/08/19	05/08/19	EPA 6010C	
---------	-------------	-------	-------	---	---------	----------	----------	-----------	--

Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc.

Logos Operating, LLC
PO Box 18
Flora Vista NM, 87415

Project Name: Ignacio 33-8 2
Project Number: 12035-0114
Project Manager: Larissa Farrell

Reported:
05/14/19 12:35

Volatile Organic Compounds by 8260 - Quality Control
Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 1915001 - Purge and Trap EPA 5030A
Blank (1915001-BLK1)

Prepared: 04/08/19 1 Analyzed: 04/11/19 0

Benzene	ND	0.0250	mg/kg							
Toluene	ND	0.0250	"							
Ethylbenzene	ND	0.0250	"							
p,m-Xylene	ND	0.0500	"							
o-Xylene	ND	0.0250	"							
Total Xylenes	ND	0.0250	"							
Surrogate: 1,2-Dichloroethane-d4	0.498		"	0.500		99.5	70-130			
Surrogate: Toluene-d8	0.498		"	0.500		99.5	70-130			
Surrogate: Bromofluorobenzene	0.481		"	0.500		96.1	70-130			

LCS (1915001-BS1)

Prepared: 04/08/19 1 Analyzed: 04/10/19 1

Benzene	2.23	0.0250	mg/kg	2.50		89.3	70-130			
Toluene	2.27	0.0250	"	2.50		90.6	70-130			
Ethylbenzene	2.28	0.0250	"	2.50		91.2	70-130			
p,m-Xylene	4.60	0.0500	"	5.00		91.9	70-130			
o-Xylene	2.34	0.0250	"	2.50		93.6	70-130			
Total Xylenes	6.94	0.0250	"	7.50		92.5	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.473		"	0.500		94.5	70-130			
Surrogate: Toluene-d8	0.512		"	0.500		102	70-130			
Surrogate: Bromofluorobenzene	0.499		"	0.500		99.8	70-130			

Matrix Spike (1915001-MS1)

Source: P904022-01

Prepared: 04/08/19 1 Analyzed: 04/10/19 1

Benzene	2.31	0.0250	mg/kg	2.50	ND	92.3	48-131			
Toluene	2.34	0.0250	"	2.50	ND	93.4	48-130			
Ethylbenzene	2.37	0.0250	"	2.50	ND	94.8	45-135			
p,m-Xylene	4.77	0.0500	"	5.00	ND	95.4	43-135			
o-Xylene	2.42	0.0250	"	2.50	ND	97.0	43-135			
Total Xylenes	7.19	0.0250	"	7.50	ND	95.9	43-135			
Surrogate: 1,2-Dichloroethane-d4	0.482		"	0.500		96.3	70-130			
Surrogate: Toluene-d8	0.507		"	0.500		101	70-130			
Surrogate: Bromofluorobenzene	0.500		"	0.500		99.9	70-130			

Matrix Spike Dup (1915001-MSD1)

Source: P904022-01

Prepared: 04/08/19 1 Analyzed: 04/10/19 1

Benzene	2.31	0.0250	mg/kg	2.50	ND	92.2	48-131	0.0434	23	
Toluene	2.34	0.0250	"	2.50	ND	93.7	48-130	0.299	24	
Ethylbenzene	2.36	0.0250	"	2.50	ND	94.4	45-135	0.465	27	
p,m-Xylene	4.74	0.0500	"	5.00	ND	94.8	43-135	0.599	27	
o-Xylene	2.43	0.0250	"	2.50	ND	97.2	43-135	0.206	27	
Total Xylenes	7.17	0.0250	"	7.50	ND	95.6	43-135	0.327	27	
Surrogate: 1,2-Dichloroethane-d4	0.487		"	0.500		97.4	70-130			
Surrogate: Toluene-d8	0.512		"	0.500		102	70-130			

Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc.

Logos Operating, LLC
 PO Box 18
 Flora Vista NM, 87415

Project Name: Ignacio 33-8 2
 Project Number: 12035-0114
 Project Manager: Larissa Farrell

Reported:
 05/14/19 12:35

Volatile Organic Compounds by 8260 - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	--------------------	-------	----------------	------------------	------	----------------	-----	--------------	-------

Batch 1915001 - Purge and Trap EPA 5030A

Matrix Spike Dup (1915001-MSD1)

Source: P904022-01

Prepared: 04/08/19 1 Analyzed: 04/10/19 1

Surrogate: Bromofluorobenzene	0.496	mg/kg	0.500	99.1	70-130
-------------------------------	-------	-------	-------	------	--------

Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc.

Logos Operating, LLC
 PO Box 18
 Flora Vista NM, 87415

 Project Name: Ignacio 33-8 2
 Project Number: 12035-0114
 Project Manager: Larissa Farrell

Reported:
 05/14/19 12:35

Nonhalogenated Organics by 8015 - Quality Control
Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 1915001 - Purge and Trap EPA 5030A
Blank (1915001-BLK1)

Prepared: 04/08/19 1 Analyzed: 04/11/19 0

Gasoline Range Organics (C6-C10)	ND	20.0	mg/kg							
Surrogate: 1,2-Dichloroethane-d4	0.498		"	0.500		99.5	70-130			
Surrogate: Toluene-d8	0.498		"	0.500		99.5	70-130			
Surrogate: Bromofluorobenzene	0.481		"	0.500		96.1	70-130			

LCS (1915001-BS2)

Prepared: 04/08/19 1 Analyzed: 04/10/19 1

Gasoline Range Organics (C6-C10)	55.5	20.0	mg/kg	50.0		111	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.489		"	0.500		97.8	70-130			
Surrogate: Toluene-d8	0.511		"	0.500		102	70-130			
Surrogate: Bromofluorobenzene	0.492		"	0.500		98.4	70-130			

Matrix Spike (1915001-MS2)

Source: P904022-01

Prepared: 04/08/19 1 Analyzed: 04/10/19 1

Gasoline Range Organics (C6-C10)	52.9	20.0	mg/kg	50.0	ND	106	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.495		"	0.500		98.9	70-130			
Surrogate: Toluene-d8	0.508		"	0.500		102	70-130			
Surrogate: Bromofluorobenzene	0.497		"	0.500		99.3	70-130			

Matrix Spike Dup (1915001-MSD2)

Source: P904022-01

Prepared: 04/08/19 1 Analyzed: 04/10/19 2

Gasoline Range Organics (C6-C10)	55.5	20.0	mg/kg	50.0	ND	111	70-130	4.77	20	
Surrogate: 1,2-Dichloroethane-d4	0.500		"	0.500		100	70-130			
Surrogate: Toluene-d8	0.500		"	0.500		100	70-130			
Surrogate: Bromofluorobenzene	0.490		"	0.500		98.0	70-130			

Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc.

Logos Operating, LLC
 PO Box 18
 Flora Vista NM, 87415

 Project Name: Ignacio 33-8 2
 Project Number: 12035-0114
 Project Manager: Larissa Farrell

Reported:
 05/14/19 12:35

Nonhalogenated Organics by 8015 - Quality Control
Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 1915005 - DRO Extraction EPA 3570
Blank (1915005-BLK1)

Prepared: 04/09/19 1 Analyzed: 04/10/19 1

Diesel Range Organics (C10-C28)	ND	25.0	mg/kg							
Oil Range Organics (C28-C40)	ND	50.0	"							
<i>Surrogate: n-Nonane</i>	<i>40.5</i>		<i>"</i>	<i>50.0</i>		<i>81.0</i>	<i>50-200</i>			

LCS (1915005-BS1)

Prepared: 04/09/19 1 Analyzed: 04/10/19 1

Diesel Range Organics (C10-C28)	458	25.0	mg/kg	500		91.6	38-132			
<i>Surrogate: n-Nonane</i>	<i>42.1</i>		<i>"</i>	<i>50.0</i>		<i>84.2</i>	<i>50-200</i>			

Matrix Spike (1915005-MS1)

Source: P904022-01

Prepared: 04/09/19 1 Analyzed: 04/10/19 1

Diesel Range Organics (C10-C28)	410	25.0	mg/kg	500	ND	82.1	38-132			
<i>Surrogate: n-Nonane</i>	<i>37.1</i>		<i>"</i>	<i>50.0</i>		<i>74.2</i>	<i>50-200</i>			

Matrix Spike Dup (1915005-MSD1)

Source: P904022-01

Prepared: 04/09/19 1 Analyzed: 04/10/19 1

Diesel Range Organics (C10-C28)	418	25.0	mg/kg	500	ND	83.5	38-132	1.74	20	
<i>Surrogate: n-Nonane</i>	<i>41.3</i>		<i>"</i>	<i>50.0</i>		<i>82.5</i>	<i>50-200</i>			

Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc.

Logos Operating, LLC
PO Box 18
Flora Vista NM, 87415

Project Name: Ignacio 33-8 2
Project Number: 12035-0114
Project Manager: Larissa Farrell

Reported:
05/14/19 12:35

Total Metals by 6010 - Quality Control
Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 1916005 - Metals Solid Hotblock Digestion EPA 3050B/200.2
Blank (1916005-BLK1)

Prepared: 04/15/19 1 Analyzed: 04/16/19 1

Arsenic	ND	0.500	mg/kg
Barium	ND	6.25	"
Cadmium	ND	0.250	"
Chromium	ND	0.500	"
Copper	ND	0.500	"
Lead	ND	0.250	"
Mercury	ND	0.250	"
Nickel	ND	1.25	"
Selenium	ND	1.25	"
Silver	ND	0.250	"
Zinc	ND	2.50	"

LCS (1916005-BS1)

Prepared: 04/15/19 1 Analyzed: 04/16/19 1

Arsenic	11.2	0.500	mg/kg	12.5	89.8	80-120
Barium	306	6.25	"	313	98.0	80-120
Cadmium	5.79	0.250	"	6.25	92.7	80-120
Chromium	24.8	0.500	"	25.0	99.2	80-120
Copper	11.9	0.500	"	12.5	95.3	80-120
Lead	5.94	0.250	"	6.25	95.0	80-120
Mercury	22.2	0.250	"	25.0	88.7	80-120
Nickel	28.5	1.25	"	31.3	91.3	80-120
Selenium	28.2	1.25	"	31.3	90.2	80-120
Silver	2.39	0.250	"	2.50	95.5	80-120
Zinc	55.6	2.50	"	62.5	89.0	80-120

Matrix Spike (1916005-MS1)

Source: P904022-01

Prepared: 04/15/19 1 Analyzed: 04/16/19 1

Arsenic	12.3	0.500	mg/kg	12.5	1.44	86.8	75-125
Barium	527	6.25	"	313	320	66.4	75-125
Cadmium	6.52	0.250	"	6.25	1.35	82.8	75-125
Chromium	31.4	0.500	"	25.0	9.09	89.1	75-125
Copper	31.3	0.500	"	12.5	21.4	78.9	75-125
Lead	14.7	0.250	"	6.25	9.07	90.4	75-125
Mercury	20.7	0.250	"	25.0	ND	82.9	75-125
Nickel	42.1	1.25	"	31.3	17.1	79.9	75-125
Selenium	23.7	1.25	"	31.3	ND	75.7	75-125
Silver	2.18	0.250	"	2.50	ND	87.1	75-125
Zinc	117	2.50	"	62.5	61.8	88.2	75-125

SPK1

Matrix Spike Dup (1916005-MSD1)

Source: P904022-01

Prepared: 04/15/19 1 Analyzed: 04/16/19 1

Arsenic	10.9	0.500	mg/kg	12.5	1.44	75.6	75-125	12.0	20
Barium	510	6.25	"	313	320	60.8	75-125	3.38	20
Cadmium	6.33	0.250	"	6.25	1.35	79.7	75-125	3.00	20

SPK1

Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc.

Logos Operating, LLC
 PO Box 18
 Flora Vista NM, 87415

 Project Name: Ignacio 33-8 2
 Project Number: 12035-0114
 Project Manager: Larissa Farrell

Reported:
 05/14/19 12:35

Total Metals by 6010 - Quality Control
Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	--------------------	-------	----------------	------------------	------	----------------	-----	--------------	-------

Batch 1916005 - Metals Solid Hotblock Digestion EPA 3050B/200.2
Matrix Spike Dup (1916005-MSD1)
Source: P904022-01

Prepared: 04/15/19 1 Analyzed: 04/16/19 1

Chromium	31.3	0.500	"	25.0	9.09	88.8	75-125	0.240	20	
Copper	32.1	0.500	"	12.5	21.4	85.5	75-125	2.60	20	
Lead	12.7	0.250	"	6.25	9.07	57.9	75-125	14.8	20	SPK1
Mercury	20.2	0.250	"	25.0	ND	81.0	75-125	2.38	20	
Nickel	40.0	1.25	"	31.3	17.1	73.1	75-125	5.18	20	SPK1
Selenium	23.0	1.25	"	31.3	ND	73.5	75-125	3.03	20	SPK1
Silver	2.16	0.250	"	2.50	ND	86.5	75-125	0.691	20	
Zinc	117	2.50	"	62.5	61.8	88.5	75-125	0.171	20	

Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc.

Logos Operating, LLC
 PO Box 18
 Flora Vista NM, 87415

 Project Name: Ignacio 33-8 2
 Project Number: 12035-0114
 Project Manager: Larissa Farrell

Reported:
 05/14/19 12:35

Total Metals by 6010 - Quality Control
Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 1919018 - Metals Solid Hotblock Digestion EPA 3050B/200.2
Blank (1919018-BLK1)

Prepared & Analyzed: 05/08/19 1

Arsenic ND 0.500 mg/kg

LCS (1919018-BS1)

Prepared & Analyzed: 05/08/19 1

Arsenic 11.9 0.500 mg/kg 12.5 94.8 80-120

Matrix Spike (1919018-MS1)
Source: P905024-01

Prepared & Analyzed: 05/08/19 1

Arsenic 11.2 0.500 mg/kg 12.5 0.708 83.6 75-125

Matrix Spike Dup (1919018-MSD1)
Source: P905024-01

Prepared & Analyzed: 05/08/19 1

Arsenic 11.0 0.500 mg/kg 12.5 0.708 82.6 75-125 1.10 20

Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc.

Logos Operating, LLC
 PO Box 18
 Flora Vista NM, 87415

 Project Name: Ignacio 33-8 2
 Project Number: 12035-0114
 Project Manager: Larissa Farrell

Reported:
 05/14/19 12:35

Cation/Anion 10:1 Leach Procedure - Quality Control
Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 1915035 - Metals Water Hotblock Digestion EPA 3010A/200.2
Blank (1915035-BLK1)

Prepared & Analyzed: 04/11/19 1

Calcium	ND	1.00	mg/L
Magnesium	ND	1.00	"
Sodium	ND	2.00	"

LCS (1915035-BS1)

Prepared & Analyzed: 04/11/19 1

Calcium	53.8	1.00	mg/L	50.0	108	80-120
Magnesium	49.8	1.00	"	50.0	99.6	80-120
Sodium	18.6	2.00	"	20.0	92.9	80-120

Matrix Spike (1915035-MS1)

Source: P904047-01

Prepared & Analyzed: 04/11/19 1

Calcium	119	1.00	mg/L	50.0	64.8	108	75-125
Magnesium	93.3	1.00	"	50.0	36.7	113	75-125
Sodium	8880	200	"	20.0	9040	NR	75-125

SPK2

Matrix Spike Dup (1915035-MSD1)

Source: P904047-01

Prepared & Analyzed: 04/11/19 1

Calcium	115	1.00	mg/L	50.0	64.8	101	75-125	3.07	20
Magnesium	92.8	1.00	"	50.0	36.7	112	75-125	0.451	20
Sodium	8800	200	"	20.0	9040	NR	75-125	0.860	20

SPK2

Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc.

Logos Operating, LLC
 PO Box 18
 Flora Vista NM, 87415

 Project Name: Ignacio 33-8 2
 Project Number: 12035-0114
 Project Manager: Larissa Farrell

Reported:
 05/14/19 12:35

Boron-Hot Water Soluble by EPA 6010 - Quality Control
Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 1916006 - Boron HW Soluble Digestion
Blank (1916006-BLK1)

Prepared: 04/15/19 1 Analyzed: 04/16/19 1

Boron	ND	2.00	mg/L
-------	----	------	------

LCS (1916006-BS1)

Prepared: 04/15/19 1 Analyzed: 04/16/19 1

Boron	53.6		mg/L	50.0	107	80-120
-------	------	--	------	------	-----	--------

Matrix Spike (1916006-MS1)
Source: P904022-02

Prepared: 04/15/19 1 Analyzed: 04/16/19 1

Boron	52.8		mg/L	50.0	0.0302	106	75-125
-------	------	--	------	------	--------	-----	--------

Matrix Spike Dup (1916006-MSD1)
Source: P904022-02

Prepared: 04/15/19 1 Analyzed: 04/16/19 1

Boron	53.4		mg/L	50.0	0.0302	107	75-125	1.19	20
-------	------	--	------	------	--------	-----	--------	------	----

Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc.

Logos Operating, LLC
 PO Box 18
 Flora Vista NM, 87415

 Project Name: Ignacio 33-8 2
 Project Number: 12035-0114
 Project Manager: Larissa Farrell

Reported:
 05/14/19 12:35

Wet Chemistry - Quality Control
Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	--------------------	-------	----------------	------------------	------	----------------	-----	--------------	-------

Batch 1916034 - Wet Chemistry Preparation
LCS (1916034-BS1)

Prepared & Analyzed: 04/18/19 1

pH	7.97		pH Units	8.00	99.6	98.75-101.25
----	------	--	----------	------	------	--------------

Duplicate (1916034-DUP1)

Source: P904022-01

Prepared & Analyzed: 04/18/19 1

pH	8.73		pH Units	8.72	0.115	20
----	------	--	----------	------	-------	----

Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc.

Logos Operating, LLC
 PO Box 18
 Flora Vista NM, 87415

 Project Name: Ignacio 33-8 2
 Project Number: 12035-0114
 Project Manager: Larissa Farrell

Reported:
 05/14/19 12:35

Wet Chemistry - Quality Control
Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 1917006 - Wet Chemistry Preparation
Blank (1917006-BLK1)

Prepared & Analyzed: 04/22/19 1

Specific Conductance (@ 25 C) ND 10.0 uS/cm

LCS (1917006-BS1)

Prepared & Analyzed: 04/22/19 1

Specific Conductance (@ 25 C) 1410 10.0 uS/cm 1410 100 98-102

Duplicate (1917006-DUP1)
Source: P904022-01

Prepared & Analyzed: 04/22/19 1

Specific Conductance (@ 25 C) 199 10.0 uS/cm 204 2.48 20

Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc.

Logos Operating, LLC
 PO Box 18
 Flora Vista NM, 87415

Project Name: Ignacio 33-8 2
 Project Number: 12035-0114
 Project Manager: Larissa Farrell

Reported:
 05/14/19 12:35

Notes and Definitions

SPK2 The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to native analyte concentration at 4 times or greater than the spike concentration.

SPK1 The spike recovery is outside of quality control limits.

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

RPD Relative Percent Difference

** Methods marked with ** are non-accredited methods.

Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc.

Project Information Client: <u>Logos Operating, LLC</u> Project: <u>lanacio 33-82</u> Project Manager: <u>lanissa farrell</u> Address: _____ City, State, Zip: _____ Phone: <u>505-419-1100</u> Email: _____		Chain of Custody Report Attention Report due by: _____ Attention: _____ Address: _____ City, State, Zip: _____ Phone: _____ Email: _____		Lab Use Only Lab WO# <u>P 904022</u> Job Number <u>12035-0114</u>		TAT 1D <input type="checkbox"/> 3D <input checked="" type="checkbox"/>		EPA Program RCRA <input type="checkbox"/> CWA <input type="checkbox"/> SDWA <input type="checkbox"/>										
				Analysis and Method						State								
				DRO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0	TPH 418.1					NM	CO	UT	AZ
				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Time Sampled	Date Sampled	Matrix	No Containers	Sample ID	Lab Number	DRO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0	TPH 418.1	TAT	RCRA	CWA	SDWA	Remarks
3:41	4/5/19	S	3	Bottom	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Rush 3 day
3:44	4/5/19	S	3	Walls	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4:00	4/5/19	S	1	Background-Arsenic	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Additional Instructions: Sample for TPH (rush) then depending on result we can test for Table 910 client req. DRO/DRO/GRO by 8015 1st (3 day rush) - may add full 9010 table later. on 4-5-19 hold "Background Ar" for later analysis

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by: L. Farrell

Relinquished by: (Signature) <u>Lanissa Farrell</u>	Date <u>4/5/19</u>	Time <u>5:11 pm</u>	Received by: (Signature) <u>AL</u>	Date <u>4/5/19</u>	Time <u>5:11 pm</u>	Lab Use Only Received on ice: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N T1 _____ T2 _____ T3 _____ AVG Temp °C <u>4</u>
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time	

Sample Matrix: S - Soil, Sd - Solid, Sg - Sludge, A - Aqueous, O - Other _____ Container Type: g - glass, p - poly/plastic, ag - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.



5796 US Highway 64, Farmington, NM 87401
 Three Springs • 65 Mercado Street, Suite 115, Durango, CO 81301

Ph (505) 632-0615 Fx (505) 632-1865
 Ph (970) 259-0615 Fr (800) 362-1879

envirotech-inc.com
 laboratory@envirotech-inc.com



ANALYTICAL REPORT

April 18, 2019

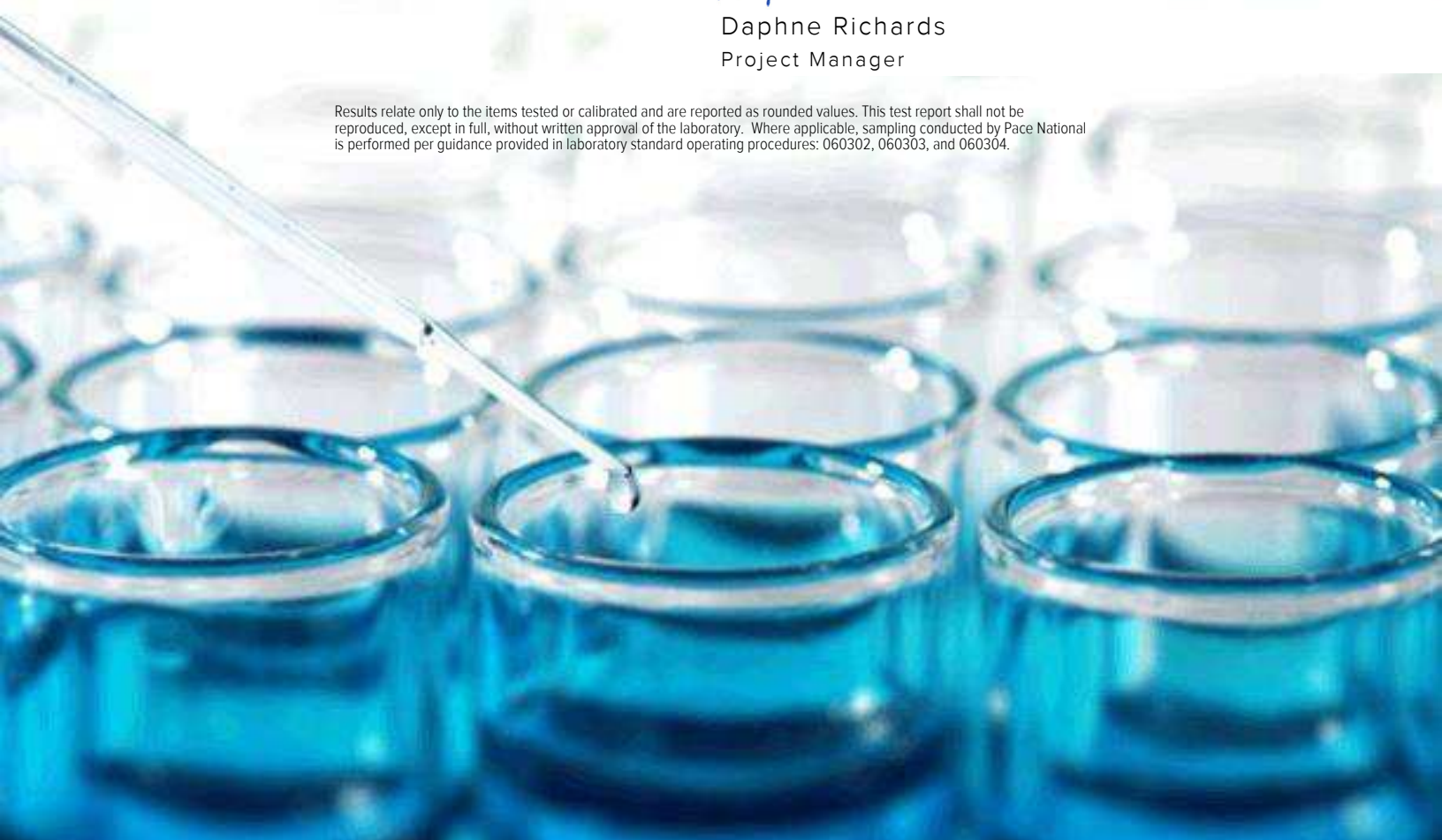
EnviroTech- NM

Sample Delivery Group: L1088975
Samples Received: 04/13/2019
Project Number: 12035-0114
Description: Ignacio 33-82
Site: P904022
Report To: Irene Yazzie
5796 US. Highway 64
Farmington, NM 87401

Entire Report Reviewed By:

Daphne Richards
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.





Cp: Cover Page	1	¹ Cp
Tc: Table of Contents	2	
Ss: Sample Summary	3	² Tc
Cn: Case Narrative	4	
Sr: Sample Results	5	³ Ss
BOTTOMS L1088975-01	5	
WALLS L1088975-02	6	⁴ Cn
Qc: Quality Control Summary	7	⁵ Sr
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	7	
Gl: Glossary of Terms	9	⁶ Qc
Al: Accreditations & Locations	10	⁷ Gl
Sc: Sample Chain of Custody	11	⁸ Al
		⁹ Sc



BOTTOMS L1088975-01 Solid

Collected by
L. FarrellCollected date/time
04/05/19 15:41Received date/time
04/13/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1267607	1	04/17/19 14:56	04/18/19 01:31	CJR	Mt. Juliet, TN

¹ Cp² Tc³ Ss

WALLS L1088975-02 Solid

Collected by
L. FarrellCollected date/time
04/05/19 15:44Received date/time
04/13/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1267607	1	04/17/19 14:56	04/18/19 01:52	CJR	Mt. Juliet, TN

⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne Richards
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Collected date/time: 04/05/19 15:41

L1088975

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	04/18/2019 01:31	WG1267607
Acenaphthene	ND		0.00600	1	04/18/2019 01:31	WG1267607
Acenaphthylene	ND		0.00600	1	04/18/2019 01:31	WG1267607
Benzo(a)anthracene	ND		0.00600	1	04/18/2019 01:31	WG1267607
Benzo(a)pyrene	ND		0.00600	1	04/18/2019 01:31	WG1267607
Benzo(b)fluoranthene	ND		0.00600	1	04/18/2019 01:31	WG1267607
Benzo(g,h,i)perylene	ND		0.00600	1	04/18/2019 01:31	WG1267607
Benzo(k)fluoranthene	ND		0.00600	1	04/18/2019 01:31	WG1267607
Chrysene	ND		0.00600	1	04/18/2019 01:31	WG1267607
Dibenz(a,h)anthracene	ND		0.00600	1	04/18/2019 01:31	WG1267607
Fluoranthene	ND		0.00600	1	04/18/2019 01:31	WG1267607
Fluorene	ND		0.00600	1	04/18/2019 01:31	WG1267607
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	04/18/2019 01:31	WG1267607
Naphthalene	ND		0.0200	1	04/18/2019 01:31	WG1267607
Phenanthrene	0.00740		0.00600	1	04/18/2019 01:31	WG1267607
Pyrene	ND		0.00600	1	04/18/2019 01:31	WG1267607
1-Methylnaphthalene	0.0289		0.0200	1	04/18/2019 01:31	WG1267607
2-Methylnaphthalene	0.0296		0.0200	1	04/18/2019 01:31	WG1267607
2-Chloronaphthalene	ND		0.0200	1	04/18/2019 01:31	WG1267607
(S) p-Terphenyl-d14	111		23.0-120		04/18/2019 01:31	WG1267607
(S) Nitrobenzene-d5	129		14.0-149		04/18/2019 01:31	WG1267607
(S) 2-Fluorobiphenyl	127	J1	34.0-125		04/18/2019 01:31	WG1267607

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

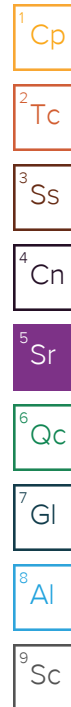
8 Al

9 Sc



Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	04/18/2019 01:52	WG1267607
Acenaphthene	ND		0.00600	1	04/18/2019 01:52	WG1267607
Acenaphthylene	ND		0.00600	1	04/18/2019 01:52	WG1267607
Benzo(a)anthracene	ND		0.00600	1	04/18/2019 01:52	WG1267607
Benzo(a)pyrene	ND		0.00600	1	04/18/2019 01:52	WG1267607
Benzo(b)fluoranthene	ND		0.00600	1	04/18/2019 01:52	WG1267607
Benzo(g,h,i)perylene	ND		0.00600	1	04/18/2019 01:52	WG1267607
Benzo(k)fluoranthene	ND		0.00600	1	04/18/2019 01:52	WG1267607
Chrysene	ND		0.00600	1	04/18/2019 01:52	WG1267607
Dibenz(a,h)anthracene	ND		0.00600	1	04/18/2019 01:52	WG1267607
Fluoranthene	ND		0.00600	1	04/18/2019 01:52	WG1267607
Fluorene	ND		0.00600	1	04/18/2019 01:52	WG1267607
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	04/18/2019 01:52	WG1267607
Naphthalene	ND		0.0200	1	04/18/2019 01:52	WG1267607
Phenanthrene	ND		0.00600	1	04/18/2019 01:52	WG1267607
Pyrene	ND		0.00600	1	04/18/2019 01:52	WG1267607
1-Methylnaphthalene	ND		0.0200	1	04/18/2019 01:52	WG1267607
2-Methylnaphthalene	ND		0.0200	1	04/18/2019 01:52	WG1267607
2-Chloronaphthalene	ND		0.0200	1	04/18/2019 01:52	WG1267607
(S) p-Terphenyl-d14	74.4		23.0-120		04/18/2019 01:52	WG1267607
(S) Nitrobenzene-d5	80.2		14.0-149		04/18/2019 01:52	WG1267607
(S) 2-Fluorobiphenyl	75.4		34.0-125		04/18/2019 01:52	WG1267607



Method Blank (MB)

(MB) R3402799-3 04/17/19 23:03

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.000600	0.00600
Acenaphthene	U		0.000600	0.00600
Acenaphthylene	U		0.000600	0.00600
Benzo(a)anthracene	U		0.000600	0.00600
Benzo(a)pyrene	U		0.000600	0.00600
Benzo(b)fluoranthene	U		0.000600	0.00600
Benzo(g,h,i)perylene	U		0.000600	0.00600
Benzo(k)fluoranthene	U		0.000600	0.00600
Chrysene	U		0.000600	0.00600
Dibenz(a,h)anthracene	U		0.000600	0.00600
Fluoranthene	U		0.000600	0.00600
Fluorene	U		0.000600	0.00600
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600
Naphthalene	U		0.00200	0.0200
Phenanthrene	U		0.000600	0.00600
Pyrene	U		0.000600	0.00600
1-Methylnaphthalene	U		0.00200	0.0200
2-Methylnaphthalene	U		0.00200	0.0200
2-Chloronaphthalene	U		0.00200	0.0200
(S) Nitrobenzene-d5	92.6			14.0-149
(S) 2-Fluorobiphenyl	104			34.0-125
(S) p-Terphenyl-d14	105			23.0-120

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

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

(LCS) R3402799-1 04/17/19 22:21 • (LCSD) R3402799-2 04/17/19 22:42

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0800	0.0876	0.0837	110	105	50.0-126			4.55	20
Acenaphthene	0.0800	0.0917	0.0868	115	109	50.0-120			5.49	20
Acenaphthylene	0.0800	0.0801	0.0754	100	94.3	50.0-120			6.05	20
Benzo(a)anthracene	0.0800	0.0833	0.0782	104	97.8	45.0-120			6.32	20
Benzo(a)pyrene	0.0800	0.0734	0.0687	91.8	85.9	42.0-120			6.62	20
Benzo(b)fluoranthene	0.0800	0.0838	0.0809	105	101	42.0-121			3.52	20
Benzo(g,h,i)perylene	0.0800	0.0837	0.0781	105	97.6	45.0-125			6.92	20
Benzo(k)fluoranthene	0.0800	0.0855	0.0805	107	101	49.0-125			6.02	20
Chrysene	0.0800	0.0894	0.0855	112	107	49.0-122			4.46	20
Dibenz(a,h)anthracene	0.0800	0.0838	0.0787	105	98.4	47.0-125			6.28	20
Fluoranthene	0.0800	0.0955	0.0922	119	115	49.0-129			3.52	20

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

(LCS) R3402799-1 04/17/19 22:21 • (LCSD) R3402799-2 04/17/19 22:42

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Fluorene	0.0800	0.0869	0.0812	109	102	49.0-120			6.78	20
Indeno(1,2,3-cd)pyrene	0.0800	0.0831	0.0780	104	97.5	46.0-125			6.33	20
Naphthalene	0.0800	0.0740	0.0693	92.5	86.6	50.0-120			6.56	20
Phenanthrene	0.0800	0.0929	0.0885	116	111	47.0-120			4.85	20
Pyrene	0.0800	0.0859	0.0843	107	105	43.0-123			1.88	20
1-Methylnaphthalene	0.0800	0.0793	0.0751	99.1	93.9	51.0-121			5.44	20
2-Methylnaphthalene	0.0800	0.0786	0.0745	98.3	93.1	50.0-120			5.36	20
2-Chloronaphthalene	0.0800	0.0915	0.0868	114	109	50.0-120			5.27	20
(S) Nitrobenzene-d5				102	95.1	14.0-149				
(S) 2-Fluorobiphenyl				107	102	34.0-125				
(S) p-Terphenyl-d14				102	102	23.0-120				

L1089783-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1089783-01 04/17/19 23:25 • (MS) R3402799-4 04/17/19 23:46 • (MSD) R3402799-5 04/18/19 00:07

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Anthracene	0.0800	U	0.0788	0.0693	98.5	86.6	1	10.0-145			12.8	30
Acenaphthene	0.0800	U	0.0812	0.0694	102	86.8	1	14.0-127			15.7	27
Acenaphthylene	0.0800	U	0.0713	0.0607	89.1	75.9	1	21.0-124			16.1	25
Benzo(a)anthracene	0.0800	U	0.0685	0.0608	85.6	76.0	1	10.0-139			11.9	30
Benzo(a)pyrene	0.0800	U	0.0696	0.0582	87.0	72.8	1	10.0-141			17.8	31
Benzo(b)fluoranthene	0.0800	U	0.0658	0.0560	82.3	70.0	1	10.0-140			16.1	36
Benzo(g,h,i)perylene	0.0800	U	0.0686	0.0597	85.8	74.6	1	10.0-140			13.9	33
Benzo(k)fluoranthene	0.0800	U	0.0749	0.0659	93.6	82.4	1	10.0-137			12.8	31
Chrysene	0.0800	U	0.0748	0.0678	93.5	84.8	1	10.0-145			9.82	30
Dibenz(a,h)anthracene	0.0800	U	0.0682	0.0601	85.3	75.1	1	10.0-132			12.6	31
Fluoranthene	0.0800	U	0.0799	0.0695	99.9	86.9	1	10.0-153			13.9	33
Fluorene	0.0800	U	0.0758	0.0648	94.8	81.0	1	11.0-130			15.6	29
Indeno(1,2,3-cd)pyrene	0.0800	U	0.0674	0.0585	84.3	73.1	1	10.0-137			14.1	32
Naphthalene	0.0800	U	0.0641	0.0553	80.1	69.1	1	10.0-135			14.7	27
Phenanthrene	0.0800	U	0.0798	0.0693	99.8	86.6	1	10.0-144			14.1	31
Pyrene	0.0800	U	0.0723	0.0635	90.4	79.4	1	10.0-148			13.0	35
1-Methylnaphthalene	0.0800	0.00137	0.0694	0.0594	85.0	72.5	1	10.0-142			15.5	28
2-Methylnaphthalene	0.0800	0.00369	0.0686	0.0595	81.1	69.8	1	10.0-137			14.2	28
2-Chloronaphthalene	0.0800	U	0.0830	0.0711	104	88.9	1	29.0-120			15.4	24
(S) Nitrobenzene-d5					94.2	84.8		14.0-149				
(S) 2-Fluorobiphenyl					101	86.9		34.0-125				
(S) p-Terphenyl-d14					82.4	73.3		23.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
----	--

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 GI

8 AI

9 Sc



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



[illegible]

Envirotech, Inc.

Phone: (505) 632-0615 Fax: (505) 632-1865

Subcontract Sample Receipt Checklist (ScSRC)

L1088975

Instructions:

Please document any potential abnormalities/nonconformities with the submitted samples. It is requested the subcontract lab scan this document and the COC and email/fax these two documents upon sample receipt. It is also requested the subcontract laboratory call Envirotech immediately with any abnormalities/nonconformances that may impact the general quality of the requested sample analysis.

Envirotech WO ID:	P904022	Date shipped:	4-12-19
Envirotech SCO Initials:	RL	Shipping Carrier:	FedEX
Subcontract Lab Name:	Pace Analytical	State of origin:	NM/CO/UT/AZ/Other
		Envirotech email:	hlopez@envirotech-inc.com

State Certification Information

Does the receiving laboratory hold the appropriate RCRA/CWA/SDWA state certification?

Note: There are no RCRA/CWA state certification programs for the states of NM / CO

Does the laboratory hold the certification for the requested method(s) of analysis?

	Yes	No	NA
Does the sample ID match the COC?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the number of samples per sampling site location match the COC?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was the COC complete, i.e., signatures, dates/times, requested analyses?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples received within the method specified holding time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
or is there sufficient holding time left to conduct analysis as standard TAT?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Chain of Custody (COC) Information

Sample Turn Around Time (TAT) Information

Did the COC indicate standard TAT, or expedited TAT?

Standard 6-day TAT ☐ 24-hr rush ☐ 48-hr rush ☐ 72-hr rush ☐ other rush ☐

Sample Cooler Information

Was the sample cooler received in good condition?

Was the sample(s) received in tact, i.e., not broken?

Was the sample received on ice? If yes, the recorded temp is 4°C, i.e., 6°±2°C

If no visible ice, record the temperature. Actual sample temperature: _____

Sample Container Information

Is the appropriate volume/weight or number of sample containers collected:

Sample Preservation Information

Does the COC or field labels indicate the samples were correctly preserved?

Multiphase Sample Matrix Information

Does the sample have more than one phase, i.e., multiphase?

If so, does the COC specify which phase(s) is to be analyzed?

Subcontract Laboratory Notes

Subcontract Lab WO ID:	Phone No:	Email address:
Signature of subcontract laboratory sample custodian	Date Received:	

Subcontract Laboratory Information

5796 US Highway 64, Farmington, NM 87401

Three Springs - 65 Mercado Street, Suite 115, Durango, CO 81301

Ph (505) 632-0615 Fx (505) 632-1865

Ph (970) 259-0615 Fr (800) 362-1879

envirotech-inc.com
laboratory@envirotech-inc.com

Project Information

Chain of Custody

Page 1 of 1

Client: Lagos Operating, LLC
 Project: Ladacio 33-82
 Project Manager: Lanisa Farrell
 Address:
 City, State, Zip
 Phone: 505-419-1100
 Email:

Report Attention

Report due by:
 Attention:
 Address:
 City, State, Zip
 Phone:
 Email:

Lab Use Only

Lab WO# P 904022
 Job Number 12035-0144

TAT

1D ☐ 3D ☒

EPA Program

RCRA ☐ CWA ☐ SDWA ☐

Analysis and Method

State

Analysis and Method: DRO by 8015 ☒ GRO/DRO by 8015 ☒ BTEX by 8021 ☐ VOC by 8260 ☐ Metals 6010 ☐ Chloride 300.0 ☐ TPH 418.1 ☒ 910 Table
 State: NM ☐ CO ☒ UT ☐ AZ ☐
 Remarks: Per Larissa 4/11/19

Time Sampled	Date Sampled	Matrix	No Containers	Sample ID	Lab Number	DRO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0	TPH 418.1	910 Table	Remarks
3:41	4/5/19	S	3	Bottom	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>Rush 3 day</u>
3:44	4/5/19	S	3	Walls	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
4:00	4/5/19	S	1	Background-Arsenic	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Additional Instructions: Sample for TPH (rush) then depending on result we can test for Table 910
Client req. DRO/GRO by 8015 1st (3 day rush) - may add full 910 table later. on 4:51/19 hold Background Ar for later analysis

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by: L. Farrell

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature) <u>Lanisa Farrell</u>	Date <u>4/5/19</u>	Time <u>5:11 pm</u>	Received by: (Signature) <u>Al L</u>	Date <u>4/5/19</u>	Time <u>5:11 pm</u>	Lab Use Only
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time	Received on ice: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N
						T1 <u> </u> T2 <u> </u> T3 <u> </u>
						AVG Temp °C <u>4</u>

Sample Matrix: S - Soil, Sd - Solid, Sg - Sludge, A - Aqueous, O - Other

Container Type: g - glass, p - poly/plastic, ag - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

Project Information
 Client: Loops Operating, LLC
 Project: Adacio 33-82
 Project Manager: Lanisa Farrell
 Address: _____
 City, State, Zip: _____
 Phone: 505-419-1100
 Email: _____

Chain of Custody

Report Attention

Report due by: _____
 Attention: _____
 Address: _____
 City, State, Zip: _____
 Phone: _____
 Email: _____

Lab Use Only

Lab WO#: P 904022
 Job Number: 12035-0144

TAT

1D 3D
☒ ☐

Page 1 of 1

EPA Program

RCRA CWA SDWA
☒ ☐ ☐

Analysis and Method

8015
 8015
 8021
 8260
 6010
 9010
 418.1
 910 Table

Per Lanisa
 4/11/19
 6010
 910 Table

State

NM CO UT AZ
☒ ☐ ☐ ☐

Remarks

Rush 3 day

X per Lanisa
 4/11/19

Time Sampled	Date Sampled	Matrix	No Containers	Sample ID	Lab Number
3:41	4/5/19	S	3	Bottom	1
3:44	4/5/19	S	3	Walls	2
4:00	4/5/19	S	1	Background - Arsenic	3

Additional Instructions: Sample for TPH (rush) then depending on results we can test for Table 910
Client req. DRO/DRO by 8015 N+ (3 day rush) - may add full 9010 table later. at 4:51/19 Hold Background Ar for later analysis

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or

time of collection is considered fraud and may be grounds for legal action. Sampled by:

L. Farrell

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6°C on subsequent days.

Relinquished by: (Signature)

Date

Time

Received by: (Signature)

Date

Time

Lab Use Only

Relinquished by: (Signature)

Date

Time

Received by: (Signature)

Date

Time

Received on Ice: ☒ Y ☐ N

T1

AVG Temp °C

T2

T3

Sample Matrix: S - Soil, Sd - Solid, Sg - Sludge, A - Aqueous, O - Other

Container Type: g - glass, p - poly/plastic, ag - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.



5796 US Highway 64, Farmington, NM 87401
 Three Springs • 65 Mercado Street, Suite 115, Durango, CO 81301

Ph (505) 632-0615 Fx (505) 632-1865
 Ph (970) 259-0615 Fx (800) 362-1879

