

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 Department

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

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	nOY1814231747
District RP	1RP-5068
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party Legacy Reserves, L.P.	OGRID 240974
Contact Name Meredith O’Brien, P.E.	Contact Telephone (720) 327-1543
Contact email mobrien@legacyreserves.com	Incident # (assigned by OCD) nOY1814231747 1RP-5068
Contact mailing address 1775 Sherman St., Ste. 1400, Denver, CO 80203	

Location of Release Source

Latitude North 32.192936° Longitude West -103.226294°
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Cooper Jal Unit #238	Site Type Flow Line from Well
Date Release Discovered 02-16-2016	API# (if applicable) 30-025-09659

Unit Letter	Section	Township	Range	County
A	26	24S	36E	Lea

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☒ Private (Name: Jal Public Library – Woolworth Estate

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☐ Crude Oil	Volume Released (bbl.)	Volume Recovered (bbl.)
☒ Produced Water	Volume Released (bbl.) 210	Volume Recovered (bbl.) 130
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☒ No
☐ Condensate	Volume Released (bbl.)	Volume Recovered (bbl.)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release was flow line rupture

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Was this a major release as defined by 19.15.29.7(A) NMAC? ☒ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? Fluid volume exceeds 25bbls
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc) Verbal notification by voice message from Mark Larson (consultant) to Maxey Brown and Olivia Yu at 13:10 (MST) on May 15, 2018.	

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

☒ The source of the release has been stopped. ☒ The impacted area has been secured to protect human health and the environment. ☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. ☒ All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> been undertaken, explain why:	
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health, or the environment. In addition, OCD 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.	
Printed Name: <u>Meredith O'Brien, P.E.</u>	Title: <u>Sr. Environmental Engineer</u>
Signature: <u>Meredith O'Brien</u>	Date: <u>11-17-2022</u>
email: <u>mobrien@legacyreserves.com</u>	Telephone: <u>(720)- 327-1543</u>
<u>OCD Only</u>	
Received by: _____	Date: _____

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Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	149.69 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas not on an exploration, development, production, or storage site?	☐ Yes ☒ No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: *Each of the following items must be included in the report.*

- ☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☒ Field data
- ☒ Data table of soil contaminant concentration data
- ☒ Depth to water determination
- ☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☒ Boring or excavation logs
- ☒ Photographs including date and GIS information
- ☒ Topographic/Aerial maps
- ☒ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

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Printed Name: Meredith O'Brien, P.E.Title: Sr. Environmental EngineerSignature: Meredith O'BrienDate: 11-17-2022email: mobrien@legacyreserves.comTelephone: (720) 327-1543**OCD Only**

Received by: _____

Date: _____

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Remediation Plan

Remediation Plan Checklist: *Each of the following items must be included in the plan.*

- ☒ Detailed description of proposed remediation technique
- ☒ Scaled sitemap with GPS coordinates showing delineation points
- ☒ Estimated volume of material to be remediated
- ☒ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☒ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: *Each of the following items must be confirmed as part of any request for deferral of remediation.*

- ☒ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- ☐ Extents of contamination must be fully delineated.
- ☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health, or the environment. In addition, OCD 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.

Printed Name: Meredith O'Brien, P.E.Title: Sr. Environmental EngineerSignature: Meredith O'BrienDate: 11-17-2022email: mobrien@legacyreserves.comTelephone: (720) 327-1543**OCD Only**Received by: Jocelyn Harimon Date: 11/22/2022☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: _____

Date: _____

Incident ID	nOY1814231747
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Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: *Each of the following items must be included in the closure report.*

- ☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC
- ☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)
- ☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)
- ☒ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health, or the environment. In addition, OCD 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.

Printed Name: Meredith O'Brien, P.E.

Title: Sr. Environmental Engineer

Signature: Meredith O'Brien

Date: 11-17-2022

email: mobrien@legacyreserves.com

Telephone: (720) 327-1543

OCD Only

Received by: Jocelyn Harimon

Date: 11/22/2022

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: Brittany Hall Date: 3/22/2023

Printed Name: Brittany Hall

Title: Environmental Specialist

**1RP-5068
CLOSURE REPORT
Cooper Jal Unit #238 Flowline
Produced Water Spill
Lea County, New Mexico**

Latitude: N 32.192936°
Longitude: W -103.226294°

LAI Project No. 18-0138-01

March 25, 2020

Prepared for:
Legacy Reserves Operating, LP
1775 Sherman Street, Suite 1400
Denver, CO 80203

Prepared by:
Larson & Associates, Inc.
507 North Marienfeld Street, Suite 202
Midland, Texas 79701

A handwritten signature in black ink, appearing to read 'Mark J. Larson', is written over a horizontal line.

Mark J. Larson, P.G.
Certified Professional Geologist #10490

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Appendix D	Laboratory Reports
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1RP-5068
Closure Report
Cooper Jal Unit #238 Produced Water Release
March 26, 2020

1.0 INTRODUCTION

Larson & Associates Inc. (LAI) has prepared this closure report on behalf of Legacy Reserves Operating, LP (Legacy) for submittal to the New Mexico Oil Conservation Division (OCD) District 1 for a produced water release at the Cooper Jal Unit #238 (Site) located in Unit A (NE/4, NE/4), Section 26, Township 24 South, Range 36 East in Lea County, New Mexico. The geodetic position is North 32.192936° and West - 103.226294°. Figure 1 presents a topographic map. Figure 2 presents an aerial map.

1.1 Background

The release occurred on May 3, 2018, due to a flowline rupture allowing for approximately 210 barrels (bbls) of produced water to be released onto the lease road. Approximately 130 bbls were recovered. The spill area measured approximately 52,022 square feet. The spill was reported to the OCD (voice message to Maxey Brown and Olivia Yu) on May 15, 2018 by Mark Larson with LAI. The initial C-141 was submitted on May 17, 2020 and assigned remediation permit number 1RP-5068. Appendix A presents the initial C-141. Appendix B presents OCD communications.

1.2 Physical Setting

The physical setting is as follows:

- The surface elevation is approximately 3,320 feet above mean sea level (msl);
- The topography slopes gently to the southeast;
- There are no surface water features within 1,000 feet of the Site;
- The soils are designated as “Berino-Cacique loamy fine sands association”, consisting of 0 to 6 inches of loamy fine sand underlain by 6 to 60 inches of sandy clay loam;
- The geology is the Eolian and piedmont deposits (Holocene to middle Pleistocene) – interlayered eolian sands and piedmont-slope deposits;
- Groundwater occurs in the Ogallala formation at approximately 149.69 feet below ground surface (bgs)(1996);
- According to the United States Geologic Survey (USGS) the nearest groundwater well is located in Unit A (NE/4, NE/4), Section 23, Township 24 South, Range 36 East, approximately 1.0 mile or 5,300 feet north of the Site.

1.3 Remediation Levels

The following remediation standards are based on closure criteria for soils impacted by a release as presented in Table 1 of 19.15.29 NMAC:

- Benzene 10 mg/Kg
- BTEX 50 mg/Kg
- TPH 2,500 mg/Kg
- Chloride 20,000 mg/Kg

Further, 19.15.29.13 NMAC (Restoration, Reclamation and Re-Vegetation) requires the operator to restore the impacted surface area that existed prior to the release or their final land use.

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Closure Report
Cooper Jal Unit #238 Produced Water Release
March 26, 2020

2.0 DELINEATION

The delineation plan was submitted to OCD on August 31, 2018. Between September 6 and September 10, 2019, LAI personnel collected soil samples from eleven (11) locations within the spill area (S-1, S-5, S-6, S-7 to S-10, S-12 to S-14, and S-16) and eleven (11) locations outside of the spill area (S-2 to S-4, S-11, S-15, S-17, and S-18 to S-22) in each cardinal direction (north, east, south, west) using direct push technology (DPT). The samples were collected at 1 foot intervals to approximately 5 feet bgs, depending on subsurface conditions. The soil samples were delivered under preservation and chain of custody to Permian Basin Environmental Laboratory (PBEL) in Midland, Texas. The upper sample from each location was analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX) and total petroleum hydrocarbons (TPH) by EPA SW-846 Methods 8021B and 8015M, respectively. All samples were analyzed for chloride by EPA Method 300. Benzene, BTEX, and TPH were reported below the OCD delineation limits of 10 mg/Kg, 50 mg/Kg, and 100 mg/Kg respectively, in Table 1 (19.15.29 NMAC). Chloride reported above the delineation limit of 600 mg/Kg in the following samples:

S-1, 4 to 5 feet bgs (1,030 mg/Kg)	S-8, 4 to 5 feet bgs (724 mg/Kg)
S-3, 1 to 2 feet bgs (899 mg/Kg)	S-9, 4 to 5 feet bgs (1,480 mg/Kg)
S-5, 2 to 3 feet bgs (2,660 mg/Kg)	S-10, 4 to 5 feet bgs (925 mg/Kg)
S-6, 1 to 2 feet bgs (682 mg/Kg)	S-12, 1 to 2 feet bgs (788 mg/Kg)
S-6, 2 to 3 feet bgs (2,930 mg/Kg)	S-13, 2 to 3 feet bgs (666 mg/Kg)
S-7, 1 to 2 feet bgs (1,500 mg/Kg)	S-14, 1 to 2 feet bgs (1,170 mg/Kg)
S-7, 4 to 5 feet bgs (2,430 mg/Kg)	S-14, 2 to 3 feet bgs (1,200 mg/Kg)
S-8, 1 to 2 feet bgs (1,040 mg/Kg)	

Under the current rule (19.15.29.11(5)(C)), delineation for chloride to 600 mg/Kg is not required where groundwater exceeds 100 feet in depth, therefore the release was delineated vertically for chloride.

Table 1 presents the delineation soil sample analytical data summary. Figure 2 presents an aerial map with soil sample locations.

3.0 REMEDIATION

Between October 29, 2019 and December 20, 2019, Caprock Oilfield Services (Caprock) used a trackhoe to excavate soil from an area measuring about approximately 36,170 square feet encompassing delineation samples S-1 and S-5 through S-8, to approximately 4.5 feet bgs. Caprock excavated additional soil from an area measuring approximately 27,252 square feet encompassing delineation samples S-12, S-13, and S-14 to approximately 4.5 feet bgs. Approximately 13,930 cubic yards of soil were disposed at Lea Land Landfill, Inc., located south of US Highway 62/180 east of Carlsbad, New Mexico. Appendix C presents the waste manifests.

Between November 1, 2019 and December 20, 2019, LAI personnel collected five-point composite confirmation soil samples from the sidewalls (north, east, south, and west) and bottom of each excavation. Twenty-five (25) composite samples each of clean caliche and topsoil were collected from a nearby pit. The samples were delivered under preservation and chain of custody to PBEL and were analyzed for BTEX, TPH and chloride by EPA SW-846 Methods 8021B, 8015M and Method 300,

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Closure Report
Cooper Jal Unit #238 Produced Water Release
March 26, 2020

respectively. All confirmation soil samples reported benzene, BTEX, TPH, and chloride below the OCD remediation levels. BTEX and TPH were below the method reporting limits in the backfill composite samples and chloride was less 600 mg/Kg. Table 2 presents the confirmation soil analytical data summary. Figure 3 presents the excavations and confirmation sample locations. Appendix D presents laboratory reports. Appendix E presents photographs.

The excavations were backfilled up to 2 feet bgs with clean caliche and to surface with clean topsoil. On February 7, 2020, LAI personnel seeded the backfilled areas with BLM Mix No 3. Legacy requests no further action for 1RP-5068.

Tables

Table 1
1RP-5068
Delineation Soil Sample Analytical Data Summary
Legacy Reserves, Cooper Jal #238
Lea County, New Mexico
18-0138-01

Sample	Depth (Feet)	Collection Date	Status	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	C6 - C35 (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				10	50	100 / 2,500	600 / 10,000			
S-1	0 - 1	9/6/2019	In-situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	52.6
	2 - 3	9/6/2019	In-situ	--	--	--	--	--	--	1,110
	4 - 5	9/6/2019	In-situ	--	--	--	--	--	--	1,030
S-2	0 - 1	9/9/2019	In-situ	<0.00106	<0.00637	<26.6	<26.6	<26.6	<26.6	24.7
	1 - 2	9/9/2019	In-situ	--	--	--	--	--	--	544
S-3	0 - 1	9/9/2019	In-situ	<0.00108	<0.00647	<26.9	<26.9	<26.9	<26.9	215
	1 - 2	9/9/2019	In-situ	--	--	--	--	--	--	899
S-4	0 - 1	9/9/2019	In-situ	<0.00105	<0.00631	<26.3	<26.3	<26.3	<26.3	31.5
	1 - 2	9/9/2019	In-situ	--	--	--	--	--	--	167
S-5	0 - 1	9/9/2019	In-situ	<0.00115	<0.00690	<28.7	<28.7	<28.7	<28.7	1.23
	1 - 2	9/9/2019	In-situ	--	--	--	--	--	--	10.4
	2 - 3	9/9/2019	In-situ	--	--	--	--	--	--	2,660
S-6	0 - 1	9/9/2019	In-situ	<0.00114	<0.00683	<28.4	<28.4	<28.4	<28.4	<1.14
	1 - 2	9/9/2019	In-situ	--	--	--	--	--	--	682
	2 - 3	9/9/2019	In-situ	--	--	--	--	--	--	2,930
S-7	0 - 1	9/9/2019	In-situ	<0.00106	<0.00637	<26.6	<26.6	<26.6	<26.6	132
	1 - 2	9/9/2019	In-situ	--	--	--	--	--	--	1500
	4 - 5	9/9/2019	In-situ	--	--	--	--	--	--	2430
S-8	0 - 1	9/9/2019	In-situ	<0.00105	<0.00631	<26.3	<26.3	<26.3	<26.3	3.44
	1 - 2	9/9/2019	In-situ	--	--	--	--	--	--	1,040
	4 - 5	9/9/2019	In-situ	--	--	--	--	--	--	724
S-9	0 - 1	9/9/2019	In-situ	<0.00106	<0.00637	<26.6	<26.6	<26.6	<26.6	239
	1 - 2	9/9/2019	In-situ	--	--	--	--	--	--	211
	4 - 5	9/9/2019	In-situ	--	--	--	--	--	--	1,480

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Sample	Depth (Feet)	Collection Date	Status	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	C6 - C35 (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				10	50	100 / 2,500				600 / 10,000
S-10	0 - 1	9/9/2019	In-situ	<0.00110	<0.00660	<27.5	<27.5	<27.5	<27.5	10.7
	2 - 3	9/9/2019	In-situ	--	--	--	--	--	--	109
	4 - 5	9/9/2019	In-situ	--	--	--	--	--	--	925
S-11	0 - 1	9/9/2019	In-situ	<0.00104	<0.00624	<26.0	<26.0	<26.0	<26.0	<1.04
	2 - 3	9/9/2019	In-situ	--	--	--	--	--	--	11.5
	4 - 5	9/9/2019	In-situ	--	--	--	--	--	--	18.7
S-12	0 - 1	9/9/2019	In-situ	<0.00105	<0.00631	<26.3	<26.3	<26.3	<26.3	404
	1 - 2	9/9/2019	In-situ	--	--	--	--	--	--	788
S-13	0 - 1	9/10/2019	In-situ	<0.00111	<0.00666	<27.8	<27.8	<27.8	<27.8	200
	2 - 3	9/10/2019	In-situ	--	--	--	--	--	--	666
	4 - 5	9/10/2019	In-situ	--	--	--	--	--	--	414
S-14	0 - 1	9/10/2019	In-situ	<0.00110	<0.00660	<27.5	<27.5	<27.5	<27.5	526
	1 - 2	9/10/2019	In-situ	--	--	--	--	--	--	1,170
	2 - 3	9/10/2019	In-situ	--	--	--	--	--	--	1,200
S-15	0 - 1	9/10/2019	In-situ	<0.00103	<0.00618	<25.8	<25.8	<25.8	<25.8	<1.03
	2 - 3	9/10/2019	In-situ	--	--	--	--	--	--	5.14
	4 - 5	9/10/2019	In-situ	--	--	--	--	--	--	14.1
S-16	0 - 1	9/10/2019	In-situ	<0.00105	<0.00631	<26.3	<26.3	<26.3	<26.3	2.24
	1 - 2	9/10/2019	In-situ	--	--	--	--	--	--	34.3
	2 - 3	9/10/2019	In-situ	--	--	--	--	--	--	450
S-17	0 - 1	9/10/2019	In-situ	<0.00104	<0.00624	<26.0	<26.0	<26.0	<26.0	3.84
	1 - 2	9/10/2019	In-situ	--	--	--	--	--	--	394
S-18	0 - 1	9/10/2019	In-situ	<0.00109	<0.00653	<27.2	<27.2	<27.2	<27.2	<1.09
S-19	0 - 1	9/10/2019	In-situ	<0.00103	<0.00618	<25.8	<25.8	<25.8	<25.8	<1.03

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Legacy Reserves, Cooper Jal #238
Lea County, New Mexico
18-0138-01

Sample	Depth (Feet)	Collection Date	Status	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	C6 - C35 (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				10	50				100 / 2,500	600 / 10,000
S-20	0 - 1	9/10/2019	In-situ	<0.00104	<0.00624	<26.0	<26.0	<26.0	<26.0	18.3
S-21	0 - 1	9/10/2019	In-situ	<0.00106	<0.00637	<26.6	<26.6	<26.6	<26.6	4.22
S-22	0 - 1	9/10/2019	In-situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	<1.02

Notes: analysis performed by Permian Basin Laboratories, Midland, Texas by EPA SW-846 Methods 8021B (BTEX), 8015M (TPH) and 300 (chloride)

mg/Kg: denotes concentration in milligrams per kilogram

Depth is feet below ground surface (bgs)

Denotes concentration above remediation level

Table 2
1RP-5201
Confrimration Soil Sample Analytical Data Summary
Legacy Reserves, Cooper Jal #238
Lea County, New Mexico
18-0138-01

Sample	Excavation Location	Collection Date	Status	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	C6 - C35 (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				10	50				2,500 / 100	10,000 / 600
Confirmation Soil Samples										
1.1	Sidewall West (0-4')	12/12/2019	In-situ	<0.00106	<0.00637	<26.6	<26.6	<26.6	<26.6	47.6
1.2	Sidewall West (0-4')	12/12/2019	In-situ	<0.00104	<0.00624	<26.0	<26.0	<26.0	<26.0	108
1.3	Sidewall West (0-4')	12/12/2019	In-situ	<0.00103	<0.00618	<25.8	<25.8	<25.8	<25.8	21.7
1.4	Sidewall North (0 - 4')	12/12/2019	In-situ	<0.00106	<0.00637	<26.6	<26.6	<26.6	<26.6	231
1.5	Sidewall North (0 - 4')	12/12/2019	In-situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	38.6
1.6	Sidewall North (0 - 4')	12/12/2019	In-situ	<0.00104	<0.00624	<26.0	<26.0	<26.0	<26.0	19.6
1.7	Sidewall South (0-4')	12/12/2019	In-situ	<0.00104	<0.00624	<26.0	<26.0	<26.0	<26.0	44.4
1.8	Sidewall South (0-4')	12/12/2019	In-situ	<0.00106	<0.00637	<26.6	<26.6	<26.6	<26.6	58.9
1.9	Sidewall South (0-4')	12/12/2019	In-situ	<0.00103	<0.00618	<25.8	<25.8	<25.8	<25.8	16.6
1.10	Bottom (4.5')	12/12/2019	In-situ	<0.00112	<0.00673	<28.1	<28.1	<28.1	<28.1	1,740
1.11	Bottom (4.5')	12/12/2019	In-situ	<0.00110	<0.00660	<27.5	<27.5	<27.5	<27.5	1,290
1.12	Bottom (4.5')	12/12/2019	In-situ	<0.00111	<0.00666	<27.8	<27.8	<27.8	<27.8	101
1.13	Bottom (4.5')	12/12/2019	In-situ	<0.00109	<0.00653	<27.2	<27.2	<27.2	<27.2	84.7
1.14	Bottom (4.5')	12/12/2019	In-situ	<0.00111	<0.00666	<27.8	<27.8	<27.8	<27.8	261
1.15	Bottom (4.5')	12/12/2019	In-situ	<0.00111	<0.00666	<27.8	<27.8	<27.8	<27.8	77.4
1.16	Bottom (4.5')	12/12/2019	In-situ	<0.00109	<0.00653	<27.2	<27.2	<27.2	<27.2	768
1.17	Bottom (4.5')	12/12/2019	In-situ	<0.00111	<0.00666	<27.8	<27.8	<27.8	<27.8	594
1.18	Bottom (4.5')	12/12/2019	In-situ	<0.00110	<0.00660	<27.5	<27.5	<27.5	<27.5	810
5.1	Sidewall North (0 - 4')	12/12/2019	In-situ	<0.00103	<0.00618	<25.8	<25.8	<25.8	<25.8	9.51
5.2	Sidewall South (0-4')	12/12/2019	In-situ	<0.00105	<0.00631	<26.3	<26.3	<26.3	<26.3	29.5
5.3	Sidewall South (0-4')	12/12/2019	In-situ	<0.00103	<0.00618	<25.8	<25.8	<25.8	<25.8	10.6
5.4	Sidewall North (0 - 4')	12/12/2019	In-situ	<0.00105	<0.00631	<26.3	<26.3	<26.3	<26.3	15.4
5.5	Sidewall North (0 - 4')	12/12/2019	In-situ	<0.00104	<0.00624	<26.0	<26.0	<26.0	<26.0	14.9
5.6	Sidewall South (0-4')	12/12/2019	In-situ	<0.00104	<0.00624	<26.0	29.0	<26.0	29.0	33.4
5.7	Sidewall South (0-4')	12/12/2019	In-situ	<0.00104	<0.00624	<26.0	<26.0	<26.0	<26.0	18.5
5.8	Sidewall North (0 - 4')	12/12/2019	In-situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	9.18
5.9	Sidewall North (0 - 4')	12/12/2019	In-situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	129
5.10	Sidewall South (0-4')	12/12/2019	In-situ	<0.00105	<0.00631	<26.3	<26.3	<26.3	<26.3	184
5.11	Sidewall South (0-4')	12/12/2019	In-situ	<0.00104	<0.00624	<26.0	<26.0	<26.0	<26.0	13.2
5.12	Sidewall North (0 - 4')	12/12/2019	In-situ	<0.00103	<0.00618	<25.8	<25.8	<25.8	<25.8	11.7

Table 2
1RP-5201
Confrimration Soil Sample Analytical Data Summary
Legacy Reserves, Cooper Jal #238
Lea County, New Mexico
18-0138-01

Sample	Excavation Location	Collection Date	Status	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	C6 - C35 (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				10	50	2,500 / 100	10,000 / 600			
5.13	Sidewall North (0 - 4')	12/12/2019	In-situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	15.6
5.14	Sidewall South (0-4')	12/12/2019	Excavated	<0.00106	<0.00637	<26.6	<26.6	<26.6	<26.6	736
		12/20/2019	In-situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	7.99
5.15	Sidewall South (0-4')	12/12/2019	In-situ	<0.00106	<0.00637	<26.6	<26.6	<26.6	<26.6	171
5.16	Sidewall North (0 - 4')	12/12/2019	In-situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	112
5.17	Bottom (4.5')	12/12/2019	In-situ	<0.00112	<0.00673	<28.1	<28.1	<28.1	<28.1	925
5.18	Bottom (4.5')	12/12/2019	In-situ	<0.00111	<0.00666	<27.8	<27.8	<27.8	<27.8	886
5.19	Bottom (4.5')	12/12/2019	In-situ	<0.00111	<0.00666	<27.8	<27.8	<27.8	<27.8	542
5.20	Bottom (4.5')	12/12/2019	In-situ	<0.00114	<0.00683	<28.4	<28.4	<28.4	<28.4	1,110
5.21	Bottom (4.5')	12/12/2019	In-situ	<0.00114	<0.00683	<28.4	<28.4	<28.4	<28.4	1,100
5.22	Bottom (4.5')	12/12/2019	In-situ	<0.00111	<0.00666	<27.8	<27.8	<27.8	<27.8	1,160
5.23	Bottom (4.5')	12/12/2019	In-situ	<0.00115	<0.00690	<28.7	<28.7	<28.7	<28.7	977
5.24	Bottom (4.5')	12/12/2019	In-situ	<0.00108	<0.00647	<26.9	<26.9	<26.9	<26.9	963
6.1	Sidewall South (0-4')	12/12/2019	In-situ	<0.00106	<0.00637	<26.6	<26.6	<26.6	<26.6	118
6.2	Sidewall North (0 - 4')	12/12/2019	In-situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	67
6.3	Sidewall North (0 - 4')	12/12/2019	In-situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	9.01
6.4	Sidewall South (0-4')	12/12/2019	In-situ	0.00103	<0.00618	<25.8	<25.8	<25.8	<25.8	12.3
6.5	Sidewall South (0-4')	12/12/2019	In-situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	11.1
6.6	Sidewall North (0 - 4')	12/12/2019	In-situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	26.2
6.7	Sidewall North (0 - 4')	12/12/2019	In-situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	9.63
6.8	Sidewall South (0-4')	12/12/2019	In-situ	<0.00105	<0.00631	<26.3	<26.3	<26.3	<26.3	119
6.9	Sidewall South (0-4')	12/12/2019	In-situ	<0.00109	<0.00653	<27.2	<27.2	<27.2	<27.2	86.2
6.10	Sidewall North (0 - 4')	12/12/2019	In-situ	<0.00101	<0.00606	<25.3	31.8	<25.3	31.8	407
6.11	Sidewall North (0 - 4')	12/12/2019	In-situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	130
6.12	Sidewall South (0-4')	12/12/2019	In-situ	<0.00104	<0.00624	<26.0	<26.0	<26.0	<26.0	66.6
6.13	Bottom (4.5')	12/12/2019	In-situ	<0.00118	<0.00707	<29.4	<29.4	<29.4	<29.4	1,900
6.14	Bottom (4.5')	12/12/2019	In-situ	<0.00111	<0.00666	<27.8	<27.8	<27.8	<27.8	252
6.15	Bottom (4.5')	12/12/2019	In-situ	<0.00111	<0.00666	<27.8	<27.8	<27.8	<27.8	292
6.16	Bottom (4.5')	12/12/2019	In-situ	<0.00111	<0.00666	<27.8	<27.8	<27.8	<27.8	533
6.17	Bottom (4.5')	12/12/2019	In-situ	<0.00112	<0.00673	<28.1	<28.1	<28.1	<28.1	466
6.18	Bottom (4.5')	12/12/2019	In-situ	<0.00111	<0.00666	<27.8	<27.8	<27.8	<27.8	616

Table 2
1RP-5201
Confrimration Soil Sample Analytical Data Summary
Legacy Reserves, Cooper Jal #238
Lea County, New Mexico
18-0138-01

Sample	Excavation Location	Collection Date	Status	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	C6 - C35 (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				10	50				2,500 / 100	10,000 / 600
7.1	Sidewall North (0-4')	12/16/2019	In-situ	<0.00101	0.00181	<25.3	<25.3	<25.3	<25.3	52.4
7.2	Sidewall North (0-4')	12/16/2019	Excavated	<0.00101	0.00187	<25.3	<25.3	<25.3	<25.3	1,760
		12/20/2010	In-situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	220
7.3	Sidewall North (0-4')	12/16/2019	In-situ	<0.00101	0.00127	<25.3	<25.3	<25.3	<25.3	191
7.4	Sidewall East (0-4')	12/16/2019	Excavated	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	1,200
		12/20/2019	In-situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	192
7.5	Sidewall South (0-4')	12/16/2019	In-situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	465
7.6	Sidewall South (0-4')	12/16/2019	Excavated	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	965
		12/20/2019	In-situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	342
7.7	Sidewall South (0-4')	12/16/2019	In-situ	<0.00105	<0.00631	<26.3	38.3	<26.3	38.3	445
7.8	Bottom (4.5')	12/16/2019	In-situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	3,680
7.9	Bottom (4.5')	12/16/2019	In-situ	0.00103	<0.00618	<25.8	<25.8	<25.8	<25.8	1,260
7.10	Bottom (4.5')	12/16/2019	In-situ	<0.00100	<0.00600	<27.2	<27.2	<27.2	<27.2	977
7.11	Bottom (4.5')	12/16/2019	In-situ	<0.00100	<0.00600	<25.5	<25.5	<25.5	<25.5	5,450
7.12	Bottom (4.5')	12/16/2019	In-situ	<0.00100	<0.00600	<26.6	<26.6	<26.6	<26.6	1,210
7.13	Bottom (4.5')	12/16/2019	In-situ	<0.00100	<0.00600	<25.5	<25.5	<25.5	<25.5	1,010
7.14	Bottom (4.5')	12/16/2019	In-situ	<0.00100	<0.00600	<25.8	<25.8	<25.8	<25.8	891
7.15	Bottom (4.5')	12/16/2019	In-situ	<0.00100	<0.00600	<25.8	<25.8	<25.8	<25.8	1,470
7.16	Bottom (4.5')	12/16/2019	In-situ	<0.00100	<0.00600	38.00	895	425	1,360	298
7.17	Bottom (4.5')	12/16/2019	In-situ	<0.00100	<0.00600	<27.8	92.5	<27.8	92.5	2,880
12.1	Sidewall East (0-4')	11/1/2019	Excavated	<0.00100	<0.00600	<25.0	<25.0	<25.0	<25.0	621
		12/12/2019	In-situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	14.2
12.2	Sidewall East (0-4')	11/1/2019	Excavated	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	4,850
		12/12/2019	In-situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	46.2
12.3	Sidewall East (0-4')	11/1/2019	Excavated	<0.00101	<0.00606	<25.0	<25.0	<25.0	<25.0	2,450
		12/12/2019	In-situ	<0.00100	<0.00600	<25.3	<25.3	<25.3	<25.3	12.5
12.4	Sidewall West (0-4')	11/1/2019	Excavated	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	3,810
		12/12/2019	In-situ	<0.00105	<0.00631	<26.3	<26.3	<26.3	<26.3	123
12.5	Sidewall West (0-4')	11/1/2019	Excavated	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	5,020

Table 2
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Confrimration Soil Sample Analytical Data Summary
Legacy Reserves, Cooper Jal #238
Lea County, New Mexico
18-0138-01

Sample	Excavation Location	Collection Date	Status	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	C6 - C35 (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				10	50	2,500 / 100	10,000 / 600			
12.6	Sidewall West (0-4')	12/12/2019	In-situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	51.2
12.7	Bottom (4.5')	11/1/2019	In-situ	<0.00100	<0.00600	<25.0	<25.0	<25.0	<25.0	27.5
12.8	Bottom (4.5')	11/1/2019	In-situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	602
12.9	Bottom (4.5')	11/1/2019	In-situ	<0.00125	<0.0075	<31.2	<31.2	<31.2	<31.2	3,910
12.1	Bottom (4.5')	11/1/2019	In-situ	<0.00123	<0.00739	<30.0	90.1	59.8	150	2,000
12.11	Bottom (4.5')	11/1/2019	In-situ	<0.00103	<0.00618	<25.8	<25.8	<25.8	<25.8	1,710
12.12	Bottom (4.5')	11/1/2019	In-situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	1,030
12.12	Sidewall North (0-4)	11/1/2019	In-situ	<0.00103	<0.00618	<25.8	<25.8	<25.8	<25.8	549
13.1	Sidewall North (0-4')	11/1/2019	Excavated	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	2,170
		12/12/2019	In-situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	12.0
13.2	Sidewall North (0-4')	11/1/2019	In-situ	<0.00101	<0.00606	<25.0	<25.0	<25.0	<25.0	17.8
13.3	Sidewall South (0-4')	11/1/2019	In-situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	88.2
13.4	Sidewall South (0-4')	11/1/2019	In-situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	48.3
13.5	Bottom (5')	11/1/2019	In-situ	<0.00101	<0.00606	<25.3	95.4	72.6	168	365
13.6	Bottom (5')	11/1/2019	In-situ	<0.00100	<0.00600	<25.0	<25.0	<25.0	<25.0	412
13.7	Bottom (5')	11/1/2019	In-situ	<0.00103	<0.00618	<25.8	33.4	34.9	68.3	385
13.8	Bottom (5')	11/1/2019	In-situ	<0.00103	<0.00618	<25.8	<25.8	<25.8	<25.8	52.7
14.1	Sidewall North (0-4')	11/20/2019	Excavated	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	1,040
		12/20/2019	In-Situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	7.37
14.2	Sidewall North (0-4')	11/20/2019	In-Situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	141
14.3	Sidewall North (0-4')	11/20/2019	In-Situ	<0.00100	<0.00600	<25.0	<25.0	<25.0	<25.0	11.0
14.4	Sidewall North (0-4')	11/20/2019	In-Situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	440
14.5	Sidewall North (0-4')	11/20/2019	In-Situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	503
14.6	Sidewall North (0-4')	11/20/2019	Excavated	<0.00103	<0.00618	<25.8	<25.8	<25.8	<25.8	4,680
		12/20/2019	In-Situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	6.95
14.7	Sidewall East (0-4')	11/20/2019	Excavated	<0.00105	<0.00631	<26.3	<26.3	<26.3	<26.3	6,650
		12/20/2019	In-Situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	6.05
14.8	Sidewall East (0-4')	11/20/2019	In-Situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	14.3
14.9	Sidewall East (0-4')	11/20/2019	In-Situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	154
14.10	Sidewall East (0-4')	11/20/2019	In-Situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	6.82
14.11	Sidewall East (0-4')	11/20/2019	Excavated	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	1,490

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Legacy Reserves, Cooper Jal #238
Lea County, New Mexico
18-0138-01

Sample	Excavation Location	Collection Date	Status	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	C6 - C35 (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				10	50				2,500 / 100	10,000 / 600
14.12	Sidewall East (0-4')	12/20/2019	In-Situ	<0.00103	<0.00618	<25.8	<25.8	<25.8	<25.8	6.53
14.13	Sidewall East (0-4')	11/20/2019	In-Situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	47.7
14.14	Sidewall South (0-4')	11/20/2019	In-Situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	11.1
14.14	Sidewall South (0-4')	11/20/2019	Excavated	<0.00104	<0.00624	<26.0	<26.0	<26.0	<26.0	5,430
14.15	Sidewall South (0-4')	12/20/2019	In-Situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	4.59
14.15	Sidewall South (0-4')	11/20/2019	In-Situ	<0.00108	<0.00647	<26.9	<26.9	<26.9	<26.9	48.1
14.16	Sidewall West (0-4')	11/20/2019	Excavated	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	2,010
14.17	Sidewall West (0-4')	12/20/2019	In-Situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	6.04
14.17	Sidewall West (0-4')	11/20/2019	Excavated	<0.00103	<0.00618	<25.8	<25.8	<25.8	<25.8	8,580
14.18	Sidewall South (0-4')	12/20/2019	In-Situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	5.37
14.18	Sidewall South (0-4')	11/20/2019	In-Situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	585
14.19	Sidewall South (0-4')	11/20/2019	In-Situ	<0.00103	<0.00618	<25.8	<25.8	<25.8	<25.8	141
14.20	Bottom (4.5')	11/20/2019	In-Situ	<0.00105	<0.00631	<26.3	<26.3	<26.3	<26.3	85.9
14.21	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<26.0	<26.0	<26.0	<26.0	401
14.22	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<25.8	<25.8	<25.8	<25.8	50.5
14.23	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<26.0	<26.0	<26.0	<26.0	429
14.24	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<27.5	<27.5	<27.5	<27.5	694
14.25	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<26.6	35.4	<26.6	35.4	620
14.26	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<26.6	<26.6	<26.6	<26.6	2,460
14.27	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<25.8	<25.8	<25.8	<25.8	295
14.28	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<26.9	<26.9	<26.9	<26.9	1,530
14.29	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<26.3	<26.3	<26.3	<26.3	522
14.30	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<25.5	<25.5	<25.5	<25.5	438
14.31	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<26.9	<26.9	<26.9	<26.9	600
14.32	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<27.2	45.5	38.1	83.6	1,380
14.33	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<26.9	63.4	37.1	100	1,890
14.34	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<26.9	<26.9	<26.9	<26.9	697
14.35	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<26.0	<26.0	<26.0	<26.0	946
14.36	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<26.9	<26.9	<26.9	<26.9	7,450
14.37	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<26.0	<26.0	<26.0	<26.0	358
14.38	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<26.0	47.3	<26.0	47.3	578
14.39	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<26.0	28.6	<26.0	28.6	618
14.40	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<26.3	111	46.9	158	1,080

Table 2
1RP-5201
Confrimration Soil Sample Analytical Data Summary
Legacy Reserves, Cooper Jal #238
Lea County, New Mexico
18-0138-01

Sample	Excavation Location	Collection Date	Status	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	C6 - C35 (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				10	50	2,500 / 100	10,000 / 600			
14.41	Bottom (4.5')	11/20/2019	In-Situ	<0.00103	<0.00618	<25.8	<25.8	<25.8	<25.8	245
14.42	Bottom (4.5')	11/20/2019	In-Situ	<0.00103	<0.00618	<25.8	<25.8	<25.8	<25.8	20.0
14.43	Bottom (4.5')	11/20/2019	In-Situ	<0.00105	<0.00631	<26.3	<26.3	<26.3	<26.3	443
14.44	Bottom (4.5')	11/20/2019	In-Situ	<0.00105	<0.00631	<26.3	60.0	31.5	91.6	918
14.45	Bottom (4.5')	11/20/2019	In-Situ	<0.00105	<0.00631	<26.3	82.4	44.1	126	425
14.46	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<26.0	<26.0	<26.0	<26.0	860
14.47	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<26.9	<26.9	<26.9	<26.9	477
14.48	Bottom (4.5')	11/20/2019	In-Situ	<0.00100	<0.00600	<27.2	31.6	<27.2	31.6	832
Backfill Soil Samples										
Caliche BF-1		12/31/2019	In-Situ	<0.00106	<0.00531	<26.6	42.0	<26.6	42.0	26.2
Caliche BF-2		12/31/2019	In-Situ	<0.00106	<0.00531	<26.6	<26.6	<26.6	<26.6	26.6
Caliche BF-3		12/31/2019	In-Situ	<0.00105	<0.00631	<26.3	<26.3	<26.3	<26.3	46.7
Caliche BF-4		12/31/2019	In-Situ	<0.00108	<0.00647	<26.9	45.0	<26.9	45.0	26.4
Caliche BF-5		12/31/2019	In-Situ	<0.00105	<0.00631	<26.3	40.9	<26.3	40.9	11.6
Caliche BF-6		12/31/2019	In-Situ	<0.00106	<0.00531	<26.6	32.9	<26.6	32.9	27.8
Caliche BF-7		12/31/2019	In-Situ	<0.00106	<0.00531	<26.6	<26.6	<26.6	<26.6	23.6
Caliche BF-8		12/31/2019	In-Situ	<0.00104	<0.00520	<26.0	<26.0	<26.0	<26.0	14.0
Caliche BF-9		12/31/2019	In-Situ	<0.00106	<0.00531	<26.6	<26.6	<26.6	<26.6	20.3
Caliche BF-10		12/31/2019	In-Situ	<0.00106	<0.00531	<26.6	<26.6	<26.6	<26.6	51.0
Caliche BF-11		12/31/2019	In-Situ	<0.00105	<0.00631	<26.6	<26.6	<26.6	<26.6	32.8
Caliche BF-12		12/31/2019	In-Situ	<0.00106	<0.00531	<26.6	<26.6	<26.6	<26.6	49.0
Caliche BF-13		12/31/2019	In-Situ	<0.00105	<0.00631	<26.3	<26.3	<26.3	<26.3	34.0
Caliche BF-14		12/31/2019	In-Situ	<0.00105	<0.00631	<26.3	<26.3	<26.3	<26.3	40.3
Caliche BF-15		12/31/2019	In-Situ	<0.00106	<0.00531	<26.6	<26.6	<26.6	<26.6	32.4
Caliche BF-16		12/31/2019	In-Situ	<0.00105	<0.00631	<26.3	<26.3	<26.3	<26.3	41.6
Caliche BF-17		12/31/2019	In-Situ	<0.00105	<0.00631	<26.3	<26.3	<26.3	<26.3	32.6
Caliche BF-18		12/31/2019	In-Situ	<0.00106	<0.00531	<26.6	<26.6	<26.6	<26.6	34.9
Caliche BF-19		12/31/2019	In-Situ	<0.00106	<0.00531	<26.6	<26.6	<26.6	<26.6	50.3
Caliche BF-20		12/31/2019	In-Situ	<0.00105	<0.00631	<26.3	<26.3	<26.3	<26.3	54.6
Caliche BF-21		12/31/2019	In-Situ	<0.00108	<0.00647	<26.9	<26.9	<26.9	<26.9	38.6
Caliche BF-22		12/31/2019	In-Situ	<0.00105	<0.00631	<26.3	<26.3	<26.3	<26.3	22.5
Caliche BF-23		12/31/2019	In-Situ	<0.00103	<0.00618	<25.8	<25.8	<25.8	<25.8	140
Caliche BF-24		12/31/2019	In-Situ	<0.00106	<0.00531	<26.6	<26.6	<26.6	<26.6	38.9

Table 2
1RP-5201
Confrimration Soil Sample Analytical Data Summary
Legacy Reserves, Cooper Jal #238
Lea County, New Mexico
18-0138-01

Sample	Excavation Location	Collection Date	Status	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	C6 - C35 (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				10	50	2,500 / 100				10,000 / 600
Caliche BF-25		12/31/2019	In-Situ	<0.00104	<0.00520	<26.0	<26.0	<26.0	<26.0	91.7
Sand BF-1		12/31/2019	In-Situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	18.5
Sand BF-2		12/31/2019	In-Situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	13.5
Sand BF-3		12/31/2019	In-Situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	15.7
Sand BF-4		12/31/2019	In-Situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	11.4
Sand BF-5		12/31/2019	In-Situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	19.7
Sand BF-6		12/31/2019	In-Situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	15.8
Sand BF-7		12/31/2019	In-Situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	15.7
Sand BF-8		12/31/2019	In-Situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	10.1
Sand BF-9		12/31/2019	In-Situ	<0.00100	<0.00600	<25.0	<25.0	<25.0	<25.0	17
Sand BF-10		12/31/2019	In-Situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	17.6
Sand BF-11		12/31/2019	In-Situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	10.3
Sand BF-12		12/31/2019	In-Situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	15.6
Sand BF-13		12/31/2019	In-Situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	21.9
Sand BF-14		12/31/2019	In-Situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	14.5
Sand BF-15		12/31/2019	In-Situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	18.6
Sand BF-16		12/31/2019	In-Situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	14.4
Sand BF-17		12/31/2019	In-Situ	<0.00101	<0.00606	<25.3	43.9	<25.3	43.9	19.2
Sand BF-18		12/31/2019	In-Situ	<0.00102	<0.00612	<25.5	29.6	<25.5	29.6	15.3
Sand BF-19		12/31/2019	In-Situ	<0.00101	<0.00606	<25.3	25.9	25.3	51.2	27.9
Sand BF-20		12/31/2019	In-Situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	18.8
Sand BF-21		12/31/2019	In-Situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	22
Sand BF-22		12/31/2019	In-Situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	14.8
Sand BF-23		12/31/2019	In-Situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	24.4
Sand BF-24		12/31/2019	In-Situ	<0.00102	<0.00612	<25.5	<25.5	<25.5	<25.5	19.5
Sand BF-25		12/31/2019	In-Situ	<0.00101	<0.00606	<25.3	<25.3	<25.3	<25.3	16.2

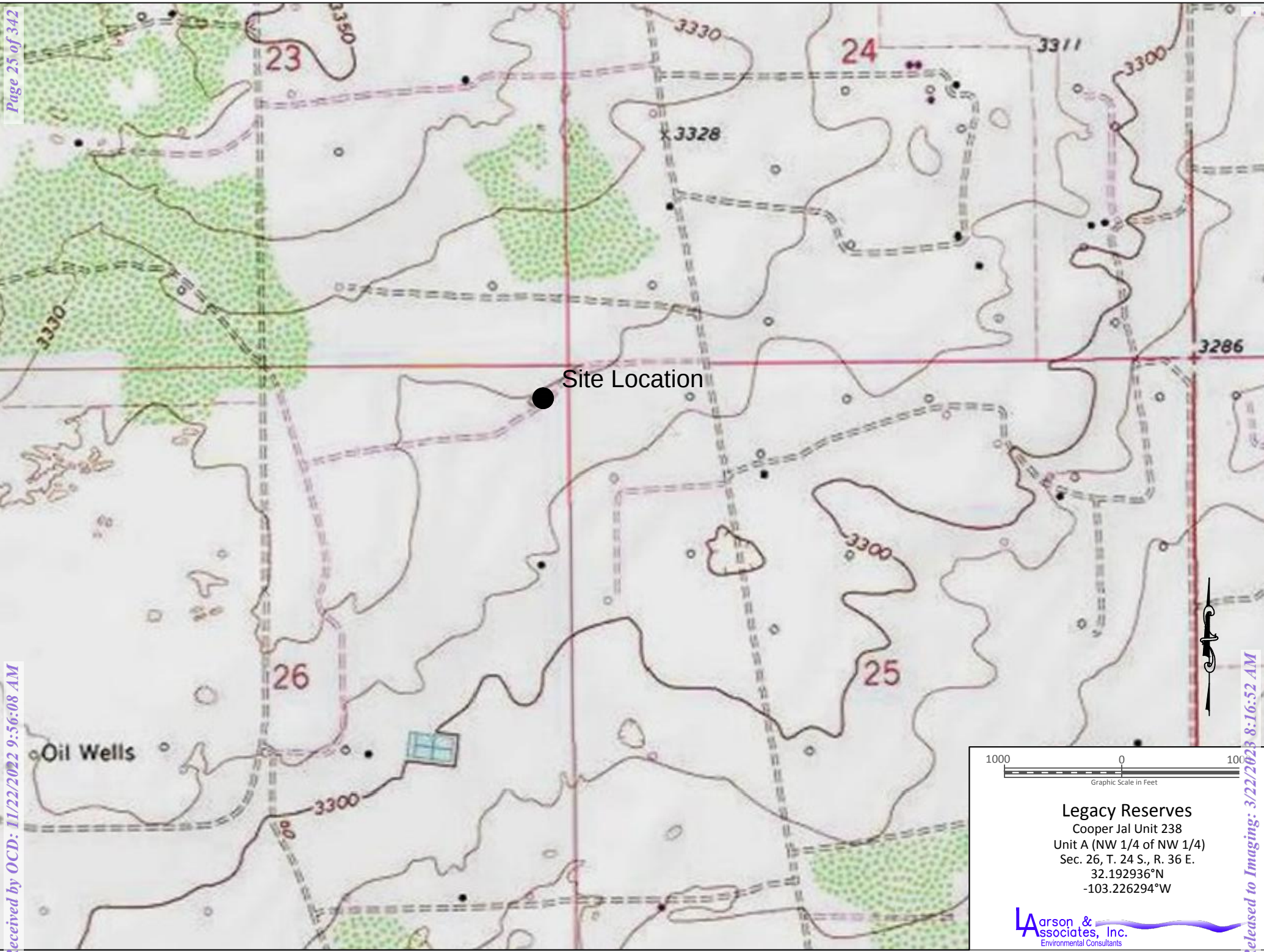
Notes: analysis performed by Xenco Laboratories, Midland, Texas by EPA SW-846 Methods 8021B (BTEX), 8015M (TPH) and 300 (chloride)

mg/Kg: denotes concentration in milligrams per kilogram

Depth is feet below ground surface (bgs)

Denotes concentration above remediation level

Figures



Legacy Reserves
Cooper Jal Unit 238
Unit A (NW 1/4 of NW 1/4)
Sec. 26, T. 24 S., R. 36 E.
32.192936°N
-103.226294°W



Figure 1 - Topographic Map

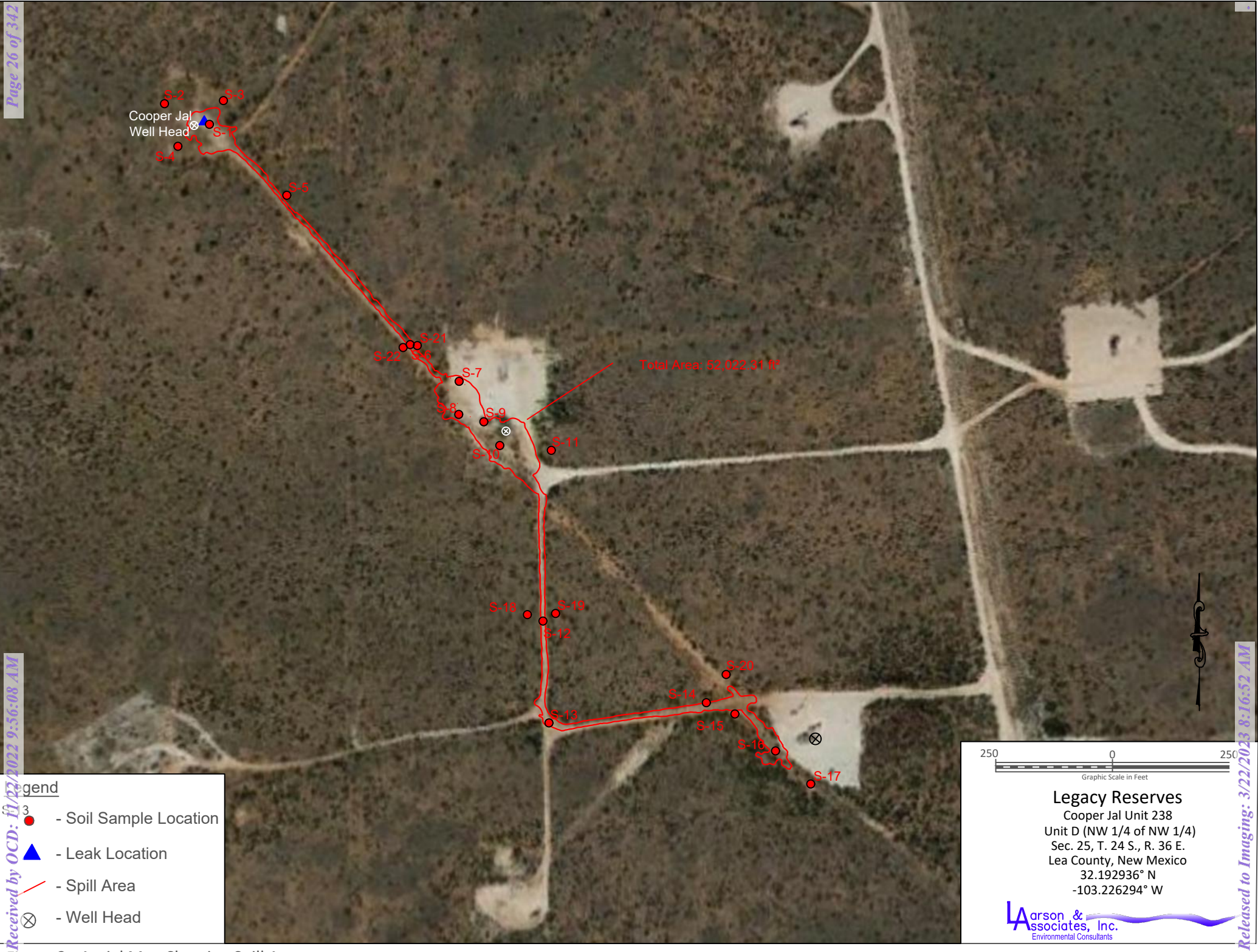


Figure 2 - Aerial Map Showing Spill Area

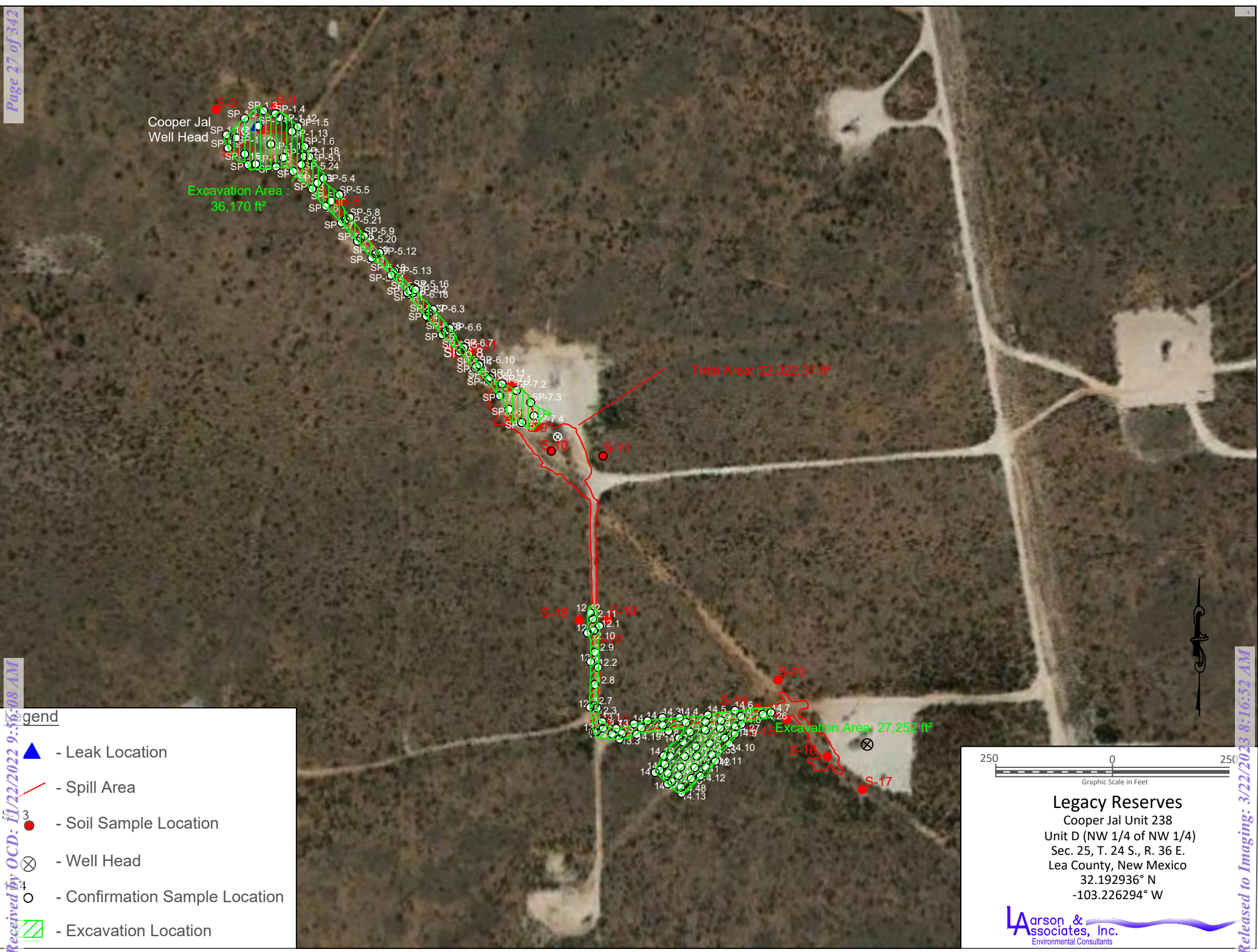
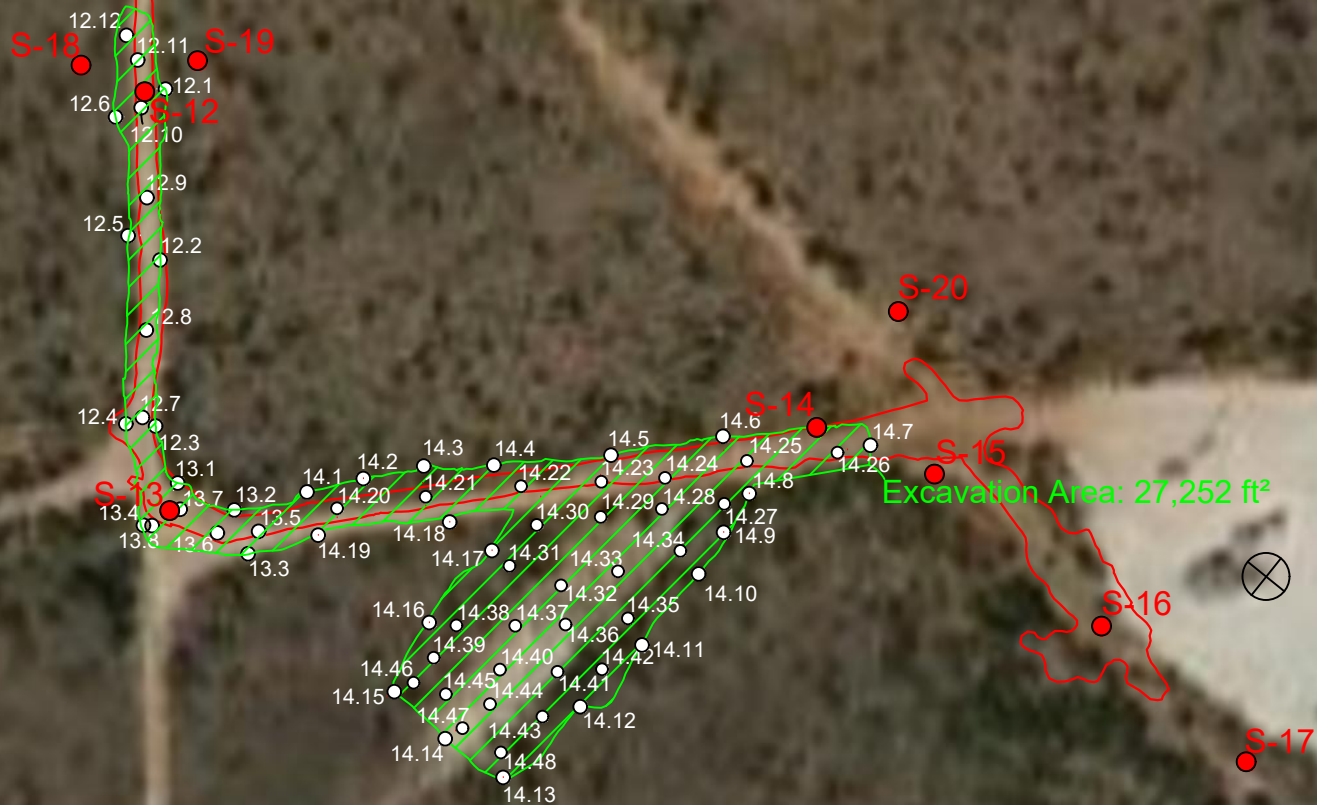


Figure 3 - Aerial Map Showing Excavation Locations



Legend

- Spill Area
- Soil Sample Location
- Well Head
- Confirmation Sample Location
- Excavation Location



Legacy Reserves
Cooper Jal Unit 238
Unit D (NW 1/4 of NW 1/4)
Sec. 25, T. 24 S., R. 36 E.
Lea County, New Mexico
32.192936° N
-103.226294° W

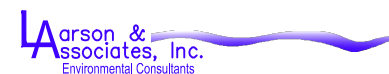


Figure 3a -Focused Aerial Map Showing Southern Proposed Excavation and Trimbled Excavation



Legend

- ▲ - Leak Location
- - Confirmation Sample Location
- Spill Area
- ▨ - Excavation Location
- - Soil Sample Location
- ⊗ - Well Head



Legacy Reserves
 Cooper Jal Unit 238
 Unit D (NW 1/4 of NW 1/4)
 Sec. 25, T. 24 S., R. 36 E.
 Lea County, New Mexico
 32.192936° N
 -103.226294° W

Larson & Associates, Inc.
 Environmental Consultants

Figure 3b -Focused Aerial Map Showing Northern Excavation and Confirmation Sample

Appendix A

Initial C-141

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: Legacy Reserves Operating, LP	Contact: Clyde Wilhoit
Address: 303 W. Wall Street, Suite 1300 Midland, TX 79701	Telephone No. 432-425-4137
Facility: Cooper Jal Unit #238 Flowline	Facility Type: Flow Line

Surface Owner: Private	Mineral Owner: Federal	API No. 30-025-09659
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LOCATION OF RELEASE

Unit Letter A	Section 26	Township 24S	Range 36E	Feet from the	North/South Line	Feet from the	East/West Line	County Lea County
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Latitude 32.192936° Longitude -103.226294°

NATURE OF RELEASE

Type of Release: Injection Water	Volume of Release: 210 bbl	Volume Recovered: 130 bbl
Source of Release: Flow Line Rupture	Date and Hour of Occurrence May 3, 2018	Date and Hour of Discovery May 3, 2018—15:00MST
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Verbal notification was done by voice message to Maxey Brown and Olivia Yu.	
By Whom? Mark Larson	Date and Hour 5/15/2018 at 13:10	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*
N/A

RECEIVED

By Olivia Yu at 8:40 am, May 22, 2018

Describe Cause of Problem and Remedial Action Taken.*

Approximately 210 bbl of injection water was released from a rupture in a flowline. Fluid traveled south along lease road for 1,600 feet and then turned to the east after reaching an intersection and traveled 700 additional feet. 130 bbl of fluid were recovered. The total area affected by this release is 52,022 square feet.

Describe Area Affected and Cleanup Action Taken.*

Larson & Associates, Inc., will prepare a plan to delineate the spill for OCD approval. A delineation report with remediation plan will be submitted to the OCD for approval prior to remediation of the spill.

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>Clyde Wilhoit</i>		OIL CONSERVATION DIVISION	
Printed Name: Clyde Wilhoit		Approved by Environmental Specialist: <i>oy</i>	
Title: Maintenance Foreman		Approval Date: 5/22/2018	Expiration Date:
E-mail Address: cwilhoit@legacylp.com		Conditions of Approval: see attached directive	Attached ☒
Date: 5/17/18	Phone: 432-425-4137		

1RP-5068

nOY1814231747

pOY1814232044

Operator/Responsible Party,

The OCD has received the form C-141 you provided on _5/17/2018_ regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number _1RP-5068__ has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC. [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District _1_ office in __Hobbs__ on or before _6/22/2018_. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.
- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.
- Nominal detection limits for field and laboratory analyses must be provided.
- Composite sampling is not generally allowed.
- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

- Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

- If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

- Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold

OCD Environmental Bureau Chief
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505-476-3465
jim.griswold@state.nm.us

Appendix B
OCD Communications

From: Mark Larson
To: [Yu, Olivia, EMNRD](#)
Cc: ["sdittman@legacylp.com"](mailto:sdittman@legacylp.com); [Ashton Thielke](#)
Subject: Re: Initial C-141 - Cooper Jal Unit #238 Produced Water Spill, May 3, 2018
Date: Thursday, May 17, 2018 2:01:00 PM
Attachments: Signed C-141, May 17, 2018.pdf

Olivia,

On behalf of Legacy Reserves, L.P. (Legacy) please find the initial C-141 for a produced water spill from a flow line connected with the Cooper Jal Unit (CJU) #283 in Lea County, New Mexico. The spill occurred on May 3, 2018, due to rupture of the buried flow line near plugged well (CJU #222) in Unit A (NE/4, NE/4), Section 26, Township 24 South, Range 36 East. Legacy attempted to verbally notify OCD but was not successful with speaking to a representative. Larson & Associates, Inc. (LAI) left voice messages with OCD representatives, Maxey Brown and Olivia Yu, on May 15, 2018, at about 1:10pm and 1:15 pm (mountain time). The spill involved approximately 210 barrels (bbl) of produced water with approximately 130 bbls recovered. LAI will submit the delineation plan upon arrival of the initial C-141 and issuance of the remediation permit number. Please contact Steve Dittman with Legacy at (432) 312-4757, Ashton Thielke with LAI at (432) 556-5818 or me if you have questions. Respectively,

Mark J. Larson, P.G.
President/Sr. Project Manager
507 N. Marienfeld St., Suite 205
Midland, Texas 79701
Office - 432-687-0901
Cell - 432- 556-8656
Fax - 432-687-0456
mark@laenvironmental.com

"Serving the Permian Basin Since 2000"

Appendix C
Waste Manifests

Appendix D
Laboratory Reports

**PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701**



Analytical Report

Prepared for:

Mark Larson
Larson & Associates, Inc.
P.O. Box 50685
Midland, TX 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Location: New Mexico
Lab Order Number: 9I12005



NELAP/TCEQ # T104704516-18-9

Report Date: 09/21/19

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
S-1 @ (0-1')	9I12005-01	Soil	09/06/19 14:00	09-12-2019 09:40
S-1 @ (2-3')	9I12005-02	Soil	09/06/19 14:01	09-12-2019 09:40
S-1 @ (4-5')	9I12005-03	Soil	09/06/19 14:02	09-12-2019 09:40
S-2 @ (0-1')	9I12005-04	Soil	09/09/19 10:08	09-12-2019 09:40
S-2 @ (1-2')	9I12005-05	Soil	09/09/19 10:09	09-12-2019 09:40
S-3 @ (0-1')	9I12005-06	Soil	09/09/19 10:43	09-12-2019 09:40
S-3 @ (1-2')	9I12005-07	Soil	09/09/19 10:44	09-12-2019 09:40
S-4 @ (0-1')	9I12005-08	Soil	09/09/19 11:04	09-12-2019 09:40
S-4 @ (1-2')	9I12005-09	Soil	09/09/19 11:05	09-12-2019 09:40
S-5 @ (0-1')	9I12005-10	Soil	09/09/19 11:40	09-12-2019 09:40
S-5 @ (1-2')	9I12005-11	Soil	09/09/19 11:41	09-12-2019 09:40
S-5 @ (2-3')	9I12005-12	Soil	09/09/19 11:42	09-12-2019 09:40
S-6 @ (0-1')	9I12005-13	Soil	09/09/19 12:12	09-12-2019 09:40
S-6 @ (1-2')	9I12005-14	Soil	09/09/19 12:13	09-12-2019 09:40
S-6 @ (2-3')	9I12005-15	Soil	09/09/19 12:14	09-12-2019 09:40
S-7 @ (0-1')	9I12005-16	Soil	09/09/19 13:08	09-12-2019 09:40
S-7 @ (2-3')	9I12005-17	Soil	09/09/19 13:09	09-12-2019 09:40
S-7 @ (4-5')	9I12005-18	Soil	09/09/19 13:10	09-12-2019 09:40
S-8 @ (0-1')	9I12005-19	Soil	09/09/19 13:44	09-12-2019 09:40
S-8 @ (2-3')	9I12005-20	Soil	09/09/19 13:45	09-12-2019 09:40
S-8 @ (4-5')	9I12005-21	Soil	09/09/19 13:46	09-12-2019 09:40
S-9 @ (0-1')	9I12005-22	Soil	09/09/19 14:09	09-12-2019 09:40
S-9 @ (2-3')	9I12005-23	Soil	09/09/19 14:10	09-12-2019 09:40
S-9 @ (4-5')	9I12005-24	Soil	09/09/19 14:11	09-12-2019 09:40
S-10 @ (0-1')	9I12005-25	Soil	09/09/19 14:41	09-12-2019 09:40
S-10 @ (2-3')	9I12005-26	Soil	09/09/19 14:42	09-12-2019 09:40
S-10 @ (4-5')	9I12005-27	Soil	09/09/19 14:43	09-12-2019 09:40
S-11 @ (0-1')	9I12005-28	Soil	09/09/19 15:06	09-12-2019 09:40
S-11 @ (2-3')	9I12005-29	Soil	09/09/19 15:07	09-12-2019 09:40
S-11 @ (4-5')	9I12005-30	Soil	09/09/19 15:08	09-12-2019 09:40
S-12 @ (0-1')	9I12005-31	Soil	09/09/19 15:31	09-12-2019 09:40
S-12 @ (1-2')	9I12005-32	Soil	09/09/19 15:32	09-12-2019 09:40
S-13 @ (0-1')	9I12005-33	Soil	09/10/19 09:09	09-12-2019 09:40
S-13 @ (2-3')	9I12005-34	Soil	09/10/19 09:10	09-12-2019 09:40

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
S-13 @ (4-5')	9I12005-35	Soil	09/10/19 09:11	09-12-2019 09:40
S-14 @ (0-1')	9I12005-36	Soil	09/10/19 09:40	09-12-2019 09:40
S-14 @ (1-2')	9I12005-37	Soil	09/10/19 09:41	09-12-2019 09:40
S-14 @ (2-3')	9I12005-38	Soil	09/10/19 09:42	09-12-2019 09:40
S-15 @ (0-1')	9I12005-39	Soil	09/10/19 10:14	09-12-2019 09:40
S-15 @ (2-3')	9I12005-40	Soil	09/10/19 10:15	09-12-2019 09:40
S-15 @ (4-5')	9I12005-41	Soil	09/10/19 10:16	09-12-2019 09:40
S-16 @ (0-1')	9I12005-42	Soil	09/10/19 10:34	09-12-2019 09:40
S-16 @ (1-2')	9I12005-43	Soil	09/10/19 10:35	09-12-2019 09:40
S-16 @ (2-3')	9I12005-44	Soil	09/10/19 10:36	09-12-2019 09:40
S-17 @ (0-1')	9I12005-45	Soil	09/10/19 11:39	09-12-2019 09:40
S-17 @ (1-2')	9I12005-46	Soil	09/10/19 11:40	09-12-2019 09:40
S-18 @ (0-1')	9I12005-47	Soil	09/10/19 12:40	09-12-2019 09:40
S-19 @ (0-1')	9I12005-48	Soil	09/10/19 13:27	09-12-2019 09:40
S-20 @ (0-1')	9I12005-49	Soil	09/10/19 13:16	09-12-2019 09:40
S-21 @ (0-1')	9I12005-50	Soil	09/10/19 13:35	09-12-2019 09:40
S-22 @ (0-1')	9I12005-51	Soil	09/10/19 13:42	09-12-2019 09:40

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-1 @ (0-1')
9I12005-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00102	mg/kg dry	1	P9I1208	09/12/19	09/13/19	EPA 8021B	
Toluene	ND	0.00102	mg/kg dry	1	P9I1208	09/12/19	09/13/19	EPA 8021B	
Ethylbenzene	ND	0.00102	mg/kg dry	1	P9I1208	09/12/19	09/13/19	EPA 8021B	
Xylene (p/m)	ND	0.00204	mg/kg dry	1	P9I1208	09/12/19	09/13/19	EPA 8021B	
Xylene (o)	ND	0.00102	mg/kg dry	1	P9I1208	09/12/19	09/13/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		83.6 %	75-125		P9I1208	09/12/19	09/13/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		91.7 %	75-125		P9I1208	09/12/19	09/13/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	52.6	1.02	mg/kg dry	1	P9I1814	09/18/19	09/19/19	EPA 300.0	
% Moisture	2.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.5	mg/kg dry	1	P9I1404	09/16/19	09/17/19	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P9I1404	09/16/19	09/17/19	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P9I1404	09/16/19	09/17/19	TPH 8015M	
Surrogate: 1-Chlorooctane		122 %	70-130		P9I1404	09/16/19	09/17/19	TPH 8015M	
Surrogate: o-Terphenyl		129 %	70-130		P9I1404	09/16/19	09/17/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	09/16/19	09/17/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-1 @ (2-3')
9I12005-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	1110	5.49	mg/kg dry	5	P9I2003	09/20/19	09/20/19	EPA 300.0	
% Moisture	9.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

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S-1 @ (4-5')
9I12005-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	1030	6.02	mg/kg dry	5	P9I2003	09/20/19	09/20/19	EPA 300.0
% Moisture	17.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

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Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-2 @ (0-1')
9I12005-04 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00106	mg/kg dry	1	P9I1208	09/12/19	09/13/19	EPA 8021B	
Toluene	ND	0.00106	mg/kg dry	1	P9I1208	09/12/19	09/13/19	EPA 8021B	
Ethylbenzene	ND	0.00106	mg/kg dry	1	P9I1208	09/12/19	09/13/19	EPA 8021B	
Xylene (p/m)	ND	0.00213	mg/kg dry	1	P9I1208	09/12/19	09/13/19	EPA 8021B	
Xylene (o)	ND	0.00106	mg/kg dry	1	P9I1208	09/12/19	09/13/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		106 %	75-125		P9I1208	09/12/19	09/13/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		97.0 %	75-125		P9I1208	09/12/19	09/13/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	24.7	1.06	mg/kg dry	1	P9I1814	09/18/19	09/19/19	EPA 300.0	
% Moisture	6.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.6	mg/kg dry	1	P9I1404	09/16/19	09/17/19	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P9I1404	09/16/19	09/17/19	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P9I1404	09/16/19	09/17/19	TPH 8015M	
Surrogate: 1-Chlorooctane		121 %	70-130		P9I1404	09/16/19	09/17/19	TPH 8015M	
Surrogate: o-Terphenyl		131 %	70-130		P9I1404	09/16/19	09/17/19	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	09/16/19	09/17/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-2 @ (1-2')
9I12005-05 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	544	1.04	mg/kg dry	1	P9I2003	09/20/19	09/20/19	EPA 300.0	
% Moisture	4.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-3 @ (0-1')
9I12005-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00108	mg/kg dry	1	P9I1208	09/12/19	09/13/19	EPA 8021B	
Toluene	ND	0.00108	mg/kg dry	1	P9I1208	09/12/19	09/13/19	EPA 8021B	
Ethylbenzene	ND	0.00108	mg/kg dry	1	P9I1208	09/12/19	09/13/19	EPA 8021B	
Xylene (p/m)	ND	0.00215	mg/kg dry	1	P9I1208	09/12/19	09/13/19	EPA 8021B	
Xylene (o)	ND	0.00108	mg/kg dry	1	P9I1208	09/12/19	09/13/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		87.0 %	75-125		P9I1208	09/12/19	09/13/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		99.3 %	75-125		P9I1208	09/12/19	09/13/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	215	1.08	mg/kg dry	1	P9I1814	09/18/19	09/19/19	EPA 300.0	
% Moisture	7.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.9	mg/kg dry	1	P9I1404	09/16/19	09/17/19	TPH 8015M	
>C12-C28	ND	26.9	mg/kg dry	1	P9I1404	09/16/19	09/17/19	TPH 8015M	
>C28-C35	ND	26.9	mg/kg dry	1	P9I1404	09/16/19	09/17/19	TPH 8015M	
Surrogate: 1-Chlorooctane		112 %	70-130		P9I1404	09/16/19	09/17/19	TPH 8015M	
Surrogate: o-Terphenyl		119 %	70-130		P9I1404	09/16/19	09/17/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.9	mg/kg dry	1	[CALC]	09/16/19	09/17/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-3 @ (1-2')
9I12005-07 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	899	1.27	mg/kg dry	1	P9I2003	09/20/19	09/20/19	EPA 300.0	
% Moisture	21.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-4 @ (0-1')
9I12005-08 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00105	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Toluene	ND	0.00105	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Ethylbenzene	ND	0.00105	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Xylene (p/m)	ND	0.00211	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Xylene (o)	ND	0.00105	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		93.5 %	75-125		P9I1209	09/12/19	09/13/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		108 %	75-125		P9I1209	09/12/19	09/13/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	31.5	1.05	mg/kg dry	1	P9I1814	09/18/19	09/19/19	EPA 300.0	
% Moisture	5.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.3	mg/kg dry	1	P9I1404	09/16/19	09/17/19	TPH 8015M	
>C12-C28	ND	26.3	mg/kg dry	1	P9I1404	09/16/19	09/17/19	TPH 8015M	
>C28-C35	ND	26.3	mg/kg dry	1	P9I1404	09/16/19	09/17/19	TPH 8015M	
Surrogate: 1-Chlorooctane		113 %	70-130		P9I1404	09/16/19	09/17/19	TPH 8015M	
Surrogate: o-Terphenyl		121 %	70-130		P9I1404	09/16/19	09/17/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.3	mg/kg dry	1	[CALC]	09/16/19	09/17/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.	Project: Cooper Jal 238-Legacy	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 18-0138-01	
Midland TX, 79710	Project Manager: Mark Larson	

S-4 @ (1-2')

9I12005-09 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	167	1.19	mg/kg dry	1	P9I2003	09/20/19	09/20/19	EPA 300.0	
% Moisture	16.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Permian Basin Environmental Lab, L.P.

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P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-5 @ (0-1')
9I12005-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00115	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Toluene	ND	0.00115	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Ethylbenzene	ND	0.00115	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Xylene (p/m)	ND	0.00230	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Xylene (o)	ND	0.00115	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		113 %	75-125		P9I1209	09/12/19	09/13/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		97.7 %	75-125		P9I1209	09/12/19	09/13/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	1.23	1.15	mg/kg dry	1	P9I1814	09/18/19	09/19/19	EPA 300.0	
% Moisture	13.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	28.7	mg/kg dry	1	P9I1405	09/16/19	09/18/19	TPH 8015M	
>C12-C28	ND	28.7	mg/kg dry	1	P9I1405	09/16/19	09/18/19	TPH 8015M	
>C28-C35	ND	28.7	mg/kg dry	1	P9I1405	09/16/19	09/18/19	TPH 8015M	
Surrogate: 1-Chlorooctane		116 %	70-130		P9I1405	09/16/19	09/18/19	TPH 8015M	
Surrogate: o-Terphenyl		125 %	70-130		P9I1405	09/16/19	09/18/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	28.7	mg/kg dry	1	[CALC]	09/16/19	09/18/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-5 @ (1-2')
9I12005-11 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	10.4	1.22	mg/kg dry	1	P9I2003	09/20/19	09/20/19	EPA 300.0	
% Moisture	18.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Permian Basin Environmental Lab, L.P.

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P.O. Box 50685	Project Number: 18-0138-01	
Midland TX, 79710	Project Manager: Mark Larson	

S-5 @ (2-3')

9I12005-12 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	2660	11.0	mg/kg dry	10	P9I2003	09/20/19	09/20/19	EPA 300.0	
% Moisture	9.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

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Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-6 @ (0-1')
9I12005-13 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00114	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Toluene	ND	0.00114	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Ethylbenzene	ND	0.00114	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Xylene (p/m)	ND	0.00227	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Xylene (o)	ND	0.00114	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		95.0 %	75-125		P9I1209	09/12/19	09/13/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		110 %	75-125		P9I1209	09/12/19	09/13/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	ND	1.14	mg/kg dry	1	P9I1814	09/18/19	09/19/19	EPA 300.0	
% Moisture	12.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	28.4	mg/kg dry	1	P9I1405	09/16/19	09/18/19	TPH 8015M	
>C12-C28	ND	28.4	mg/kg dry	1	P9I1405	09/16/19	09/18/19	TPH 8015M	
>C28-C35	ND	28.4	mg/kg dry	1	P9I1405	09/16/19	09/18/19	TPH 8015M	
Surrogate: 1-Chlorooctane		117 %	70-130		P9I1405	09/16/19	09/18/19	TPH 8015M	
Surrogate: o-Terphenyl		128 %	70-130		P9I1405	09/16/19	09/18/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	28.4	mg/kg dry	1	[CALC]	09/16/19	09/18/19	calc	

Permian Basin Environmental Lab, L.P.

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P.O. Box 50685	Project Number: 18-0138-01	
Midland TX, 79710	Project Manager: Mark Larson	

S-6 @ (1-2')

9I12005-14 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	682	1.06	mg/kg dry	1	P9I2003	09/20/19	09/20/19	EPA 300.0	
% Moisture	6.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

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Project Manager: Mark Larson

Fax: (432) 687-0456

S-6 @ (2-3')
9I12005-15 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	2930	13.2	mg/kg dry	10	P9I2003	09/20/19	09/20/19	EPA 300.0
% Moisture	26.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216

Permian Basin Environmental Lab, L.P.

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Project Number: 18-0138-01
Project Manager: Mark Larson

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S-7 @ (0-1')
9I12005-16 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00106	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Toluene	ND	0.00106	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Ethylbenzene	ND	0.00106	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Xylene (p/m)	ND	0.00213	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Xylene (o)	ND	0.00106	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		106 %	75-125		P9I1209	09/12/19	09/13/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		88.7 %	75-125		P9I1209	09/12/19	09/13/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	132	1.06	mg/kg dry	1	P9I1814	09/18/19	09/19/19	EPA 300.0	
% Moisture	6.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.6	mg/kg dry	1	P9I1405	09/16/19	09/18/19	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P9I1405	09/16/19	09/18/19	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P9I1405	09/16/19	09/18/19	TPH 8015M	
Surrogate: 1-Chlorooctane		123 %	70-130		P9I1405	09/16/19	09/18/19	TPH 8015M	
Surrogate: o-Terphenyl		136 %	70-130		P9I1405	09/16/19	09/18/19	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	09/16/19	09/18/19	calc	

Permian Basin Environmental Lab, L.P.

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P.O. Box 50685	Project Number: 18-0138-01	
Midland TX, 79710	Project Manager: Mark Larson	

S-7 @ (2-3')

9I12005-17 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	1500	12.0	mg/kg dry	10	P9I1814	09/18/19	09/19/19	EPA 300.0	
% Moisture	17.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

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Project Manager: Mark Larson

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S-7 @ (4-5')
9I12005-18 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	2430	12.0	mg/kg dry	10	P9I1814	09/18/19	09/19/19	EPA 300.0
% Moisture	17.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216

Permian Basin Environmental Lab, L.P.

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Project Number: 18-0138-01
Project Manager: Mark Larson

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S-8 @ (0-1')
9I12005-19 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00105	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Toluene	ND	0.00105	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Ethylbenzene	ND	0.00105	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Xylene (p/m)	ND	0.00211	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Xylene (o)	ND	0.00105	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		90.0 %	75-125		P9I1209	09/12/19	09/13/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		110 %	75-125		P9I1209	09/12/19	09/13/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	3.44	1.05	mg/kg dry	1	P9I1814	09/18/19	09/19/19	EPA 300.0	
% Moisture	5.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.3	mg/kg dry	1	P9I1405	09/16/19	09/18/19	TPH 8015M	
>C12-C28	ND	26.3	mg/kg dry	1	P9I1405	09/16/19	09/18/19	TPH 8015M	
>C28-C35	ND	26.3	mg/kg dry	1	P9I1405	09/16/19	09/18/19	TPH 8015M	
Surrogate: 1-Chlorooctane		114 %	70-130		P9I1405	09/16/19	09/18/19	TPH 8015M	
Surrogate: o-Terphenyl		125 %	70-130		P9I1405	09/16/19	09/18/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.3	mg/kg dry	1	[CALC]	09/16/19	09/18/19	calc	

Permian Basin Environmental Lab, L.P.

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P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-8 @ (2-3')
9I12005-20 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	1040	1.16	mg/kg dry	1	P9I2003	09/20/19	09/20/19	EPA 300.0	
% Moisture	14.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Permian Basin Environmental Lab, L.P.

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P.O. Box 50685	Project Number: 18-0138-01	
Midland TX, 79710	Project Manager: Mark Larson	

S-8 @ (4-5')

9I12005-21 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	724	1.04	mg/kg dry	1	P9I2003	09/20/19	09/20/19	EPA 300.0	
% Moisture	6.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

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Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-9 @ (0-1')
9I12005-22 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00106	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Toluene	ND	0.00106	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Ethylbenzene	ND	0.00106	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Xylene (p/m)	ND	0.00213	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Xylene (o)	ND	0.00106	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		96.5 %	75-125		P9I1209	09/12/19	09/13/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		106 %	75-125		P9I1209	09/12/19	09/13/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	239	1.06	mg/kg dry	1	P9I1814	09/18/19	09/19/19	EPA 300.0	
% Moisture	6.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.6	mg/kg dry	1	P9I1405	09/16/19	09/18/19	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P9I1405	09/16/19	09/18/19	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P9I1405	09/16/19	09/18/19	TPH 8015M	
Surrogate: 1-Chlorooctane		115 %	70-130		P9I1405	09/16/19	09/18/19	TPH 8015M	
Surrogate: o-Terphenyl		129 %	70-130		P9I1405	09/16/19	09/18/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	09/16/19	09/18/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-9 @ (2-3")

9I12005-23 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	211	1.08	mg/kg dry	1	P9I1814	09/18/19	09/19/19	EPA 300.0
% Moisture	7.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216

Permian Basin Environmental Lab, L.P.

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P.O. Box 50685	Project Number: 18-0138-01	
Midland TX, 79710	Project Manager: Mark Larson	

S-9 @ (4-5')

9I12005-24 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	1480	11.1	mg/kg dry	10	P9I1814	09/18/19	09/19/19	EPA 300.0	
% Moisture	10.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

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Project Manager: Mark Larson

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S-10 @ (0-1')
9I12005-25 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00110	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Toluene	ND	0.00110	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Ethylbenzene	ND	0.00110	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Xylene (p/m)	ND	0.00220	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Xylene (o)	ND	0.00110	mg/kg dry	1	P9I1209	09/12/19	09/13/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		96.5 %	75-125		P9I1209	09/12/19	09/13/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		118 %	75-125		P9I1209	09/12/19	09/13/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	10.7	1.10	mg/kg dry	1	P9I1814	09/18/19	09/19/19	EPA 300.0	
% Moisture	9.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.5	mg/kg dry	1	P9I1405	09/16/19	09/18/19	TPH 8015M	
>C12-C28	ND	27.5	mg/kg dry	1	P9I1405	09/16/19	09/18/19	TPH 8015M	
>C28-C35	ND	27.5	mg/kg dry	1	P9I1405	09/16/19	09/18/19	TPH 8015M	
Surrogate: 1-Chlorooctane		122 %	70-130		P9I1405	09/16/19	09/18/19	TPH 8015M	
Surrogate: o-Terphenyl		131 %	70-130		P9I1405	09/16/19	09/18/19	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	ND	27.5	mg/kg dry	1	[CALC]	09/16/19	09/18/19	calc	

Permian Basin Environmental Lab, L.P.

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Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-10 @ (2-3')

9I12005-26 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	109	1.05	mg/kg dry	1	P9I2003	09/20/19	09/20/19	EPA 300.0	
% Moisture	5.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Permian Basin Environmental Lab, L.P.

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Project Number: 18-0138-01
Project Manager: Mark Larson

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S-10 @ (4-5')

9I12005-27 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	925	5.26	mg/kg dry	5	P9I2003	09/20/19	09/20/19	EPA 300.0	
% Moisture	5.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Permian Basin Environmental Lab, L.P.

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Project Manager: Mark Larson

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S-11 @ (0-1')

9I12005-28 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00104	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Toluene	ND	0.00104	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Ethylbenzene	ND	0.00104	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Xylene (p/m)	ND	0.00208	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Xylene (o)	ND	0.00104	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		115 %	75-125		P9I1601	09/16/19	09/16/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		96.8 %	75-125		P9I1601	09/16/19	09/16/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	ND	1.04	mg/kg dry	1	P9I1814	09/18/19	09/19/19	EPA 300.0	
% Moisture	4.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.0	mg/kg dry	1	P9I1405	09/16/19	09/18/19	TPH 8015M	
>C12-C28	ND	26.0	mg/kg dry	1	P9I1405	09/16/19	09/18/19	TPH 8015M	
>C28-C35	ND	26.0	mg/kg dry	1	P9I1405	09/16/19	09/18/19	TPH 8015M	
Surrogate: 1-Chlorooctane		129 %	70-130		P9I1405	09/16/19	09/18/19	TPH 8015M	
Surrogate: o-Terphenyl		142 %	70-130		P9I1405	09/16/19	09/18/19	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	ND	26.0	mg/kg dry	1	[CALC]	09/16/19	09/18/19	calc	

Permian Basin Environmental Lab, L.P.

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P.O. Box 50685	Project Number: 18-0138-01	
Midland TX, 79710	Project Manager: Mark Larson	

S-11 @ (2-3')

9I12005-29 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods									
Chloride	11.5	1.04	mg/kg dry	1	P9I2003	09/20/19	09/20/19	EPA 300.0	
% Moisture	4.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

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Project Manager: Mark Larson

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S-11 @ (4-5')**9I12005-30 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.**General Chemistry Parameters by EPA / Standard Methods**

Chloride	18.7	1.04	mg/kg dry	1	P9I2003	09/20/19	09/20/19	EPA 300.0	
% Moisture	4.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Permian Basin Environmental Lab, L.P.

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Project Manager: Mark Larson

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S-12 @ (0-1')
9I12005-31 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00105	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Toluene	ND	0.00105	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Ethylbenzene	ND	0.00105	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Xylene (p/m)	ND	0.00211	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Xylene (o)	ND	0.00105	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		114 %	75-125		P9I1601	09/16/19	09/16/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		95.4 %	75-125		P9I1601	09/16/19	09/16/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	404	1.05	mg/kg dry	1	P9I1815	09/18/19	09/19/19	EPA 300.0	
% Moisture	5.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.3	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
>C12-C28	ND	26.3	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
>C28-C35	ND	26.3	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
Surrogate: 1-Chlorooctane		130 %	70-130		P9I1406	09/16/19	09/18/19	TPH 8015M	
Surrogate: o-Terphenyl		147 %	70-130		P9I1406	09/16/19	09/18/19	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	ND	26.3	mg/kg dry	1	[CALC]	09/16/19	09/18/19	calc	

Permian Basin Environmental Lab, L.P.

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Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-12 @ (1-2')

9I12005-32 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	788	1.08	mg/kg dry	1	P9I2003	09/20/19	09/20/19	EPA 300.0	
% Moisture	7.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Permian Basin Environmental Lab, L.P.

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Project Manager: Mark Larson

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S-13 @ (0-1')
9I12005-33 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00111	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Toluene	ND	0.00111	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Ethylbenzene	ND	0.00111	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Xylene (p/m)	ND	0.00222	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Xylene (o)	ND	0.00111	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		102 %	75-125		P9I1601	09/16/19	09/16/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		114 %	75-125		P9I1601	09/16/19	09/16/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	200	1.11	mg/kg dry	1	P9I1815	09/18/19	09/19/19	EPA 300.0	
% Moisture	10.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.8	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
Surrogate: 1-Chlorooctane		127 %	70-130		P9I1406	09/16/19	09/18/19	TPH 8015M	
Surrogate: o-Terphenyl		141 %	70-130		P9I1406	09/16/19	09/18/19	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	09/16/19	09/18/19	calc	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

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Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-13 @ (2-3')**9I12005-34 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.**General Chemistry Parameters by EPA / Standard Methods**

Chloride	666	1.06	mg/kg dry	1	P9I2003	09/20/19	09/20/19	EPA 300.0	
% Moisture	6.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Permian Basin Environmental Lab, L.P.

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Project Manager: Mark Larson

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S-13 @ (4-5')**9I12005-35 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.**General Chemistry Parameters by EPA / Standard Methods**

Chloride	414	1.00	mg/kg dry	1	P9I2003	09/20/19	09/20/19	EPA 300.0	
% Moisture	ND	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Permian Basin Environmental Lab, L.P.

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Project Manager: Mark Larson

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S-14 @ (0-1')
9I12005-36 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00110	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Toluene	ND	0.00110	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Ethylbenzene	ND	0.00110	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Xylene (p/m)	ND	0.00220	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Xylene (o)	ND	0.00110	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		88.2 %	75-125		P9I1601	09/16/19	09/16/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		103 %	75-125		P9I1601	09/16/19	09/16/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	526	1.10	mg/kg dry	1	P9I1815	09/18/19	09/19/19	EPA 300.0	
% Moisture	9.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.5	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
>C12-C28	ND	27.5	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
>C28-C35	ND	27.5	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
Surrogate: 1-Chlorooctane		117 %	70-130		P9I1406	09/16/19	09/18/19	TPH 8015M	
Surrogate: o-Terphenyl		130 %	70-130		P9I1406	09/16/19	09/18/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.5	mg/kg dry	1	[CALC]	09/16/19	09/18/19	calc	

Permian Basin Environmental Lab, L.P.

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Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-14 @ (1-2')

9I12005-37 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	1170	5.38	mg/kg dry	5	P9I1815	09/18/19	09/19/19	EPA 300.0	
% Moisture	7.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

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Project Number: 18-0138-01
Project Manager: Mark Larson

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S-14 @ (2-3')

9I12005-38 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	1200	5.43	mg/kg dry	5	P9I1815	09/18/19	09/19/19	EPA 300.0
% Moisture	8.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-15 @ (0-1')
9I12005-39 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00103	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Toluene	ND	0.00103	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Ethylbenzene	ND	0.00103	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Xylene (p/m)	ND	0.00206	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Xylene (o)	ND	0.00103	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		82.0 %	75-125		P9I1601	09/16/19	09/16/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		95.1 %	75-125		P9I1601	09/16/19	09/16/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	ND	1.03	mg/kg dry	1	P9I1815	09/18/19	09/19/19	EPA 300.0	
% Moisture	3.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.8	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
Surrogate: 1-Chlorooctane		119 %	70-130		P9I1406	09/16/19	09/18/19	TPH 8015M	
Surrogate: o-Terphenyl		133 %	70-130		P9I1406	09/16/19	09/18/19	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	09/16/19	09/18/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-15 @ (2-3')**9I12005-40 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.**General Chemistry Parameters by EPA / Standard Methods**

Chloride	5.14	1.03	mg/kg dry	1	P9I2003	09/20/19	09/20/19	EPA 300.0	
% Moisture	3.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.	Project: Cooper Jal 238-Legacy	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 18-0138-01	
Midland TX, 79710	Project Manager: Mark Larson	

S-15 @ (4-5')
9I12005-41 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods									
Chloride	14.1	1.03	mg/kg dry	1	P9I2003	09/20/19	09/20/19	EPA 300.0	
% Moisture	3.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-16 @ (0-1')

9I12005-42 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00105	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Toluene	ND	0.00105	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Ethylbenzene	ND	0.00105	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Xylene (p/m)	ND	0.00211	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Xylene (o)	ND	0.00105	mg/kg dry	1	P9I1601	09/16/19	09/16/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		90.8 %	75-125		P9I1601	09/16/19	09/16/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		95.9 %	75-125		P9I1601	09/16/19	09/16/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	2.24	1.05	mg/kg dry	1	P9I1815	09/18/19	09/19/19	EPA 300.0	
% Moisture	5.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.3	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
>C12-C28	ND	26.3	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
>C28-C35	ND	26.3	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
Surrogate: 1-Chlorooctane		95.5 %	70-130		P9I1406	09/16/19	09/18/19	TPH 8015M	
Surrogate: o-Terphenyl		98.7 %	70-130		P9I1406	09/16/19	09/18/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.3	mg/kg dry	1	[CALC]	09/16/19	09/18/19	calc	

Permian Basin Environmental Lab, L.P.

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P.O. Box 50685	Project Number: 18-0138-01	
Midland TX, 79710	Project Manager: Mark Larson	

S-16 @ (1-2')
9I12005-43 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods									
Chloride	34.3	1.05	mg/kg dry	1	P9I2004	09/20/19	09/21/19	EPA 300.0	
% Moisture	5.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Larson & Associates, Inc.	Project: Cooper Jal 238-Legacy	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 18-0138-01	
Midland TX, 79710	Project Manager: Mark Larson	

S-16 @ (2-3')

9I12005-44 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	450	1.09	mg/kg dry	1	P9I2004	09/20/19	09/21/19	EPA 300.0	
% Moisture	8.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-17 @ (0-1')

9I12005-45 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00104	mg/kg dry	1	P9I1602	09/16/19	09/16/19	EPA 8021B	
Toluene	ND	0.00104	mg/kg dry	1	P9I1602	09/16/19	09/16/19	EPA 8021B	
Ethylbenzene	ND	0.00104	mg/kg dry	1	P9I1602	09/16/19	09/16/19	EPA 8021B	
Xylene (p/m)	ND	0.00208	mg/kg dry	1	P9I1602	09/16/19	09/16/19	EPA 8021B	
Xylene (o)	ND	0.00104	mg/kg dry	1	P9I1602	09/16/19	09/16/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		88.8 %	75-125		P9I1602	09/16/19	09/16/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		101 %	75-125		P9I1602	09/16/19	09/16/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	3.84	1.04	mg/kg dry	1	P9I1815	09/18/19	09/19/19	EPA 300.0	
% Moisture	4.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.0	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
>C12-C28	ND	26.0	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
>C28-C35	ND	26.0	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
Surrogate: 1-Chlorooctane		93.7 %	70-130		P9I1406	09/16/19	09/18/19	TPH 8015M	
Surrogate: o-Terphenyl		99.7 %	70-130		P9I1406	09/16/19	09/18/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.0	mg/kg dry	1	[CALC]	09/16/19	09/18/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-17 @ (1-2')

9I12005-46 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	394	1.08	mg/kg dry	1	P9I2004	09/20/19	09/21/19	EPA 300.0	
% Moisture	7.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-18 @ (0-1')
9I12005-47 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00109	mg/kg dry	1	P9I1602	09/16/19	09/16/19	EPA 8021B	
Toluene	ND	0.00109	mg/kg dry	1	P9I1602	09/16/19	09/16/19	EPA 8021B	
Ethylbenzene	ND	0.00109	mg/kg dry	1	P9I1602	09/16/19	09/16/19	EPA 8021B	
Xylene (p/m)	ND	0.00217	mg/kg dry	1	P9I1602	09/16/19	09/16/19	EPA 8021B	
Xylene (o)	ND	0.00109	mg/kg dry	1	P9I1602	09/16/19	09/16/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		113 %	75-125		P9I1602	09/16/19	09/16/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		95.0 %	75-125		P9I1602	09/16/19	09/16/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	ND	1.09	mg/kg dry	1	P9I1815	09/18/19	09/19/19	EPA 300.0	
% Moisture	8.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.2	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
>C12-C28	ND	27.2	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
>C28-C35	ND	27.2	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
Surrogate: 1-Chlorooctane		99.4 %	70-130		P9I1406	09/16/19	09/18/19	TPH 8015M	
Surrogate: o-Terphenyl		105 %	70-130		P9I1406	09/16/19	09/18/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.2	mg/kg dry	1	[CALC]	09/16/19	09/18/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-19 @ (0-1')

9I12005-48 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00103	mg/kg dry	1	P9I1602	09/16/19	09/17/19	EPA 8021B	
Toluene	ND	0.00103	mg/kg dry	1	P9I1602	09/16/19	09/17/19	EPA 8021B	
Ethylbenzene	ND	0.00103	mg/kg dry	1	P9I1602	09/16/19	09/17/19	EPA 8021B	
Xylene (p/m)	ND	0.00206	mg/kg dry	1	P9I1602	09/16/19	09/17/19	EPA 8021B	
Xylene (o)	ND	0.00103	mg/kg dry	1	P9I1602	09/16/19	09/17/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		115 %	75-125		P9I1602	09/16/19	09/17/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		94.6 %	75-125		P9I1602	09/16/19	09/17/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	ND	1.03	mg/kg dry	1	P9I1815	09/18/19	09/19/19	EPA 300.0	
% Moisture	3.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.8	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
Surrogate: 1-Chlorooctane		99.8 %	70-130		P9I1406	09/16/19	09/18/19	TPH 8015M	
Surrogate: o-Terphenyl		104 %	70-130		P9I1406	09/16/19	09/18/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	09/16/19	09/18/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-20 @ (0-1')

9I12005-49 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00104	mg/kg dry	1	P9I1602	09/16/19	09/17/19	EPA 8021B	
Toluene	ND	0.00104	mg/kg dry	1	P9I1602	09/16/19	09/17/19	EPA 8021B	
Ethylbenzene	ND	0.00104	mg/kg dry	1	P9I1602	09/16/19	09/17/19	EPA 8021B	
Xylene (p/m)	ND	0.00208	mg/kg dry	1	P9I1602	09/16/19	09/17/19	EPA 8021B	
Xylene (o)	ND	0.00104	mg/kg dry	1	P9I1602	09/16/19	09/17/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		116 %	75-125		P9I1602	09/16/19	09/17/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		98.2 %	75-125		P9I1602	09/16/19	09/17/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	18.3	1.04	mg/kg dry	1	P9I1815	09/18/19	09/19/19	EPA 300.0	
% Moisture	4.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.0	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
>C12-C28	ND	26.0	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
>C28-C35	ND	26.0	mg/kg dry	1	P9I1406	09/16/19	09/18/19	TPH 8015M	
Surrogate: 1-Chlorooctane		93.2 %	70-130		P9I1406	09/16/19	09/18/19	TPH 8015M	
Surrogate: o-Terphenyl		98.3 %	70-130		P9I1406	09/16/19	09/18/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.0	mg/kg dry	1	[CALC]	09/16/19	09/18/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-21 @ (0-1')

9I12005-50 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00106	mg/kg dry	1	P9I1602	09/16/19	09/17/19	EPA 8021B	
Toluene	ND	0.00106	mg/kg dry	1	P9I1602	09/16/19	09/17/19	EPA 8021B	
Ethylbenzene	ND	0.00106	mg/kg dry	1	P9I1602	09/16/19	09/17/19	EPA 8021B	
Xylene (p/m)	ND	0.00213	mg/kg dry	1	P9I1602	09/16/19	09/17/19	EPA 8021B	
Xylene (o)	ND	0.00106	mg/kg dry	1	P9I1602	09/16/19	09/17/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		91.8 %	75-125		P9I1602	09/16/19	09/17/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		106 %	75-125		P9I1602	09/16/19	09/17/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	4.22	1.06	mg/kg dry	1	P9I1815	09/18/19	09/19/19	EPA 300.0	
% Moisture	6.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.6	mg/kg dry	1	P9I1611	09/16/19	09/19/19	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P9I1611	09/16/19	09/19/19	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P9I1611	09/16/19	09/19/19	TPH 8015M	
Surrogate: 1-Chlorooctane		101 %	70-130		P9I1611	09/16/19	09/19/19	TPH 8015M	
Surrogate: o-Terphenyl		108 %	70-130		P9I1611	09/16/19	09/19/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	09/16/19	09/19/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

S-22 @ (0-1')

9I12005-51 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00102	mg/kg dry	1	P9I1602	09/16/19	09/17/19	EPA 8021B	
Toluene	ND	0.00102	mg/kg dry	1	P9I1602	09/16/19	09/17/19	EPA 8021B	
Ethylbenzene	ND	0.00102	mg/kg dry	1	P9I1602	09/16/19	09/17/19	EPA 8021B	
Xylene (p/m)	ND	0.00204	mg/kg dry	1	P9I1602	09/16/19	09/17/19	EPA 8021B	
Xylene (o)	ND	0.00102	mg/kg dry	1	P9I1602	09/16/19	09/17/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		90.5 %	75-125		P9I1602	09/16/19	09/17/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		105 %	75-125		P9I1602	09/16/19	09/17/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	ND	1.02	mg/kg dry	1	P9I1815	09/18/19	09/19/19	EPA 300.0	
% Moisture	2.0	0.1	%	1	P9I1301	09/13/19	09/13/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.5	mg/kg dry	1	P9I1611	09/16/19	09/19/19	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P9I1611	09/16/19	09/19/19	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P9I1611	09/16/19	09/19/19	TPH 8015M	
Surrogate: 1-Chlorooctane		106 %	70-130		P9I1611	09/16/19	09/19/19	TPH 8015M	
Surrogate: o-Terphenyl		112 %	70-130		P9I1611	09/16/19	09/19/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	09/16/19	09/19/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9I1208 - General Preparation (GC)

Blank (P9I1208-BLK1)

Prepared: 09/12/19 Analyzed: 09/13/19

Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 1,4-Difluorobenzene	0.105		"	0.120		87.3	75-125			
Surrogate: 4-Bromofluorobenzene	0.122		"	0.120		102	75-125			

LCS (P9I1208-BS1)

Prepared: 09/12/19 Analyzed: 09/13/19

Benzene	0.0997	0.00100	mg/kg wet	0.100		99.7	70-130			
Toluene	0.118	0.00100	"	0.100		118	70-130			
Ethylbenzene	0.103	0.00100	"	0.100		103	70-130			
Xylene (p/m)	0.192	0.00200	"	0.200		96.1	70-130			
Xylene (o)	0.113	0.00100	"	0.100		113	70-130			
Surrogate: 4-Bromofluorobenzene	0.134		"	0.120		111	75-125			
Surrogate: 1,4-Difluorobenzene	0.140		"	0.120		117	75-125			

LCS Dup (P9I1208-BS1)

Prepared: 09/12/19 Analyzed: 09/13/19

Benzene	0.100	0.00100	mg/kg wet	0.100		100	70-130	0.410	20	
Toluene	0.111	0.00100	"	0.100		111	70-130	5.88	20	
Ethylbenzene	0.101	0.00100	"	0.100		101	70-130	1.71	20	
Xylene (p/m)	0.200	0.00200	"	0.200		99.8	70-130	3.78	20	
Xylene (o)	0.117	0.00100	"	0.100		117	70-130	3.82	20	
Surrogate: 4-Bromofluorobenzene	0.114		"	0.120		95.0	75-125			
Surrogate: 1,4-Difluorobenzene	0.125		"	0.120		105	75-125			

Calibration Blank (P9I1208-CCB1)

Prepared: 09/12/19 Analyzed: 09/13/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 1,4-Difluorobenzene	0.107		"	0.120		88.9	75-125			
Surrogate: 4-Bromofluorobenzene	0.127		"	0.120		106	75-125			

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9I1208 - General Preparation (GC)

Calibration Blank (P9I1208-CCB2)

Prepared: 09/12/19 Analyzed: 09/13/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 1,4-Difluorobenzene	0.105		"	0.120		87.8	75-125			
Surrogate: 4-Bromofluorobenzene	0.105		"	0.120		87.1	75-125			

Calibration Check (P9I1208-CCV1)

Prepared: 09/12/19 Analyzed: 09/13/19

Benzene	0.0874	0.00100	mg/kg wet	0.100		87.4	80-120			
Toluene	0.109	0.00100	"	0.100		109	80-120			
Ethylbenzene	0.111	0.00100	"	0.100		111	80-120			
Xylene (p/m)	0.215	0.00200	"	0.200		107	80-120			
Xylene (o)	0.111	0.00100	"	0.100		111	80-120			
Surrogate: 4-Bromofluorobenzene	0.131		"	0.120		109	75-125			
Surrogate: 1,4-Difluorobenzene	0.135		"	0.120		112	75-125			

Calibration Check (P9I1208-CCV2)

Prepared: 09/12/19 Analyzed: 09/13/19

Benzene	0.0937	0.00100	mg/kg wet	0.100		93.7	80-120			
Toluene	0.105	0.00100	"	0.100		105	80-120			
Ethylbenzene	0.0982	0.00100	"	0.100		98.2	80-120			
Xylene (p/m)	0.203	0.00200	"	0.200		101	80-120			
Xylene (o)	0.115	0.00100	"	0.100		115	80-120			
Surrogate: 4-Bromofluorobenzene	0.117		"	0.120		97.2	75-125			
Surrogate: 1,4-Difluorobenzene	0.128		"	0.120		106	75-125			

Calibration Check (P9I1208-CCV3)

Prepared: 09/12/19 Analyzed: 09/13/19

Benzene	0.0959	0.00100	mg/kg wet	0.100		95.9	80-120			
Toluene	0.103	0.00100	"	0.100		103	80-120			
Ethylbenzene	0.0947	0.00100	"	0.100		94.7	80-120			
Xylene (p/m)	0.215	0.00200	"	0.200		107	80-120			
Xylene (o)	0.113	0.00100	"	0.100		113	80-120			
Surrogate: 1,4-Difluorobenzene	0.136		"	0.120		113	75-125			
Surrogate: 4-Bromofluorobenzene	0.106		"	0.120		88.4	75-125			

Permian Basin Environmental Lab, L.P.

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Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9I1208 - General Preparation (GC)

Matrix Spike (P9I1208-MS1)		Source: 9I12004-19		Prepared: 09/12/19		Analyzed: 09/13/19				
Benzene	0.0463	0.00102	mg/kg dry	0.102	ND	45.4	80-120			QM-07
Toluene	0.0663	0.00102	"	0.102	ND	64.9	80-120			QM-07
Ethylbenzene	0.0905	0.00102	"	0.102	ND	88.7	80-120			
Xylene (p/m)	0.149	0.00204	"	0.204	ND	73.0	80-120			QM-07
Xylene (o)	0.0689	0.00102	"	0.102	ND	67.5	80-120			QM-07
Surrogate: 1,4-Difluorobenzene	0.140		"	0.122		114	75-125			
Surrogate: 4-Bromofluorobenzene	0.138		"	0.122		113	75-125			

Matrix Spike Dup (P9I1208-MSD1)		Source: 9I12004-19		Prepared: 09/12/19		Analyzed: 09/13/19				
Benzene	0.0497	0.00102	mg/kg dry	0.102	ND	48.8	80-120	7.12	20	QM-07
Toluene	0.0683	0.00102	"	0.102	ND	66.9	80-120	3.00	20	QM-07
Ethylbenzene	0.0947	0.00102	"	0.102	ND	92.8	80-120	4.47	20	
Xylene (p/m)	0.151	0.00204	"	0.204	ND	74.2	80-120	1.60	20	QM-07
Xylene (o)	0.0716	0.00102	"	0.102	ND	70.1	80-120	3.81	20	QM-07
Surrogate: 4-Bromofluorobenzene	0.135		"	0.122		110	75-125			
Surrogate: 1,4-Difluorobenzene	0.140		"	0.122		114	75-125			

Batch P9I1209 - General Preparation (GC)

Blank (P9I1209-BLK1)				Prepared: 09/12/19		Analyzed: 09/13/19				
Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 1,4-Difluorobenzene	0.103		"	0.120		85.8	75-125			
Surrogate: 4-Bromofluorobenzene	0.108		"	0.120		89.9	75-125			

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
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Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9I1209 - General Preparation (GC)

LCS (P9I1209-BS1)

Prepared: 09/12/19 Analyzed: 09/13/19

Benzene	0.105	0.00100	mg/kg wet	0.100		105	70-130			
Toluene	0.115	0.00100	"	0.100		115	70-130			
Ethylbenzene	0.119	0.00100	"	0.100		119	70-130			
Xylene (p/m)	0.237	0.00200	"	0.200		118	70-130			
Xylene (o)	0.115	0.00100	"	0.100		115	70-130			
Surrogate: 4-Bromofluorobenzene	0.115		"	0.120		96.1	75-125			
Surrogate: 1,4-Difluorobenzene	0.131		"	0.120		109	75-125			

LCS Dup (P9I1209-BSD1)

Prepared: 09/12/19 Analyzed: 09/13/19

Benzene	0.108	0.00100	mg/kg wet	0.100		108	70-130	2.75	20	
Toluene	0.118	0.00100	"	0.100		118	70-130	2.51	20	
Ethylbenzene	0.118	0.00100	"	0.100		118	70-130	0.974	20	
Xylene (p/m)	0.232	0.00200	"	0.200		116	70-130	2.19	20	
Xylene (o)	0.117	0.00100	"	0.100		117	70-130	1.99	20	
Surrogate: 1,4-Difluorobenzene	0.136		"	0.120		113	75-125			
Surrogate: 4-Bromofluorobenzene	0.120		"	0.120		99.9	75-125			

Calibration Blank (P9I1209-CCB1)

Prepared: 09/12/19 Analyzed: 09/13/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	0.118		"	0.120		98.2	75-125			
Surrogate: 1,4-Difluorobenzene	0.105		"	0.120		87.1	75-125			

Calibration Blank (P9I1209-CCB2)

Prepared: 09/12/19 Analyzed: 09/13/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	0.118		"	0.120		97.9	75-125			
Surrogate: 1,4-Difluorobenzene	0.103		"	0.120		86.2	75-125			

Permian Basin Environmental Lab, L.P.

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Project Number: 18-0138-01
Project Manager: Mark Larson

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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9I1209 - General Preparation (GC)

Calibration Blank (P9I1209-CCB3)

Prepared: 09/12/19 Analyzed: 09/13/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	0.00		"	0.120			75-125			
Surrogate: 1,4-Difluorobenzene	0.105		"	0.120		87.1	75-125			

Calibration Check (P9I1209-CCV1)

Prepared: 09/12/19 Analyzed: 09/13/19

Benzene	0.105	0.00100	mg/kg wet	0.100		105	80-120			
Toluene	0.113	0.00100	"	0.100		113	80-120			
Ethylbenzene	0.104	0.00100	"	0.100		104	80-120			
Xylene (p/m)	0.235	0.00200	"	0.200		118	80-120			
Xylene (o)	0.114	0.00100	"	0.100		114	80-120			
Surrogate: 1,4-Difluorobenzene	0.143		"	0.120		119	75-125			
Surrogate: 4-Bromofluorobenzene	0.116		"	0.120		96.6	75-125			

Calibration Check (P9I1209-CCV2)

Prepared: 09/12/19 Analyzed: 09/13/19

Benzene	0.0922	0.00100	mg/kg wet	0.100		92.2	80-120			
Toluene	0.113	0.00100	"	0.100		113	80-120			
Ethylbenzene	0.114	0.00100	"	0.100		114	80-120			
Xylene (p/m)	0.225	0.00200	"	0.200		113	80-120			
Xylene (o)	0.118	0.00100	"	0.100		118	80-120			
Surrogate: 1,4-Difluorobenzene	0.142		"	0.120		119	75-125			
Surrogate: 4-Bromofluorobenzene	0.134		"	0.120		112	75-125			

Calibration Check (P9I1209-CCV3)

Prepared: 09/12/19 Analyzed: 09/13/19

Benzene	0.0851	0.00100	mg/kg wet	0.100		85.1	80-120			
Toluene	0.0947	0.00100	"	0.100		94.7	80-120			
Ethylbenzene	0.0931	0.00100	"	0.100		93.1	80-120			
Xylene (p/m)	0.196	0.00200	"	0.200		98.2	80-120			
Xylene (o)	0.102	0.00100	"	0.100		102	80-120			
Surrogate: 1,4-Difluorobenzene	0.141		"	0.120		118	75-125			
Surrogate: 4-Bromofluorobenzene	0.109		"	0.120		91.2	75-125			

Permian Basin Environmental Lab, L.P.

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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9I1209 - General Preparation (GC)

Matrix Spike (P9I1209-MS1)		Source: 9I12005-08		Prepared: 09/12/19		Analyzed: 09/13/19				
Benzene	0.0545	0.00105	mg/kg dry	0.105	ND	51.8	80-120			QM-05
Toluene	0.0632	0.00105	"	0.105	ND	60.0	80-120			QM-05
Ethylbenzene	0.0884	0.00105	"	0.105	ND	84.0	80-120			
Xylene (p/m)	0.129	0.00211	"	0.211	ND	61.3	80-120			QM-05
Xylene (o)	0.0669	0.00105	"	0.105	ND	63.5	80-120			QM-05
Surrogate: 4-Bromofluorobenzene	0.136		"	0.126		107	75-125			
Surrogate: 1,4-Difluorobenzene	0.148		"	0.126		117	75-125			

Matrix Spike Dup (P9I1209-MSD1)		Source: 9I12005-08		Prepared: 09/12/19		Analyzed: 09/13/19				
Benzene	0.0660	0.00105	mg/kg dry	0.105	ND	62.7	80-120	19.0	20	QM-05
Toluene	0.0714	0.00105	"	0.105	ND	67.8	80-120	12.2	20	QM-05
Ethylbenzene	0.100	0.00105	"	0.105	ND	95.0	80-120	12.3	20	
Xylene (p/m)	0.141	0.00211	"	0.211	ND	67.2	80-120	9.23	20	QM-05
Xylene (o)	0.0776	0.00105	"	0.105	ND	73.7	80-120	14.8	20	QM-05
Surrogate: 4-Bromofluorobenzene	0.140		"	0.126		111	75-125			
Surrogate: 1,4-Difluorobenzene	0.146		"	0.126		115	75-125			

Batch P9I1601 - General Preparation (GC)

Blank (P9I1601-BLK1)				Prepared & Analyzed: 09/16/19						
Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 1,4-Difluorobenzene	0.115		"	0.120		95.5	75-125			
Surrogate: 4-Bromofluorobenzene	0.129		"	0.120		108	75-125			

Permian Basin Environmental Lab, L.P.

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Project Number: 18-0138-01
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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9I1601 - General Preparation (GC)

LCS (P9I1601-BS1)

Prepared & Analyzed: 09/16/19

Benzene	0.0933	0.00100	mg/kg wet	0.100		93.3	70-130			
Toluene	0.101	0.00100	"	0.100		101	70-130			
Ethylbenzene	0.111	0.00100	"	0.100		111	70-130			
Xylene (p/m)	0.239	0.00200	"	0.200		119	70-130			
Xylene (o)	0.118	0.00100	"	0.100		118	70-130			
Surrogate: 1,4-Difluorobenzene	0.130		"	0.120		108	75-125			
Surrogate: 4-Bromofluorobenzene	0.113		"	0.120		94.3	75-125			

LCS Dup (P9I1601-BSD1)

Prepared & Analyzed: 09/16/19

Benzene	0.0975	0.00100	mg/kg wet	0.100		97.5	70-130	4.39	20	
Toluene	0.120	0.00100	"	0.100		120	70-130	17.3	20	
Ethylbenzene	0.114	0.00100	"	0.100		114	70-130	2.53	20	
Xylene (p/m)	0.236	0.00200	"	0.200		118	70-130	1.08	20	
Xylene (o)	0.114	0.00100	"	0.100		114	70-130	3.86	20	
Surrogate: 4-Bromofluorobenzene	0.123		"	0.120		102	75-125			
Surrogate: 1,4-Difluorobenzene	0.144		"	0.120		120	75-125			

Calibration Blank (P9I1601-CCB1)

Prepared & Analyzed: 09/16/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	0.102		"	0.120		84.6	75-125			
Surrogate: 1,4-Difluorobenzene	0.118		"	0.120		98.6	75-125			

Calibration Blank (P9I1601-CCB2)

Prepared & Analyzed: 09/16/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 1,4-Difluorobenzene	0.103		"	0.120		86.0	75-125			
Surrogate: 4-Bromofluorobenzene	0.107		"	0.120		89.3	75-125			

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9I1601 - General Preparation (GC)

Calibration Blank (P9I1601-CCB3)

Prepared & Analyzed: 09/16/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	0.118		"	0.120		98.6	75-125			
Surrogate: 1,4-Difluorobenzene	0.107		"	0.120		88.8	75-125			

Calibration Check (P9I1601-CCV1)

Prepared & Analyzed: 09/16/19

Benzene	0.101	0.00100	mg/kg wet	0.100		101	80-120			
Toluene	0.0932	0.00100	"	0.100		93.2	80-120			
Ethylbenzene	0.101	0.00100	"	0.100		101	80-120			
Xylene (p/m)	0.204	0.00200	"	0.200		102	80-120			
Xylene (o)	0.106	0.00100	"	0.100		106	80-120			
Surrogate: 1,4-Difluorobenzene	0.127		"	0.120		106	75-125			
Surrogate: 4-Bromofluorobenzene	0.0961		"	0.120		80.1	75-125			

Calibration Check (P9I1601-CCV2)

Prepared & Analyzed: 09/16/19

Benzene	0.0932	0.00100	mg/kg wet	0.100		93.2	80-120			
Toluene	0.113	0.00100	"	0.100		113	80-120			
Ethylbenzene	0.111	0.00100	"	0.100		111	80-120			
Xylene (p/m)	0.238	0.00200	"	0.200		119	80-120			
Xylene (o)	0.117	0.00100	"	0.100		117	80-120			
Surrogate: 4-Bromofluorobenzene	0.125		"	0.120		104	75-125			
Surrogate: 1,4-Difluorobenzene	0.137		"	0.120		114	75-125			

Calibration Check (P9I1601-CCV3)

Prepared & Analyzed: 09/16/19

Benzene	0.0988	0.00100	mg/kg wet	0.100		98.8	80-120			
Toluene	0.106	0.00100	"	0.100		106	80-120			
Ethylbenzene	0.106	0.00100	"	0.100		106	80-120			
Xylene (p/m)	0.212	0.00200	"	0.200		106	80-120			
Xylene (o)	0.110	0.00100	"	0.100		110	80-120			
Surrogate: 4-Bromofluorobenzene	0.114		"	0.120		95.4	75-125			
Surrogate: 1,4-Difluorobenzene	0.140		"	0.120		117	75-125			

Permian Basin Environmental Lab, L.P.

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Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9I1601 - General Preparation (GC)

Matrix Spike (P9I1601-MS1)		Source: 9I12005-28		Prepared & Analyzed: 09/16/19						
Benzene	0.101	0.00104	mg/kg dry	0.104	ND	97.0	80-120			
Toluene	0.0954	0.00104	"	0.104	ND	91.6	80-120			
Ethylbenzene	0.102	0.00104	"	0.104	ND	97.7	80-120			
Xylene (p/m)	0.170	0.00208	"	0.208	ND	81.6	80-120			
Xylene (o)	0.0821	0.00104	"	0.104	ND	78.8	80-120			QM-05
Surrogate: 1,4-Difluorobenzene	0.148		"	0.125		118	75-125			
Surrogate: 4-Bromofluorobenzene	0.134		"	0.125		107	75-125			

Matrix Spike Dup (P9I1601-MSD1)		Source: 9I12005-28		Prepared & Analyzed: 09/16/19						
Benzene	0.0942	0.00104	mg/kg dry	0.104	ND	90.4	80-120	7.04	20	
Toluene	0.0849	0.00104	"	0.104	ND	81.5	80-120	11.6	20	
Ethylbenzene	0.0864	0.00104	"	0.104	ND	82.9	80-120	16.4	20	
Xylene (p/m)	0.153	0.00208	"	0.208	ND	73.5	80-120	10.5	20	QM-05
Xylene (o)	0.0716	0.00104	"	0.104	ND	68.7	80-120	13.7	20	QM-05
Surrogate: 4-Bromofluorobenzene	0.120		"	0.125		95.8	75-125			
Surrogate: 1,4-Difluorobenzene	0.150		"	0.125		120	75-125			

Batch P9I1602 - General Preparation (GC)

Blank (P9I1602-BLK1)		Prepared & Analyzed: 09/16/19								
Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 4-Bromofluorobenzene	0.129		"	0.120		107	75-125			
Surrogate: 1,4-Difluorobenzene	0.112		"	0.120		93.5	75-125			

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9I1602 - General Preparation (GC)

LCS (P9I1602-BS1)

Prepared & Analyzed: 09/16/19

Benzene	0.105	0.00100	mg/kg wet	0.100		105	70-130			
Toluene	0.109	0.00100	"	0.100		109	70-130			
Ethylbenzene	0.114	0.00100	"	0.100		114	70-130			
Xylene (p/m)	0.224	0.00200	"	0.200		112	70-130			
Xylene (o)	0.118	0.00100	"	0.100		118	70-130			
Surrogate: 1,4-Difluorobenzene	0.131		"	0.120		109	75-125			
Surrogate: 4-Bromofluorobenzene	0.108		"	0.120		89.8	75-125			

LCS Dup (P9I1602-BSD1)

Prepared & Analyzed: 09/16/19

Benzene	0.101	0.00100	mg/kg wet	0.100		101	70-130	4.29	20	
Toluene	0.107	0.00100	"	0.100		107	70-130	1.83	20	
Ethylbenzene	0.112	0.00100	"	0.100		112	70-130	1.45	20	
Xylene (p/m)	0.215	0.00200	"	0.200		107	70-130	4.40	20	
Xylene (o)	0.118	0.00100	"	0.100		118	70-130	0.187	20	
Surrogate: 4-Bromofluorobenzene	0.100		"	0.120		83.5	75-125			
Surrogate: 1,4-Difluorobenzene	0.143		"	0.120		119	75-125			

Calibration Blank (P9I1602-CCB1)

Prepared & Analyzed: 09/16/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 1,4-Difluorobenzene	0.107		"	0.120		88.8	75-125			
Surrogate: 4-Bromofluorobenzene	0.118		"	0.120		98.6	75-125			

Calibration Blank (P9I1602-CCB2)

Prepared: 09/16/19 Analyzed: 09/17/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	0.138		"	0.120		115	75-125			
Surrogate: 1,4-Difluorobenzene	0.117		"	0.120		97.8	75-125			

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9I1602 - General Preparation (GC)

Calibration Check (P9I1602-CCV1)

Prepared & Analyzed: 09/16/19

Benzene	0.0988	0.00100	mg/kg wet	0.100		98.8	80-120			
Toluene	0.106	0.00100	"	0.100		106	80-120			
Ethylbenzene	0.106	0.00100	"	0.100		106	80-120			
Xylene (p/m)	0.212	0.00200	"	0.200		106	80-120			
Xylene (o)	0.110	0.00100	"	0.100		110	80-120			
Surrogate: 1,4-Difluorobenzene	0.140		"	0.120		117	75-125			
Surrogate: 4-Bromofluorobenzene	0.114		"	0.120		95.4	75-125			

Calibration Check (P9I1602-CCV2)

Prepared: 09/16/19 Analyzed: 09/17/19

Benzene	0.0995	0.00100	mg/kg wet	0.100		99.5	80-120			
Toluene	0.107	0.00100	"	0.100		107	80-120			
Ethylbenzene	0.101	0.00100	"	0.100		101	80-120			
Xylene (p/m)	0.235	0.00200	"	0.200		117	80-120			
Xylene (o)	0.114	0.00100	"	0.100		114	80-120			
Surrogate: 1,4-Difluorobenzene	0.140		"	0.120		117	75-125			
Surrogate: 4-Bromofluorobenzene	0.113		"	0.120		94.2	75-125			

Matrix Spike (P9I1602-MS1)

Source: 9I12005-45

Prepared: 09/16/19 Analyzed: 09/17/19

Benzene	0.0722	0.00104	mg/kg dry	0.104	ND	69.3	80-120			QM-05
Toluene	0.0766	0.00104	"	0.104	ND	73.5	80-120			QM-05
Ethylbenzene	0.103	0.00104	"	0.104	ND	98.4	80-120			
Xylene (p/m)	0.158	0.00208	"	0.208	ND	76.0	80-120			QM-05
Xylene (o)	0.0824	0.00104	"	0.104	ND	79.1	80-120			QM-05
Surrogate: 4-Bromofluorobenzene	0.138		"	0.125		111	75-125			
Surrogate: 1,4-Difluorobenzene	0.148		"	0.125		119	75-125			

Matrix Spike Dup (P9I1602-MSD1)

Source: 9I12005-45

Prepared: 09/16/19 Analyzed: 09/17/19

Benzene	0.0746	0.00104	mg/kg dry	0.104	ND	71.6	80-120	3.32	20	QM-05
Toluene	0.0771	0.00104	"	0.104	ND	74.0	80-120	0.664	20	QM-05
Ethylbenzene	0.102	0.00104	"	0.104	ND	98.3	80-120	0.0711	20	
Xylene (p/m)	0.155	0.00208	"	0.208	ND	74.3	80-120	2.34	20	QM-05
Xylene (o)	0.0792	0.00104	"	0.104	ND	76.1	80-120	3.89	20	QM-05
Surrogate: 1,4-Difluorobenzene	0.148		"	0.125		118	75-125			
Surrogate: 4-Bromofluorobenzene	0.142		"	0.125		113	75-125			

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Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9I1301 - * DEFAULT PREP *****

Blank (P9I1301-BLK1)	Prepared & Analyzed: 09/13/19									
% Moisture	ND	0.1	%							
Duplicate (P9I1301-DUP1)	Source: 9I12001-06 Prepared & Analyzed: 09/13/19									
% Moisture	16.0	0.1	%		15.0			6.45	20	
Duplicate (P9I1301-DUP2)	Source: 9I12001-01 Prepared & Analyzed: 09/13/19									
% Moisture	15.0	0.1	%		15.0			0.00	20	
Duplicate (P9I1301-DUP3)	Source: 9I12001-15 Prepared & Analyzed: 09/13/19									
% Moisture	15.0	0.1	%		15.0			0.00	20	
Duplicate (P9I1301-DUP4)	Source: 9I12001-28 Prepared & Analyzed: 09/13/19									
% Moisture	17.0	0.1	%		17.0			0.00	20	
Duplicate (P9I1301-DUP5)	Source: 9I12004-16 Prepared & Analyzed: 09/13/19									
% Moisture	ND	0.1	%		ND				20	
Duplicate (P9I1301-DUP6)	Source: 9I12005-11 Prepared & Analyzed: 09/13/19									
% Moisture	19.0	0.1	%		18.0			5.41	20	
Duplicate (P9I1301-DUP7)	Source: 9I12005-38 Prepared & Analyzed: 09/13/19									
% Moisture	8.0	0.1	%		8.0			0.00	20	
Duplicate (P9I1301-DUP8)	Source: 9I12012-01 Prepared & Analyzed: 09/13/19									
% Moisture	ND	0.1	%		ND				20	

Batch P9I1814 - * DEFAULT PREP *****

Blank (P9I1814-BLK1)	Prepared: 09/18/19 Analyzed: 09/19/19									
Chloride	ND	1.00	mg/kg wet							

Permian Basin Environmental Lab, L.P.

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General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9I1814 - *** DEFAULT PREP ***										
LCS (P9I1814-BS1)				Prepared: 09/18/19 Analyzed: 09/19/19						
Chloride	432	1.00	mg/kg wet	400		108	80-120			
LCS Dup (P9I1814-BSD1)				Prepared: 09/18/19 Analyzed: 09/19/19						
Chloride	431	1.00	mg/kg wet	400		108	80-120	0.0371	20	
Calibration Blank (P9I1814-CCB1)				Prepared: 09/18/19 Analyzed: 09/19/19						
Chloride	0.00		mg/kg wet							
Calibration Blank (P9I1814-CCB2)				Prepared: 09/18/19 Analyzed: 09/19/19						
Chloride	0.00		mg/kg wet							
Calibration Check (P9I1814-CCV1)				Prepared: 09/18/19 Analyzed: 09/19/19						
Chloride	20.1		mg/kg	20.0		100	0-200			
Calibration Check (P9I1814-CCV2)				Prepared: 09/18/19 Analyzed: 09/19/19						
Chloride	15.3		mg/kg	20.0		76.7	0-200			
Calibration Check (P9I1814-CCV3)				Prepared: 09/18/19 Analyzed: 09/19/19						
Chloride	17.4		mg/kg	20.0		87.1	0-200			
Matrix Spike (P9I1814-MS1)				Source: 9I12001-36		Prepared: 09/18/19 Analyzed: 09/19/19				
Chloride	1710	5.62	mg/kg dry	562	969	131	80-120			QM-05
Matrix Spike (P9I1814-MS2)				Source: 9I12005-17		Prepared: 09/18/19 Analyzed: 09/19/19				
Chloride	2510	12.0	mg/kg dry	1200	1500	83.8	80-120			
Matrix Spike Dup (P9I1814-MSD1)				Source: 9I12001-36		Prepared: 09/18/19 Analyzed: 09/19/19				
Chloride	1680	5.62	mg/kg dry	562	969	126	80-120	1.74	20	QM-05

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General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9I1814 - * DEFAULT PREP *****

Matrix Spike Dup (P9I1814-MSD2)

Source: 9I12005-17

Prepared: 09/18/19 Analyzed: 09/19/19

Chloride	2620	12.0	mg/kg dry	1200	1500	92.7	80-120	4.14	20	
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Batch P9I1815 - * DEFAULT PREP *****

Blank (P9I1815-BLK1)

Prepared: 09/18/19 Analyzed: 09/19/19

Chloride	ND	1.00	mg/kg wet							
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LCS (P9I1815-BS1)

Prepared: 09/18/19 Analyzed: 09/19/19

Chloride	422	1.00	mg/kg wet	400		105	80-120			
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LCS Dup (P9I1815-BSD1)

Prepared: 09/18/19 Analyzed: 09/19/19

Chloride	417	1.00	mg/kg wet	400		104	80-120	1.26	20	
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Calibration Blank (P9I1815-CCB1)

Prepared: 09/18/19 Analyzed: 09/19/19

Chloride	0.00		mg/kg wet							
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Calibration Blank (P9I1815-CCB2)

Prepared: 09/18/19 Analyzed: 09/19/19

Chloride	0.00		mg/kg wet							
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Calibration Check (P9I1815-CCV1)

Prepared: 09/18/19 Analyzed: 09/19/19

Chloride	17.4		mg/kg	20.0		87.1	0-200			
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Calibration Check (P9I1815-CCV2)

Prepared: 09/18/19 Analyzed: 09/19/19

Chloride	20.3		mg/kg	20.0		102	0-200			
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Calibration Check (P9I1815-CCV3)

Prepared: 09/18/19 Analyzed: 09/20/19

Chloride	20.4		mg/kg	20.0		102	0-200			
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Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9I1815 - * DEFAULT PREP *****

Matrix Spike (P9I1815-MS1)		Source: 9I12005-37		Prepared: 09/18/19 Analyzed: 09/19/19						
Chloride	1690	5.38	mg/kg dry	538	1170	96.9	80-120			
Matrix Spike (P9I1815-MS2)		Source: 9I12010-01		Prepared: 09/18/19 Analyzed: 09/20/19						
Chloride	1640	10.5	mg/kg dry	1050	633	95.7	80-120			
Matrix Spike Dup (P9I1815-MSD1)		Source: 9I12005-37		Prepared: 09/18/19 Analyzed: 09/19/19						
Chloride	1740	5.38	mg/kg dry	538	1170	107	80-120	3.12	20	
Matrix Spike Dup (P9I1815-MSD2)		Source: 9I12010-01		Prepared: 09/18/19 Analyzed: 09/20/19						
Chloride	1550	10.5	mg/kg dry	1050	633	86.9	80-120	5.84	20	

Batch P9I2003 - * DEFAULT PREP *****

Blank (P9I2003-BLK1)				Prepared & Analyzed: 09/20/19						
Chloride	ND	1.00	mg/kg wet							
LCS (P9I2003-BS1)				Prepared & Analyzed: 09/20/19						
Chloride	418	1.00	mg/kg wet	400		104	80-120			
LCS Dup (P9I2003-BSD1)				Prepared & Analyzed: 09/20/19						
Chloride	416	1.00	mg/kg wet	400		104	80-120	0.389	20	
Calibration Blank (P9I2003-CCB1)				Prepared & Analyzed: 09/20/19						
Chloride	0.00		mg/kg wet							
Calibration Blank (P9I2003-CCB2)				Prepared & Analyzed: 09/20/19						
Chloride	0.00		mg/kg wet							

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Project Number: 18-0138-01
Project Manager: Mark Larson

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General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9I2003 - * DEFAULT PREP *****

Calibration Check (P9I2003-CCV1)

Prepared & Analyzed: 09/20/19

Chloride	19.6		mg/kg	20.0		98.1	0-200			
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Calibration Check (P9I2003-CCV2)

Prepared & Analyzed: 09/20/19

Chloride	19.4		mg/kg	20.0		96.9	0-200			
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Matrix Spike (P9I2003-MS1)

Source: 9I12005-02

Prepared & Analyzed: 09/20/19

Chloride	1560	5.49	mg/kg dry	549	1110	80.9	80-120			
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Matrix Spike (P9I2003-MS2)

Source: 9I12005-27

Prepared & Analyzed: 09/20/19

Chloride	1490	5.26	mg/kg dry	526	925	107	80-120			
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Matrix Spike Dup (P9I2003-MSD1)

Source: 9I12005-02

Prepared & Analyzed: 09/20/19

Chloride	1620	5.49	mg/kg dry	549	1110	93.0	80-120	4.18	20	
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Matrix Spike Dup (P9I2003-MSD2)

Source: 9I12005-27

Prepared & Analyzed: 09/20/19

Chloride	1390	5.26	mg/kg dry	526	925	88.1	80-120	6.91	20	
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Batch P9I2004 - * DEFAULT PREP *****

Blank (P9I2004-BLK1)

Prepared: 09/20/19 Analyzed: 09/21/19

Chloride	ND	1.00	mg/kg wet							
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LCS (P9I2004-BS1)

Prepared: 09/20/19 Analyzed: 09/21/19

Chloride	ND	1.00	mg/kg wet	400			80-120			
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LCS Dup (P9I2004-BSD1)

Prepared: 09/20/19 Analyzed: 09/21/19

Chloride	ND	1.00	mg/kg wet	400			80-120		20	
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Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9I2004 - *** DEFAULT PREP ***										
Calibration Blank (P9I2004-CCB1)				Prepared: 09/20/19 Analyzed: 09/21/19						
Chloride	0.00		mg/kg wet							
Calibration Blank (P9I2004-CCB2)				Prepared: 09/20/19 Analyzed: 09/21/19						
Chloride	0.00		mg/kg wet							
Calibration Check (P9I2004-CCV1)				Prepared: 09/20/19 Analyzed: 09/21/19						
Chloride	0.00		mg/kg	20.0			0-200			
Calibration Check (P9I2004-CCV2)				Prepared: 09/20/19 Analyzed: 09/21/19						
Chloride	0.00		mg/kg	20.0			0-200			
Calibration Check (P9I2004-CCV3)				Prepared: 09/20/19 Analyzed: 09/21/19						
Chloride	0.00		mg/kg	20.0			0-200			
Matrix Spike (P9I2004-MS1)				Source: 9I13003-01 Prepared: 09/20/19 Analyzed: 09/21/19						
Chloride	ND	1.11	mg/kg dry	2780	ND		80-120			
Matrix Spike (P9I2004-MS2)				Source: 9I13003-08 Prepared: 09/20/19 Analyzed: 09/21/19						
Chloride	ND	1.09	mg/kg dry	2720	ND		80-120			
Matrix Spike Dup (P9I2004-MSD1)				Source: 9I13003-01 Prepared: 09/20/19 Analyzed: 09/21/19						
Chloride	ND	1.11	mg/kg dry	2780	ND		80-120		20	
Matrix Spike Dup (P9I2004-MSD2)				Source: 9I13003-08 Prepared: 09/20/19 Analyzed: 09/21/19						
Chloride	ND	1.09	mg/kg dry	2720	ND		80-120		20	

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9I1404 - TX 1005										
Blank (P9I1404-BLK1)				Prepared & Analyzed: 09/16/19						
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	120		"	100		120	70-130			
Surrogate: o-Terphenyl	64.0		"	50.0		128	70-130			
LCS (P9I1404-BS1)				Prepared & Analyzed: 09/16/19						
C6-C12	1020	25.0	mg/kg wet	1000		102	75-125			
>C12-C28	1070	25.0	"	1000		107	75-125			
Surrogate: 1-Chlorooctane	118		"	100		118	70-130			
Surrogate: o-Terphenyl	59.7		"	50.0		119	70-130			
LCS Dup (P9I1404-BSD1)				Prepared & Analyzed: 09/16/19						
C6-C12	1000	25.0	mg/kg wet	1000		100	75-125	1.31	20	
>C12-C28	1060	25.0	"	1000		106	75-125	1.22	20	
Surrogate: 1-Chlorooctane	119		"	100		119	70-130			
Surrogate: o-Terphenyl	63.3		"	50.0		127	70-130			
Calibration Blank (P9I1404-CCB1)				Prepared & Analyzed: 09/16/19						
C6-C12	11.4		mg/kg wet							
>C12-C28	17.0		"							
Surrogate: 1-Chlorooctane	119		"	100		119	70-130			
Surrogate: o-Terphenyl	63.7		"	50.0		127	70-130			
Calibration Blank (P9I1404-CCB2)				Prepared: 09/16/19 Analyzed: 09/17/19						
C6-C12	13.8		mg/kg wet							
>C12-C28	21.2		"							
Surrogate: 1-Chlorooctane	122		"	100		122	70-130			
Surrogate: o-Terphenyl	65.6		"	50.0		131	70-130			S-GC

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9I1404 - TX 1005

Calibration Check (P9I1404-CCV1)

Prepared & Analyzed: 09/16/19

C6-C12	482	25.0	mg/kg wet	500		96.4	85-115			
>C12-C28	521	25.0	"	500		104	85-115			
Surrogate: 1-Chlorooctane	126		"	100		126	70-130			
Surrogate: o-Terphenyl	55.6		"	50.0		111	70-130			

Calibration Check (P9I1404-CCV2)

Prepared: 09/16/19 Analyzed: 09/17/19

C6-C12	503	25.0	mg/kg wet	500		101	85-115			
>C12-C28	550	25.0	"	500		110	85-115			
Surrogate: 1-Chlorooctane	125		"	100		125	70-130			
Surrogate: o-Terphenyl	58.5		"	50.0		117	70-130			

Calibration Check (P9I1404-CCV3)

Prepared: 09/16/19 Analyzed: 09/17/19

C6-C12	482	25.0	mg/kg wet	500		96.5	85-115			
>C12-C28	514	25.0	"	500		103	85-115			
Surrogate: 1-Chlorooctane	126		"	100		126	70-130			
Surrogate: o-Terphenyl	56.0		"	50.0		112	70-130			

Duplicate (P9I1404-DUP1)

Source: 9I12005-09

Prepared: 09/16/19 Analyzed: 09/17/19

C6-C12	15.3	29.8	mg/kg dry		21.5			33.7	20	
>C12-C28	15.4	29.8	"		ND				20	
Surrogate: 1-Chlorooctane	143		"	119		120	70-130			
Surrogate: o-Terphenyl	77.4		"	59.5		130	70-130			

Batch P9I1405 - TX 1005

Blank (P9I1405-BLK1)

Prepared: 09/16/19 Analyzed: 09/18/19

C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	104		"	100		104	70-130			
Surrogate: o-Terphenyl	54.6		"	50.0		109	70-130			

Permian Basin Environmental Lab, L.P.

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Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9I1405 - TX 1005

LCS (P9I1405-BS1)

Prepared: 09/16/19 Analyzed: 09/18/19

C6-C12	1010	25.0	mg/kg wet	1000		101	75-125			
>C12-C28	1050	25.0	"	1000		105	75-125			
Surrogate: 1-Chlorooctane	99.2		"	100		99.2	70-130			
Surrogate: o-Terphenyl	50.8		"	50.0		102	70-130			

LCS Dup (P9I1405-BSD1)

Prepared: 09/16/19 Analyzed: 09/18/19

C6-C12	1050	25.0	mg/kg wet	1000		105	75-125	3.50	20	
>C12-C28	1120	25.0	"	1000		112	75-125	5.68	20	
Surrogate: 1-Chlorooctane	106		"	100		106	70-130			
Surrogate: o-Terphenyl	53.7		"	50.0		107	70-130			

Calibration Blank (P9I1405-CCB1)

Prepared: 09/16/19 Analyzed: 09/18/19

C6-C12	15.2		mg/kg wet							
>C12-C28	20.8		"							
Surrogate: 1-Chlorooctane	104		"	100		104	70-130			
Surrogate: o-Terphenyl	54.2		"	50.0		108	70-130			

Calibration Blank (P9I1405-CCB2)

Prepared: 09/16/19 Analyzed: 09/18/19

C6-C12	8.68		mg/kg wet							
>C12-C28	13.4		"							
Surrogate: 1-Chlorooctane	104		"	100		104	70-130			
Surrogate: o-Terphenyl	53.3		"	50.0		107	70-130			

Calibration Check (P9I1405-CCV1)

Prepared: 09/16/19 Analyzed: 09/18/19

C6-C12	474	25.0	mg/kg wet	500		94.9	85-115			
>C12-C28	516	25.0	"	500		103	85-115			
Surrogate: 1-Chlorooctane	108		"	100		108	70-130			
Surrogate: o-Terphenyl	48.0		"	50.0		96.0	70-130			

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Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9I1405 - TX 1005

Calibration Check (P9I1405-CCV2)

Prepared: 09/16/19 Analyzed: 09/18/19

C6-C12	470	25.0	mg/kg wet	500		94.0	85-115			
>C12-C28	517	25.0	"	500		103	85-115			
Surrogate: 1-Chlorooctane	106		"	100		106	70-130			
Surrogate: o-Terphenyl	46.6		"	50.0		93.1	70-130			

Calibration Check (P9I1405-CCV3)

Prepared: 09/16/19 Analyzed: 09/18/19

C6-C12	515	25.0	mg/kg wet	500		103	85-115			
>C12-C28	513	25.0	"	500		103	85-115			
Surrogate: 1-Chlorooctane	128		"	100		128	70-130			
Surrogate: o-Terphenyl	59.2		"	50.0		118	70-130			

Duplicate (P9I1405-DUP1)

Source: 9I12005-29

Prepared: 09/16/19 Analyzed: 09/18/19

C6-C12	ND	26.0	mg/kg dry		15.4				20	
>C12-C28	23.3	26.0	"		11.3			69.5	20	
Surrogate: 1-Chlorooctane	132		"	104		127	70-130			
Surrogate: o-Terphenyl	73.0		"	52.1		140	70-130			S-GC

Batch P9I1406 - TX 1005

Blank (P9I1406-BLK1)

Prepared: 09/16/19 Analyzed: 09/18/19

C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	126		"	100		126	70-130			
Surrogate: o-Terphenyl	67.9		"	50.0		136	70-130			S-GC

LCS (P9I1406-BS1)

Prepared: 09/16/19 Analyzed: 09/18/19

C6-C12	1070	25.0	mg/kg wet	1000		107	75-125			
>C12-C28	1090	25.0	"	1000		109	75-125			
Surrogate: 1-Chlorooctane	123		"	100		123	70-130			
Surrogate: o-Terphenyl	62.8		"	50.0		126	70-130			

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Project Number: 18-0138-01
Project Manager: Mark Larson

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Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9I1406 - TX 1005

LCS Dup (P9I1406-BSD1)

Prepared: 09/16/19 Analyzed: 09/18/19

C6-C12	1020	25.0	mg/kg wet	1000		102	75-125	5.29	20	
>C12-C28	1100	25.0	"	1000		110	75-125	0.143	20	
Surrogate: 1-Chlorooctane	125		"	100		125	70-130			
Surrogate: o-Terphenyl	60.8		"	50.0		122	70-130			

Calibration Blank (P9I1406-CCB1)

Prepared: 09/16/19 Analyzed: 09/18/19

C6-C12	11.8		mg/kg wet							
>C12-C28	8.15		"							
Surrogate: 1-Chlorooctane	123		"	100		123	70-130			
Surrogate: o-Terphenyl	66.8		"	50.0		134	70-130			S-GC

Calibration Blank (P9I1406-CCB2)

Prepared: 09/16/19 Analyzed: 09/18/19

C6-C12	9.78		mg/kg wet							
>C12-C28	8.86		"							
Surrogate: 1-Chlorooctane	121		"	100		121	70-130			
Surrogate: o-Terphenyl	65.7		"	50.0		131	70-130			S-GC

Calibration Check (P9I1406-CCV1)

Prepared: 09/16/19 Analyzed: 09/18/19

C6-C12	515	25.0	mg/kg wet	500		103	85-115			
>C12-C28	513	25.0	"	500		103	85-115			
Surrogate: 1-Chlorooctane	128		"	100		128	70-130			
Surrogate: o-Terphenyl	59.2		"	50.0		118	70-130			

Calibration Check (P9I1406-CCV2)

Prepared: 09/16/19 Analyzed: 09/18/19

C6-C12	507	25.0	mg/kg wet	500		101	85-115			
>C12-C28	494	25.0	"	500		98.8	85-115			
Surrogate: 1-Chlorooctane	126		"	100		126	70-130			
Surrogate: o-Terphenyl	58.1		"	50.0		116	70-130			

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Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

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Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9I1406 - TX 1005

Calibration Check (P9I1406-CCV3)

Prepared: 09/16/19 Analyzed: 09/18/19

C6-C12	516	25.0	mg/kg wet	500		103	85-115			
>C12-C28	575	25.0	"	500		115	85-115			
Surrogate: 1-Chlorooctane	130		"	100		130	70-130			
Surrogate: o-Terphenyl	60.0		"	50.0		120	70-130			

Duplicate (P9I1406-DUP1)

Source: 9I12005-49

Prepared: 09/16/19 Analyzed: 09/18/19

C6-C12	11.1	26.0	mg/kg dry		ND				20	
>C12-C28	12.1	26.0	"		10.1			18.2	20	
Surrogate: 1-Chlorooctane	98.6		"	104		94.6	70-130			
Surrogate: o-Terphenyl	52.7		"	52.1		101	70-130			

Batch P9I1611 - TX 1005

Blank (P9I1611-BLK1)

Prepared: 09/16/19 Analyzed: 09/19/19

C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	106		"	100		106	70-130			
Surrogate: o-Terphenyl	55.9		"	50.0		112	70-130			

LCS (P9I1611-BS1)

Prepared: 09/16/19 Analyzed: 09/19/19

C6-C12	1010	25.0	mg/kg wet	1000		101	75-125			
>C12-C28	1080	25.0	"	1000		108	75-125			
Surrogate: 1-Chlorooctane	118		"	100		118	70-130			
Surrogate: o-Terphenyl	53.1		"	50.0		106	70-130			

LCS Dup (P9I1611-BSD1)

Prepared: 09/16/19 Analyzed: 09/19/19

C6-C12	1010	25.0	mg/kg wet	1000		101	75-125	0.282	20	
>C12-C28	1090	25.0	"	1000		109	75-125	0.813	20	
Surrogate: 1-Chlorooctane	123		"	100		123	70-130			
Surrogate: o-Terphenyl	54.7		"	50.0		109	70-130			

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9I1611 - TX 1005

Calibration Blank (P9I1611-CCB1)

Prepared: 09/16/19 Analyzed: 09/19/19

C6-C12	8.09		mg/kg wet							
>C12-C28	21.5		"							
Surrogate: 1-Chlorooctane	109		"	100		109	70-130			
Surrogate: o-Terphenyl	56.0		"	50.0		112	70-130			

Calibration Check (P9I1611-CCV1)

Prepared: 09/16/19 Analyzed: 09/19/19

C6-C12	501	25.0	mg/kg wet	500		100	85-115			
>C12-C28	503	25.0	"	500		101	85-115			
Surrogate: 1-Chlorooctane	114		"	100		114	70-130			
Surrogate: o-Terphenyl	49.7		"	50.0		99.3	70-130			

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Notes and Definitions

S-GC Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.

ROI Received on Ice

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

QM-05 The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.

BULK Samples received in Bulk soil containers

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis

RPD Relative Percent Difference

LCS Laboratory Control Spike

MS Matrix Spike

Dup Duplicate

Report Approved By:



Date:

9/21/2019

Brent Barron, Laboratory Director/Technical Director

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.

Project: Cooper Jal 238-Legacy

Fax: (432) 687-0456

P.O. Box 50685

Project Number: 18-0138-01

Midland TX, 79710

Project Manager: Mark Larson

This material is intended only for the use of the individual (s) or entity to whom it is addressed, and may contain information that is privileged and confidential.

If you have received this material in error, please notify us immediately at 432-686-7235.

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

COLLECTOR: R. V. ECKEN

PRESERVATION			
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ANALYSES

☐ TBE ☐

☐ TPH 1005 ☒

☐ MOD 8015 ☒

☐ MOD 8015 ☒

☐ MOD 8015 ☒

☐ PAH 8270 ☐

☐ PESTICIDES ☐ 8151 H

☐ METALS (RCRA) ☐

☐ HERB ☐ Se

☐ METALS (RCRA) ☐ C

☐ D.W. 200.8

☐ FLASHPOINT

☐ % MOISTURE

☐ VALENTINE CHROM

☐ PESTICIDES ☐ PECHLOR

☐ ANIONS ☐ AL

Matrix

# of Containers	
HCl	
HNO ₃	
H ₂ SO ₄ □ N	
ICE	
UNPRESSED	

ANALYSES	
BTEX	☐ MTBE ☐ THF
TRPH	4:1:8:1 ☐ T
GASOLINE	MOD 801 ☐
DIESEL	MOD 801 ☐
OIL	MOD 801 ☐
VOC	8280 ☐
SVOC	8270 ☐
8081	PESTICIDES ☐
8082	PCBS ☐
TBLP	METALS (R) ☐
TCLP	PEST ☐ H ☐
TOTAL	METALS (R) ☐
LEAD	TOTAL ☐ FL ☐
ROI	TOX ☐ % M ☐
TDS	TSS ☐
pH	HEXAVAL ☐
EXPLOSIVES	☐
CHLORIDES	AN ☐
MSD	
FIELD NOTES	

analyze	samples until	delineation	limit is	reached:	CI = 1000 mg/kg	TPH = 21500 mg/kg	ETEX = 50 mg/kg
S-1 (0-1')	1	9/6/19	14:00	S			
S-1 (2-3')	2	9/6/19	14:01				
S-1 (4-5')	3	9/6/19	14:02				
S-2 (0-1')	4	9/9/19	10:08				
S-2 (1-2')	5		10:09				
S-3 (0-1')	6		10:43				
S-3 (1-2')	7		10:44				
S-4 (0-1')	8		11:04				
S-4 (1-2')	9		11:05				
S-5 (0-1')	10		11:40				
S-5 (1-2')	11		11:41				
S-5 (2-3')	12		11:42				
S-6 (0-1')	13		12:12				
S-6 (1-2')	14		12:13				
S-6 (2-3')	15		12:14				
TOTAL	15						

RECEIVED BY: (Signature)RECEIVED BY: (Signature)

10

RECEIVED B.I. (ORIGINAL)

5

TURN AROUND TIME
NORMAL ☒

LABORATORY USE ONLY: **7** **21**

1 DAY ☐
2 DAY ☐
OTHER ☐

CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED

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

Page 82 of 84

LA PROJECT #: 18-0138-01 COLLECTOR

TRRP report?		S=SOIL W=WATER A=AIR		P=PAINT SL=SLUDGE OT=OTHER		PRESERVATION		ANALYSES		FIELD NOTES	
TIME ZONE: Time zone/State:		Lab #		Date		Matrix		# of Containers		HCl HNO ₃ H ₂ SO ₄ ☐ NaOH ☐ ICE UNPRESERVED	
S-7 (0-1')	16	9/9/19	13:08	5	1						
S-7 (2-3')	17		13:09								
S-7 (4-5')	18		13:10								
S-8 (0-1')	19		13:44								
S-8 (2-3')	20		13:45								
S-8 (4-5')	21		13:46								
S-9 (0-1')	22		14:04								
S-9 (2-3')	23		14:10								
S-9 (4-5')	24		14:11								
S-10 (0-1')	25		14:41								
S-10 (2-3')	26		14:42								
S-10 (4-5')	27		14:43								
S-11 (0-1')	28		15:06								
S-11 (2-3')	29		15:07								
S-11 (4-5')	30		15:08								
TOTAL 15											

RELINQUISHED BY: (Signature) DATE/TIME: 9-12-19 9:40 RECEIVED BY: (Signature)

RELINQUISHED BY: (Signature) DATE/TIME: 9-12-19 9:40 RECEIVED BY: (Signature)

LABORATORY: PBE EL

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY: NCFEL
RECEIVING TEMP: 2 THERM#:
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL #
☐ HAND DELIVERED

analyze samples until delineation limit is reached;
 Cl- = 10000 mg/kg
 TPH = 2,500 mg/kg
 BTEX = 50 mg/kg

CHAIN-OF-CUSTOMERS

Varson & Associates, Inc.
Environmental Consultants

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

Data Reported to:

DATE: 9/12/19
PO#:
PROJECT LOCATION
LAI PROJECT #: 18

LAB WORK ORDER#: 91112005
COOPER JM 238-LEGACY
COLLECTOR: RD/EC/RN

COLLECTOR: PD/EC/PN

Page 83 of 84

Received by: 11/22/2022 9:56:08 AM

TRRP report?		S=SOIL W=WATER A=AIR		P=PAINT SL=SLUDGE OT=OTHER		TIME ZONE: Time zone/State:		PRELIMINARY ANALYSES					
Yes ☐ No ☒						MST		☐ BTEX ☐ MTBE ☐ TPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ ☐ GASOLINE MOD 8015 ☒ DIESEL - MOD 8015 ☒ ☐ OIL - MOD 8015 ☒ VOC 8260 ☐ SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ ☐ 8081 PESTICIDES ☐ 8161 HERBICIDES ☐ ☐ TBLP - METALS (RCRA) ☐ TCLP VOC ☐ ☐ TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ ☐ TOTAL METALS (RCRA) ☐ OTHER LIST ☐ ☐ LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ ☐ RCI - TOTAL ☐ FLASHPOINT ☐ ☐ TDS ☐ TOX ☐ % MOISTURE ☐ CYANIDE ☐ ☐ PH ☐ TSS ☐ HEXAVALENT CHROMIUM ☐ ☐ EXPLOSIVES ☐ PECTHOLATE ☐ ☐ CHLORIDES ☐ ANIONS ☐ ALKALINITY ☐					
Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	HCl	HNO ₃	H ₂ SO ₄ ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES		FIELD NOTES
S-12 (0-1')	31	9/9/19	15:31	S	1				X		X	X	apply to samples until delineation limit is reached CI = 1000mg/L TPH = 21500 mg BTEX = 50 mg/L
S-12 (1-2')	32	9/9/19	15:32								X	X	
S-13 (0-1')	33	9/10/19	9:09								X	X	
S-13 (2-3')	34		9:10								X	X	
S-13 (4-5')	35		9:11								X	X	
S-14 (0-1')	36		9:40								X	X	
S-14 (1-2')	37		9:41								X	X	
S-14 (2-3')	38		9:42								X	X	
S-15 (0-1')	39		10:14								X	X	
S-15 (2-3')	40		10:15								X	X	
S-15 (4-5')	41		10:16								X	X	
S-16 (0-1')	42		10:34								X	X	
S-16 (1-2')	43		10:35								X	X	
S-16 (2-3')	44		10:36								X	X	
S-17 (0-1')	45		11:39								X	X	
TOTAL	15												

RELINQUISHED BY: (Signature) [Signature] DATE/TIME 9-12-19 9:40 RECEIVED BY: (Signature) [Signature]

RELINQUISHED BY: (Signature) [Signature] DATE/TIME 9-12-19 9:40 RECEIVED BY: (Signature) [Signature]

LABORATORY: DBEL

TURN AROUND TIME
 NORMAL ☒ 1 DAY ☐
 2 DAY ☐
 OTHER ☐

LABORATORY USE ONLY
 RECEIVING TEMP: 2 THERM#: 10084
 CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL #
☐ HAND DELIVERED

**PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701**



Analytical Report

Prepared for:

Mark Larson
Larson & Associates, Inc.
P.O. Box 50685
Midland, TX 79710

Project: Cooper Jal 238-Legacy

Project Number: 18-0138-01

Location: NM

Lab Order Number: 9K04001



NELAP/TCEQ # T104704516-17-8

Report Date: 11/15/19

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DP-12.1	9K04001-01	Soil	11/01/19 11:24	11-04-2019 11:32
DP-12.2	9K04001-02	Soil	11/01/19 11:25	11-04-2019 11:32
DP-12.3	9K04001-03	Soil	11/01/19 11:30	11-04-2019 11:32
DP-12.4	9K04001-04	Soil	11/01/19 11:35	11-04-2019 11:32
DP-12.5	9K04001-05	Soil	11/01/19 11:39	11-04-2019 11:32
DP-12.6	9K04001-06	Soil	11/01/19 11:42	11-04-2019 11:32
DP-12.7 (4.5')	9K04001-07	Soil	11/01/19 11:45	11-04-2019 11:32
DP-12.8 (4.5')	9K04001-08	Soil	11/01/19 11:48	11-04-2019 11:32
DP-12.9 (4.5')	9K04001-09	Soil	11/01/19 11:50	11-04-2019 11:32
DP-12.10 (4.5')	9K04001-10	Soil	11/01/19 11:52	11-04-2019 11:32
DP-12.11 (4.5')	9K04001-11	Soil	11/01/19 12:00	11-04-2019 11:32
DP-12.12	9K04001-12	Soil	11/01/19 12:03	11-04-2019 11:32
DP-13.1	9K04001-13	Soil	11/01/19 12:07	11-04-2019 11:32
DP-13.2	9K04001-14	Soil	11/01/19 12:09	11-04-2019 11:32
DP-13.3	9K04001-15	Soil	11/01/19 12:11	11-04-2019 11:32
DP-13.4	9K04001-16	Soil	11/01/19 12:15	11-04-2019 11:32
DP-13.5 (5')	9K04001-17	Soil	11/01/19 12:20	11-04-2019 11:32
DP-13.6 (5')	9K04001-18	Soil	11/01/19 12:24	11-04-2019 11:32
DP-13.7 (5')	9K04001-19	Soil	11/01/19 12:30	11-04-2019 11:32
DP-13.8 (5')	9K04001-20	Soil	11/01/19 12:35	11-04-2019 11:32

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-12.1
9K04001-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00100	mg/kg dry	1	P9K0603	11/06/19	11/06/19	EPA 8021B	
Toluene	ND	0.00100	mg/kg dry	1	P9K0603	11/06/19	11/06/19	EPA 8021B	
Ethylbenzene	ND	0.00100	mg/kg dry	1	P9K0603	11/06/19	11/06/19	EPA 8021B	
Xylene (p/m)	ND	0.00200	mg/kg dry	1	P9K0603	11/06/19	11/06/19	EPA 8021B	
Xylene (o)	ND	0.00100	mg/kg dry	1	P9K0603	11/06/19	11/06/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		110 %	75-125		P9K0603	11/06/19	11/06/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		94.1 %	75-125		P9K0603	11/06/19	11/06/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	621	1.00	mg/kg dry	1	P9K0705	11/07/19	11/08/19	EPA 300.0	
% Moisture	ND	0.1	%	1	P9K0501	11/05/19	11/05/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.0	mg/kg dry	1	P9K0405	11/04/19	11/05/19	TPH 8015M	
>C12-C28	ND	25.0	mg/kg dry	1	P9K0405	11/04/19	11/05/19	TPH 8015M	
>C28-C35	ND	25.0	mg/kg dry	1	P9K0405	11/04/19	11/05/19	TPH 8015M	
Surrogate: 1-Chlorooctane		86.7 %	70-130		P9K0405	11/04/19	11/05/19	TPH 8015M	
Surrogate: o-Terphenyl		84.3 %	70-130		P9K0405	11/04/19	11/05/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.0	mg/kg dry	1	[CALC]	11/04/19	11/05/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-12.2
9K04001-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		94.9 %	75-125		P9K0602	11/06/19	11/06/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		116 %	75-125		P9K0602	11/06/19	11/06/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	4850	25.3	mg/kg dry	25	P9K0705	11/07/19	11/08/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9K0501	11/05/19	11/05/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9K0405	11/04/19	11/05/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9K0405	11/04/19	11/05/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9K0405	11/04/19	11/05/19	TPH 8015M	
Surrogate: 1-Chlorooctane		95.5 %	70-130		P9K0405	11/04/19	11/05/19	TPH 8015M	
Surrogate: o-Terphenyl		99.4 %	70-130		P9K0405	11/04/19	11/05/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	11/04/19	11/05/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-12.3
9K04001-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00100	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Toluene	ND	0.00100	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Ethylbenzene	ND	0.00100	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Xylene (p/m)	ND	0.00200	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Xylene (o)	ND	0.00100	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		115 %	75-125		P9K0602	11/06/19	11/06/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		84.7 %	75-125		P9K0602	11/06/19	11/06/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	2450	10.0	mg/kg dry	10	P9K0705	11/07/19	11/08/19	EPA 300.0	
% Moisture	ND	0.1	%	1	P9K0501	11/05/19	11/05/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.0	mg/kg dry	1	P9K0405	11/04/19	11/05/19	TPH 8015M	
>C12-C28	ND	25.0	mg/kg dry	1	P9K0405	11/04/19	11/05/19	TPH 8015M	
>C28-C35	ND	25.0	mg/kg dry	1	P9K0405	11/04/19	11/05/19	TPH 8015M	
Surrogate: 1-Chlorooctane		106 %	70-130		P9K0405	11/04/19	11/05/19	TPH 8015M	
Surrogate: o-Terphenyl		105 %	70-130		P9K0405	11/04/19	11/05/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.0	mg/kg dry	1	[CALC]	11/04/19	11/05/19	calc	

Permian Basin Environmental Lab, L.P.

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Permian Basin Environmental Lab.

1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-12.4
9K04001-04 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		114 %	75-125		P9K0602	11/06/19	11/06/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		89.0 %	75-125		P9K0602	11/06/19	11/06/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	3810	10.1	mg/kg dry	10	P9K0705	11/07/19	11/08/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9K0501	11/05/19	11/05/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9K0405	11/04/19	11/05/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9K0405	11/04/19	11/05/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9K0405	11/04/19	11/05/19	TPH 8015M	
Surrogate: 1-Chlorooctane		91.6 %	70-130		P9K0405	11/04/19	11/05/19	TPH 8015M	
Surrogate: o-Terphenyl		96.6 %	70-130		P9K0405	11/04/19	11/05/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	11/04/19	11/05/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-12.5
9K04001-05 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		98.6 %	75-125		P9K0602	11/06/19	11/06/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		116 %	75-125		P9K0602	11/06/19	11/06/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	5020	25.3	mg/kg dry	25	P9K0705	11/07/19	11/08/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9K0501	11/05/19	11/05/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9K0405	11/04/19	11/05/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9K0405	11/04/19	11/05/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9K0405	11/04/19	11/05/19	TPH 8015M	
Surrogate: 1-Chlorooctane		98.3 %	70-130		P9K0405	11/04/19	11/05/19	TPH 8015M	
Surrogate: o-Terphenyl		103 %	70-130		P9K0405	11/04/19	11/05/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	11/04/19	11/05/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-12.6
9K04001-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00100	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Toluene	ND	0.00100	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Ethylbenzene	ND	0.00100	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Xylene (p/m)	ND	0.00200	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Xylene (o)	ND	0.00100	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		101 %	75-125		P9K0602	11/06/19	11/06/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		112 %	75-125		P9K0602	11/06/19	11/06/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	27.5	1.00	mg/kg dry	1	P9K0705	11/07/19	11/08/19	EPA 300.0	
% Moisture	ND	0.1	%	1	P9K0501	11/05/19	11/05/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.0	mg/kg dry	1	P9K0405	11/04/19	11/05/19	TPH 8015M	
>C12-C28	ND	25.0	mg/kg dry	1	P9K0405	11/04/19	11/05/19	TPH 8015M	
>C28-C35	ND	25.0	mg/kg dry	1	P9K0405	11/04/19	11/05/19	TPH 8015M	
Surrogate: 1-Chlorooctane		88.8 %	70-130		P9K0405	11/04/19	11/05/19	TPH 8015M	
Surrogate: o-Terphenyl		68.1 %	70-130		P9K0405	11/04/19	11/05/19	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	ND	25.0	mg/kg dry	1	[CALC]	11/04/19	11/05/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-12.7 (4.5')
9K04001-07 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		91.5 %	75-125		P9K0602	11/06/19	11/06/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		111 %	75-125		P9K0602	11/06/19	11/06/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	602	1.01	mg/kg dry	1	P9K0705	11/07/19	11/08/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9K0501	11/05/19	11/05/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9K0405	11/04/19	11/05/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9K0405	11/04/19	11/05/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9K0405	11/04/19	11/05/19	TPH 8015M	
Surrogate: 1-Chlorooctane		74.2 %	70-130		P9K0405	11/04/19	11/05/19	TPH 8015M	
Surrogate: o-Terphenyl		81.4 %	70-130		P9K0405	11/04/19	11/05/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	11/04/19	11/05/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-12.8 (4.5')
9K04001-08 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00125	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Toluene	ND	0.00125	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Ethylbenzene	ND	0.00125	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Xylene (p/m)	ND	0.00250	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Xylene (o)	ND	0.00125	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		92.2 %	75-125		P9K0602	11/06/19	11/06/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		116 %	75-125		P9K0602	11/06/19	11/06/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	3910	12.5	mg/kg dry	10	P9K0705	11/07/19	11/08/19	EPA 300.0	
% Moisture	20.0	0.1	%	1	P9K0501	11/05/19	11/05/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	31.2	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C12-C28	ND	31.2	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C28-C35	ND	31.2	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: 1-Chlorooctane		111 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: o-Terphenyl		119 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	31.2	mg/kg dry	1	[CALC]	11/05/19	11/07/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-12.9 (4.5')
9K04001-09 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00123	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Toluene	ND	0.00123	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Ethylbenzene	ND	0.00123	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Xylene (p/m)	ND	0.00247	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Xylene (o)	ND	0.00123	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		91.5 %	75-125		P9K0602	11/06/19	11/06/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		118 %	75-125		P9K0602	11/06/19	11/06/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	2000	6.17	mg/kg dry	5	P9K0705	11/07/19	11/08/19	EPA 300.0	
% Moisture	19.0	0.1	%	1	P9K0501	11/05/19	11/05/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	30.9	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C12-C28	90.7	30.9	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C28-C35	59.8	30.9	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: 1-Chlorooctane		103 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: o-Terphenyl		107 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	150	30.9	mg/kg dry	1	[CALC]	11/05/19	11/07/19	calc	

Permian Basin Environmental Lab, L.P.

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Permian Basin Environmental Lab.

1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-12.10 (4.5'
9K04001-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00103	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Toluene	ND	0.00103	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Ethylbenzene	ND	0.00103	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Xylene (p/m)	ND	0.00206	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Xylene (o)	ND	0.00103	mg/kg dry	1	P9K0602	11/06/19	11/06/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		116 %	75-125		P9K0602	11/06/19	11/06/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		89.6 %	75-125		P9K0602	11/06/19	11/06/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	1710	5.15	mg/kg dry	5	P9K0705	11/07/19	11/08/19	EPA 300.0	
% Moisture	3.0	0.1	%	1	P9K0501	11/05/19	11/05/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.8	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: 1-Chlorooctane		111 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: o-Terphenyl		116 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	11/05/19	11/07/19	calc	

Permian Basin Environmental Lab, L.P.

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Permian Basin Environmental Lab.

1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-12.11 (4.5)
9K04001-11 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9K0603	11/06/19	11/06/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9K0603	11/06/19	11/06/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9K0603	11/06/19	11/06/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9K0603	11/06/19	11/06/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9K0603	11/06/19	11/06/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		112 %	75-125		P9K0603	11/06/19	11/06/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		91.2 %	75-125		P9K0603	11/06/19	11/06/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	1030	1.01	mg/kg dry	1	P9K0705	11/07/19	11/08/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9K0501	11/05/19	11/05/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C12-C28	25.7	25.3	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: 1-Chlorooctane		95.9 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: o-Terphenyl		94.7 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	25.7	25.3	mg/kg dry	1	[CALC]	11/05/19	11/07/19	calc	

Permian Basin Environmental Lab, L.P.

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Permian Basin Environmental Lab.

1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-12.12
9K04001-12 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00103	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Toluene	ND	0.00103	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Ethylbenzene	ND	0.00103	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Xylene (p/m)	ND	0.00206	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Xylene (o)	ND	0.00103	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		91.1 %	75-125		P9K0603	11/06/19	11/07/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		106 %	75-125		P9K0603	11/06/19	11/07/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	549	1.03	mg/kg dry	1	P9K1203	11/12/19	11/12/19	EPA 300.0	
% Moisture	3.0	0.1	%	1	P9K0501	11/05/19	11/05/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.8	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: 1-Chlorooctane		104 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: o-Terphenyl		110 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	11/05/19	11/07/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-13.1
9K04001-13 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		105 %	75-125		P9K0603	11/06/19	11/07/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		95.3 %	75-125		P9K0603	11/06/19	11/07/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	2170	10.1	mg/kg dry	10	P9K1203	11/12/19	11/12/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9K0501	11/05/19	11/05/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: 1-Chlorooctane		103 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: o-Terphenyl		91.8 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	11/05/19	11/07/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-13.2
9K04001-14 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00100	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Toluene	ND	0.00100	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Ethylbenzene	ND	0.00100	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Xylene (p/m)	ND	0.00200	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Xylene (o)	ND	0.00100	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		111 %	75-125		P9K0603	11/06/19	11/07/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		89.9 %	75-125		P9K0603	11/06/19	11/07/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	17.8	1.00	mg/kg dry	1	P9K1203	11/12/19	11/12/19	EPA 300.0	
% Moisture	ND	0.1	%	1	P9K0501	11/05/19	11/05/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.0	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C12-C28	ND	25.0	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C28-C35	ND	25.0	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: 1-Chlorooctane		97.0 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: o-Terphenyl		48.1 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	ND	25.0	mg/kg dry	1	[CALC]	11/05/19	11/07/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-13.3
9K04001-15 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		93.2 %	75-125		P9K0603	11/06/19	11/07/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		104 %	75-125		P9K0603	11/06/19	11/07/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	88.2	1.01	mg/kg dry	1	P9K1203	11/12/19	11/12/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9K0501	11/05/19	11/05/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: 1-Chlorooctane		101 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: o-Terphenyl		98.4 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	11/05/19	11/07/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-13.4
9K04001-16 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		94.5 %	75-125		P9K0603	11/06/19	11/07/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		111 %	75-125		P9K0603	11/06/19	11/07/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	48.3	1.01	mg/kg dry	1	P9K1203	11/12/19	11/12/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9K0501	11/05/19	11/05/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: 1-Chlorooctane		92.7 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: o-Terphenyl		86.8 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	11/05/19	11/07/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-13.5 (5')
9K04001-17 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		92.6 %	75-125		P9K0603	11/06/19	11/07/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		119 %	75-125		P9K0603	11/06/19	11/07/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	365	1.01	mg/kg dry	1	P9K1203	11/12/19	11/12/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9K0501	11/05/19	11/05/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C12-C28	95.4	25.3	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C28-C35	72.6	25.3	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: 1-Chlorooctane		103 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: o-Terphenyl		109 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	168	25.3	mg/kg dry	1	[CALC]	11/05/19	11/07/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-13.6 (5')
9K04001-18 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00100	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Toluene	ND	0.00100	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Ethylbenzene	ND	0.00100	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Xylene (p/m)	ND	0.00200	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Xylene (o)	ND	0.00100	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		83.3 %	75-125		P9K0603	11/06/19	11/07/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		109 %	75-125		P9K0603	11/06/19	11/07/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	412	1.00	mg/kg dry	1	P9K1203	11/12/19	11/12/19	EPA 300.0	
% Moisture	ND	0.1	%	1	P9K0501	11/05/19	11/05/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.0	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C12-C28	ND	25.0	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C28-C35	ND	25.0	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: 1-Chlorooctane		95.7 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: o-Terphenyl		101 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.0	mg/kg dry	1	[CALC]	11/05/19	11/07/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-13.7 (5')
9K04001-19 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00103	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Toluene	ND	0.00103	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Ethylbenzene	ND	0.00103	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Xylene (p/m)	ND	0.00206	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Xylene (o)	ND	0.00103	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		97.1 %	75-125		P9K0603	11/06/19	11/07/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		110 %	75-125		P9K0603	11/06/19	11/07/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	385	1.03	mg/kg dry	1	P9K1203	11/12/19	11/12/19	EPA 300.0	
% Moisture	3.0	0.1	%	1	P9K0501	11/05/19	11/05/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.8	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C12-C28	33.4	25.8	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C28-C35	34.9	25.8	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: 1-Chlorooctane		101 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: o-Terphenyl		109 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	68.3	25.8	mg/kg dry	1	[CALC]	11/05/19	11/07/19	calc	

Permian Basin Environmental Lab, L.P.

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Permian Basin Environmental Lab.

1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-13.8 (5')
9K04001-20 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00103	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Toluene	ND	0.00103	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Ethylbenzene	ND	0.00103	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Xylene (p/m)	ND	0.00206	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Xylene (o)	ND	0.00103	mg/kg dry	1	P9K0603	11/06/19	11/07/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		117 %	75-125		P9K0603	11/06/19	11/07/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		96.9 %	75-125		P9K0603	11/06/19	11/07/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	52.7	1.03	mg/kg dry	1	P9K1203	11/12/19	11/12/19	EPA 300.0	
% Moisture	3.0	0.1	%	1	P9K0501	11/05/19	11/05/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.8	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: 1-Chlorooctane		95.4 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Surrogate: o-Terphenyl		98.3 %	70-130		P9K0503	11/05/19	11/07/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	11/05/19	11/07/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9K0602 - General Preparation (GC)

Blank (P9K0602-BLK1)

Prepared & Analyzed: 11/06/19

Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 1,4-Difluorobenzene	0.108		"	0.120		90.3	75-125			
Surrogate: 4-Bromofluorobenzene	0.128		"	0.120		107	75-125			

LCS (P9K0602-BS1)

Prepared & Analyzed: 11/06/19

Benzene	0.0926	0.00100	mg/kg wet	0.100		92.6	70-130			
Toluene	0.112	0.00100	"	0.100		112	70-130			
Ethylbenzene	0.116	0.00100	"	0.100		116	70-130			
Xylene (p/m)	0.225	0.00200	"	0.200		112	70-130			
Xylene (o)	0.103	0.00100	"	0.100		103	70-130			
Surrogate: 1,4-Difluorobenzene	0.120		"	0.120		99.8	75-125			
Surrogate: 4-Bromofluorobenzene	0.128		"	0.120		106	75-125			

LCS Dup (P9K0602-BSD1)

Prepared & Analyzed: 11/06/19

Benzene	0.102	0.00100	mg/kg wet	0.100		102	70-130	10.1	20	
Toluene	0.114	0.00100	"	0.100		114	70-130	1.19	20	
Ethylbenzene	0.111	0.00100	"	0.100		111	70-130	4.36	20	
Xylene (p/m)	0.232	0.00200	"	0.200		116	70-130	3.02	20	
Xylene (o)	0.110	0.00100	"	0.100		110	70-130	6.54	20	
Surrogate: 1,4-Difluorobenzene	0.119		"	0.120		99.2	75-125			
Surrogate: 4-Bromofluorobenzene	0.127		"	0.120		106	75-125			

Calibration Blank (P9K0602-CCB1)

Prepared & Analyzed: 11/06/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	0.128		"	0.120		107	75-125			
Surrogate: 1,4-Difluorobenzene	0.113		"	0.120		94.5	75-125			

Permian Basin Environmental Lab, L.P.

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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9K0602 - General Preparation (GC)

Calibration Blank (P9K0602-CCB2)

Prepared & Analyzed: 11/06/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 1,4-Difluorobenzene	0.100		"	0.120		83.6	75-125			
Surrogate: 4-Bromofluorobenzene	0.122		"	0.120		102	75-125			

Calibration Blank (P9K0602-CCB3)

Prepared & Analyzed: 11/06/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	0.142		"	0.120		119	75-125			
Surrogate: 1,4-Difluorobenzene	0.109		"	0.120		90.4	75-125			

Calibration Check (P9K0602-CCV1)

Prepared & Analyzed: 11/06/19

Benzene	0.0959	0.00100	mg/kg wet	0.100		95.9	80-120			
Toluene	0.119	0.00100	"	0.100		119	80-120			
Ethylbenzene	0.114	0.00100	"	0.100		114	80-120			
Xylene (p/m)	0.228	0.00200	"	0.200		114	80-120			
Xylene (o)	0.103	0.00100	"	0.100		103	80-120			
Surrogate: 1,4-Difluorobenzene	0.122		"	0.120		102	75-125			
Surrogate: 4-Bromofluorobenzene	0.117		"	0.120		97.6	75-125			

Calibration Check (P9K0602-CCV2)

Prepared & Analyzed: 11/06/19

Benzene	0.0930	0.00100	mg/kg wet	0.100		93.0	80-120			
Toluene	0.103	0.00100	"	0.100		103	80-120			
Ethylbenzene	0.109	0.00100	"	0.100		109	80-120			
Xylene (p/m)	0.204	0.00200	"	0.200		102	80-120			
Xylene (o)	0.110	0.00100	"	0.100		110	80-120			
Surrogate: 4-Bromofluorobenzene	0.128		"	0.120		106	75-125			
Surrogate: 1,4-Difluorobenzene	0.142		"	0.120		118	75-125			

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Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9K0602 - General Preparation (GC)

Calibration Check (P9K0602-CCV3)

Prepared & Analyzed: 11/06/19

Benzene	0.0878	0.00100	mg/kg wet	0.100		87.8	80-120			
Toluene	0.0967	0.00100	"	0.100		96.7	80-120			
Ethylbenzene	0.102	0.00100	"	0.100		102	80-120			
Xylene (p/m)	0.176	0.00200	"	0.200		88.0	80-120			
Xylene (o)	0.0892	0.00100	"	0.100		89.2	80-120			
Surrogate: 1,4-Difluorobenzene	0.113		"	0.120		93.9	75-125			
Surrogate: 4-Bromofluorobenzene	0.112		"	0.120		93.5	75-125			

Matrix Spike (P9K0602-MS1)

Source: 9J31010-01

Prepared & Analyzed: 11/06/19

Benzene	0.0809	0.00110	mg/kg dry	0.110	ND	73.6	80-120			QM-07
Toluene	0.0938	0.00110	"	0.110	ND	85.3	80-120			
Ethylbenzene	0.117	0.00110	"	0.110	ND	106	80-120			
Xylene (p/m)	0.174	0.00220	"	0.220	ND	79.3	80-120			QM-07
Xylene (o)	0.0881	0.00110	"	0.110	ND	80.2	80-120			
Surrogate: 4-Bromofluorobenzene	0.152		"	0.132		115	75-125			
Surrogate: 1,4-Difluorobenzene	0.156		"	0.132		118	75-125			

Matrix Spike Dup (P9K0602-MSD1)

Source: 9J31010-01

Prepared & Analyzed: 11/06/19

Benzene	0.0785	0.00110	mg/kg dry	0.110	ND	71.4	80-120	2.99	20	QM-07
Toluene	0.0876	0.00110	"	0.110	ND	79.8	80-120	6.77	20	QM-07
Ethylbenzene	0.112	0.00110	"	0.110	ND	102	80-120	4.05	20	
Xylene (p/m)	0.169	0.00220	"	0.220	ND	76.8	80-120	3.14	20	QM-07
Xylene (o)	0.0878	0.00110	"	0.110	ND	79.9	80-120	0.287	20	QM-07
Surrogate: 4-Bromofluorobenzene	0.149		"	0.132		113	75-125			
Surrogate: 1,4-Difluorobenzene	0.152		"	0.132		115	75-125			

Batch P9K0603 - General Preparation (GC)

Blank (P9K0603-BLK1)

Prepared & Analyzed: 11/06/19

Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 4-Bromofluorobenzene	0.134		"	0.120		112	75-125			
Surrogate: 1,4-Difluorobenzene	0.112		"	0.120		93.7	75-125			

Permian Basin Environmental Lab, L.P.

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Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9K0603 - General Preparation (GC)

LCS (P9K0603-BS1)

Prepared & Analyzed: 11/06/19

Benzene	0.103	0.00100	mg/kg wet	0.100		103	70-130			
Toluene	0.110	0.00100	"	0.100		110	70-130			
Ethylbenzene	0.109	0.00100	"	0.100		109	70-130			
Xylene (p/m)	0.208	0.00200	"	0.200		104	70-130			
Xylene (o)	0.106	0.00100	"	0.100		106	70-130			
Surrogate: 1,4-Difluorobenzene	0.126		"	0.120		105	75-125			
Surrogate: 4-Bromofluorobenzene	0.132		"	0.120		110	75-125			

LCS Dup (P9K0603-BSD1)

Prepared & Analyzed: 11/06/19

Benzene	0.0954	0.00100	mg/kg wet	0.100		95.4	70-130	7.48	20	
Toluene	0.108	0.00100	"	0.100		108	70-130	1.42	20	
Ethylbenzene	0.108	0.00100	"	0.100		108	70-130	1.60	20	
Xylene (p/m)	0.195	0.00200	"	0.200		97.7	70-130	6.40	20	
Xylene (o)	0.0977	0.00100	"	0.100		97.7	70-130	8.45	20	
Surrogate: 4-Bromofluorobenzene	0.123		"	0.120		103	75-125			
Surrogate: 1,4-Difluorobenzene	0.118		"	0.120		98.0	75-125			

Calibration Blank (P9K0603-CCB1)

Prepared & Analyzed: 11/06/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	0.142		"	0.120		119	75-125			
Surrogate: 1,4-Difluorobenzene	0.109		"	0.120		90.4	75-125			

Calibration Blank (P9K0603-CCB2)

Prepared: 11/06/19 Analyzed: 11/07/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 1,4-Difluorobenzene	0.108		"	0.120		90.2	75-125			
Surrogate: 4-Bromofluorobenzene	0.133		"	0.120		111	75-125			

Permian Basin Environmental Lab, L.P.

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Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9K0603 - General Preparation (GC)

Calibration Blank (P9K0603-CCB3)

Prepared & Analyzed: 11/06/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 1,4-Difluorobenzene	0.109		"	0.120		90.4	75-125			
Surrogate: 4-Bromofluorobenzene	0.142		"	0.120		119	75-125			

Calibration Check (P9K0603-CCV1)

Prepared & Analyzed: 11/06/19

Benzene	0.0878	0.00100	mg/kg wet	0.100		87.8	80-120			
Toluene	0.0967	0.00100	"	0.100		96.7	80-120			
Ethylbenzene	0.102	0.00100	"	0.100		102	80-120			
Xylene (p/m)	0.176	0.00200	"	0.200		88.0	80-120			
Xylene (o)	0.0892	0.00100	"	0.100		89.2	80-120			
Surrogate: 1,4-Difluorobenzene	0.113		"	0.120		93.9	75-125			
Surrogate: 4-Bromofluorobenzene	0.112		"	0.120		93.5	75-125			

Calibration Check (P9K0603-CCV2)

Prepared: 11/06/19 Analyzed: 11/07/19

Benzene	0.0959	0.00100	mg/kg wet	0.100		95.9	80-120			
Toluene	0.104	0.00100	"	0.100		104	80-120			
Ethylbenzene	0.0997	0.00100	"	0.100		99.7	80-120			
Xylene (p/m)	0.205	0.00200	"	0.200		102	80-120			
Xylene (o)	0.108	0.00100	"	0.100		108	80-120			
Surrogate: 1,4-Difluorobenzene	0.126		"	0.120		105	75-125			
Surrogate: 4-Bromofluorobenzene	0.116		"	0.120		97.1	75-125			

Calibration Check (P9K0603-CCV3)

Prepared & Analyzed: 11/06/19

Benzene	0.0878	0.00100	mg/kg wet	0.100		87.8	80-120			
Toluene	0.0967	0.00100	"	0.100		96.7	80-120			
Ethylbenzene	0.102	0.00100	"	0.100		102	80-120			
Xylene (p/m)	0.176	0.00200	"	0.200		88.0	80-120			
Xylene (o)	0.0892	0.00100	"	0.100		89.2	80-120			
Surrogate: 4-Bromofluorobenzene	0.112		"	0.120		93.5	75-125			
Surrogate: 1,4-Difluorobenzene	0.113		"	0.120		93.9	75-125			

Permian Basin Environmental Lab, L.P.

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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9K0603 - General Preparation (GC)

Matrix Spike (P9K0603-MS1)

Source: 9K04001-01

Prepared: 11/06/19 Analyzed: 11/07/19

Benzene	ND	0.00100	mg/kg dry	0.100	ND		80-120			QM-07
Toluene	ND	0.00100	"	0.100	ND		80-120			QM-07
Ethylbenzene	ND	0.00100	"	0.100	ND		80-120			QM-07
Xylene (p/m)	ND	0.00200	"	0.200	ND		80-120			QM-07
Xylene (o)	ND	0.00100	"	0.100	ND		80-120			QM-07
Surrogate: 1,4-Difluorobenzene	0.0884		"	0.120		73.7	75-125			QM-07
Surrogate: 4-Bromofluorobenzene	0.147		"	0.120		122	75-125			

Matrix Spike Dup (P9K0603-MSD1)

Source: 9K04001-01

Prepared: 11/06/19 Analyzed: 11/07/19

Benzene	0.0810	0.00100	mg/kg dry	0.100	ND	81.0	80-120	20		R2
Toluene	0.0860	0.00100	"	0.100	ND	86.0	80-120	20		R2
Ethylbenzene	0.105	0.00100	"	0.100	ND	105	80-120	20		R2
Xylene (p/m)	0.162	0.00200	"	0.200	ND	81.1	80-120	20		R2
Xylene (o)	0.0827	0.00100	"	0.100	ND	82.7	80-120	20		R2
Surrogate: 1,4-Difluorobenzene	0.143		"	0.120		119	75-125			
Surrogate: 4-Bromofluorobenzene	0.140		"	0.120		116	75-125			

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General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9K0501 - * DEFAULT PREP *****

Blank (P9K0501-BLK1)

Prepared & Analyzed: 11/05/19

% Moisture	ND	0.1	%
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Duplicate (P9K0501-DUP1)

Source: 9K04002-06

Prepared & Analyzed: 11/05/19

% Moisture	3.0	0.1	%	3.0	0.00	20
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Batch P9K0705 - * DEFAULT PREP *****

Blank (P9K0705-BLK1)

Prepared: 11/07/19 Analyzed: 11/08/19

Chloride	ND	1.00	mg/kg wet
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LCS (P9K0705-BS1)

Prepared: 11/07/19 Analyzed: 11/08/19

Chloride	431	1.00	mg/kg wet	400	108	80-120
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LCS Dup (P9K0705-BSD1)

Prepared: 11/07/19 Analyzed: 11/08/19

Chloride	434	1.00	mg/kg wet	400	109	80-120	0.867	20
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Calibration Blank (P9K0705-CCB1)

Prepared: 11/07/19 Analyzed: 11/08/19

Chloride	0.00		mg/kg wet
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Calibration Blank (P9K0705-CCB2)

Prepared: 11/07/19 Analyzed: 11/08/19

Chloride	0.00		mg/kg wet
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Calibration Check (P9K0705-CCV1)

Prepared: 11/07/19 Analyzed: 11/08/19

Chloride	21.0		mg/kg	20.0	105	0-200
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Calibration Check (P9K0705-CCV2)

Prepared: 11/07/19 Analyzed: 11/08/19

Chloride	20.9		mg/kg	20.0	105	0-200
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General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9K0705 - * DEFAULT PREP *******Calibration Check (P9K0705-CCV3)**

Prepared: 11/07/19 Analyzed: 11/11/19

Chloride	21.7		mg/kg	20.0		109	0-200			
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Matrix Spike (P9K0705-MS1)**Source: 9K01010-01**

Prepared: 11/07/19 Analyzed: 11/08/19

Chloride	3280	11.1	mg/kg dry	1110	2120	104	80-120			
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Matrix Spike (P9K0705-MS2)**Source: 9K04001-02**

Prepared: 11/07/19 Analyzed: 11/08/19

Chloride	7500	25.3	mg/kg dry	2530	4850	105	80-120			
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Matrix Spike Dup (P9K0705-MSD1)**Source: 9K01010-01**

Prepared: 11/07/19 Analyzed: 11/08/19

Chloride	3380	11.1	mg/kg dry	1110	2120	114	80-120	3.22	20	
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Matrix Spike Dup (P9K0705-MSD2)**Source: 9K04001-02**

Prepared: 11/07/19 Analyzed: 11/08/19

Chloride	7730	25.3	mg/kg dry	2530	4850	114	80-120	2.93	20	
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Batch P9K1203 - * DEFAULT PREP *******Blank (P9K1203-BLK1)**

Prepared & Analyzed: 11/12/19

Chloride	ND	0.100	mg/kg wet							
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LCS (P9K1203-BS1)

Prepared & Analyzed: 11/12/19

Chloride	417	1.00	mg/kg wet	400		104	80-120			
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LCS Dup (P9K1203-BSD1)

Prepared & Analyzed: 11/12/19

Chloride	418	1.00	mg/kg wet	400		105	80-120	0.362	20	
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Calibration Blank (P9K1203-CCB1)

Prepared & Analyzed: 11/12/19

Chloride	-0.0590		mg/kg wet							
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Permian Basin Environmental Lab, L.P.

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Permian Basin Environmental Lab.

1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9K1203 - *** DEFAULT PREP ***										
Calibration Blank (P9K1203-CCB2)				Prepared & Analyzed: 11/12/19						
Chloride	0.00		mg/kg wet							
Calibration Check (P9K1203-CCV1)				Prepared & Analyzed: 11/12/19						
Chloride	19.5		mg/kg	20.0		97.6	0-200			
Calibration Check (P9K1203-CCV2)				Prepared & Analyzed: 11/12/19						
Chloride	19.8		mg/kg	20.0		99.1	0-200			
Calibration Check (P9K1203-CCV3)				Prepared: 11/12/19 Analyzed: 11/13/19						
Chloride	20.0		mg/kg	20.0		99.8	0-200			
Matrix Spike (P9K1203-MS1)				Source: 9K12001-01		Prepared & Analyzed: 11/12/19				
Chloride	1260	10.9	mg/kg dry	1090	95.5	108	80-120			
Matrix Spike (P9K1203-MS2)				Source: 9K04002-03		Prepared: 11/12/19 Analyzed: 11/13/19				
Chloride	1940	10.5	mg/kg dry	1050	826	106	80-120			
Matrix Spike Dup (P9K1203-MSD1)				Source: 9K12001-01		Prepared & Analyzed: 11/12/19				
Chloride	1290	10.9	mg/kg dry	1090	95.5	110	80-120	1.72	20	
Matrix Spike Dup (P9K1203-MSD2)				Source: 9K04002-03		Prepared: 11/12/19 Analyzed: 11/13/19				
Chloride	1910	10.5	mg/kg dry	1050	826	103	80-120	1.56	20	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9K0405 - TX 1005

Blank (P9K0405-BLK1)

Prepared: 11/04/19 Analyzed: 11/05/19

C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	91.3		"	100		91.3	70-130			
Surrogate: o-Terphenyl	45.5		"	50.0		90.9	70-130			

LCS (P9K0405-BS1)

Prepared: 11/04/19 Analyzed: 11/05/19

C6-C12	987	25.0	mg/kg wet	1000		98.7	75-125			
>C12-C28	931	25.0	"	1000		93.1	75-125			
Surrogate: 1-Chlorooctane	90.1		"	100		90.1	70-130			
Surrogate: o-Terphenyl	44.0		"	50.0		88.1	70-130			

LCS Dup (P9K0405-BSD1)

Prepared: 11/04/19 Analyzed: 11/05/19

C6-C12	928	25.0	mg/kg wet	1000		92.8	75-125	6.13	20	
>C12-C28	886	25.0	"	1000		88.6	75-125	4.95	20	
Surrogate: 1-Chlorooctane	82.9		"	100		82.9	70-130			
Surrogate: o-Terphenyl	41.3		"	50.0		82.5	70-130			

Calibration Blank (P9K0405-CCB1)

Prepared: 11/04/19 Analyzed: 11/05/19

C6-C12	12.9		mg/kg wet							
>C12-C28	6.16		"							
Surrogate: 1-Chlorooctane	79.3		"	100		79.3	70-130			
Surrogate: o-Terphenyl	41.0		"	50.0		82.0	70-130			

Calibration Blank (P9K0405-CCB2)

Prepared: 11/04/19 Analyzed: 11/05/19

C6-C12	10.8		mg/kg wet							
>C12-C28	12.4		"							
Surrogate: 1-Chlorooctane	97.0		"	100		97.0	70-130			
Surrogate: o-Terphenyl	49.6		"	50.0		99.2	70-130			

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9K0405 - TX 1005

Calibration Check (P9K0405-CCV1)

Prepared: 11/04/19 Analyzed: 11/05/19

C6-C12	573	25.0	mg/kg wet	500		115	85-115			
>C12-C28	549	25.0	"	500		110	85-115			
Surrogate: 1-Chlorooctane	104		"	100		104	70-130			
Surrogate: o-Terphenyl	53.4		"	50.0		107	70-130			

Calibration Check (P9K0405-CCV2)

Prepared: 11/04/19 Analyzed: 11/05/19

C6-C12	569	25.0	mg/kg wet	500		114	85-115			
>C12-C28	557	25.0	"	500		111	85-115			
Surrogate: 1-Chlorooctane	111		"	100		111	70-130			
Surrogate: o-Terphenyl	57.1		"	50.0		114	70-130			

Calibration Check (P9K0405-CCV3)

Prepared: 11/04/19 Analyzed: 11/05/19

C6-C12	558	25.0	mg/kg wet	500		112	85-115			
>C12-C28	550	25.0	"	500		110	85-115			
Surrogate: 1-Chlorooctane	108		"	100		108	70-130			
Surrogate: o-Terphenyl	56.5		"	50.0		113	70-130			

Matrix Spike (P9K0405-MS1)

Source: 9K04001-01

Prepared: 11/04/19 Analyzed: 11/05/19

C6-C12	946	25.0	mg/kg dry	1000	ND	94.6	75-125			
>C12-C28	868	25.0	"	1000	22.8	84.5	75-125			
Surrogate: 1-Chlorooctane	75.2		"	100		75.2	70-130			
Surrogate: o-Terphenyl	33.9		"	50.0		67.9	70-130			S-GC

Matrix Spike Dup (P9K0405-MSD1)

Source: 9K04001-01

Prepared: 11/04/19 Analyzed: 11/05/19

C6-C12	984	25.0	mg/kg dry	1000	ND	98.4	75-125	3.86	20	
>C12-C28	917	25.0	"	1000	22.8	89.4	75-125	5.62	20	
Surrogate: 1-Chlorooctane	80.1		"	100		80.1	70-130			
Surrogate: o-Terphenyl	36.2		"	50.0		72.4	70-130			

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9K0503 - TX 1005

Blank (P9K0503-BLK1)

Prepared: 11/05/19 Analyzed: 11/07/19

C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	115		"	100		115	70-130			
Surrogate: o-Terphenyl	59.7		"	50.0		119	70-130			

LCS (P9K0503-BS1)

Prepared: 11/05/19 Analyzed: 11/07/19

C6-C12	981	25.0	mg/kg wet	1000		98.1	75-125			
>C12-C28	993	25.0	"	1000		99.3	75-125			
Surrogate: 1-Chlorooctane	95.5		"	100		95.5	70-130			
Surrogate: o-Terphenyl	48.5		"	50.0		96.9	70-130			

LCS Dup (P9K0503-BSD1)

Prepared: 11/05/19 Analyzed: 11/07/19

C6-C12	1040	25.0	mg/kg wet	1000		104	75-125	5.43	20	
>C12-C28	1080	25.0	"	1000		108	75-125	8.46	20	
Surrogate: 1-Chlorooctane	101		"	100		101	70-130			
Surrogate: o-Terphenyl	52.4		"	50.0		105	70-130			

Calibration Blank (P9K0503-CCB2)

Prepared: 11/05/19 Analyzed: 11/07/19

C6-C12	5.82		mg/kg wet							
>C12-C28	14.7		"							
Surrogate: 1-Chlorooctane	114		"	100		114	70-130			
Surrogate: o-Terphenyl	55.9		"	50.0		112	70-130			

Calibration Check (P9K0503-CCV1)

Prepared: 11/05/19 Analyzed: 11/07/19

C6-C12	549	25.0	mg/kg wet	500		110	85-115			
>C12-C28	564	25.0	"	500		113	85-115			
Surrogate: 1-Chlorooctane	112		"	100		112	70-130			
Surrogate: o-Terphenyl	56.7		"	50.0		113	70-130			

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9K0503 - TX 1005										
Calibration Check (P9K0503-CCV2)				Prepared: 11/05/19 Analyzed: 11/07/19						
C6-C12	558	25.0	mg/kg wet	500		112	85-115			
>C12-C28	558	25.0	"	500		112	85-115			
Surrogate: 1-Chlorooctane	105		"	100		105	70-130			
Surrogate: o-Terphenyl	54.8		"	50.0		110	70-130			
Calibration Check (P9K0503-CCV3)				Prepared: 11/05/19 Analyzed: 11/07/19						
C6-C12	510	25.0	mg/kg wet	500		102	85-115			
>C12-C28	491	25.0	"	500		98.2	85-115			
Surrogate: 1-Chlorooctane	122		"	100		122	70-130			
Surrogate: o-Terphenyl	51.8		"	50.0		104	70-130			
Matrix Spike (P9K0503-MS1)				Source: 9K04001-20		Prepared: 11/05/19 Analyzed: 11/07/19				
C6-C12	1020	25.8	mg/kg dry	1030	ND	99.1	75-125			
>C12-C28	1130	25.8	"	1030	20.6	108	75-125			
Surrogate: 1-Chlorooctane	98.9		"	103		95.9	70-130			
Surrogate: o-Terphenyl	48.8		"	51.5		94.7	70-130			
Matrix Spike Dup (P9K0503-MSD1)				Source: 9K04001-20		Prepared: 11/05/19 Analyzed: 11/07/19				
C6-C12	944	25.8	mg/kg dry	1030	ND	91.5	75-125	7.96	20	
>C12-C28	871	25.8	"	1030	20.6	82.5	75-125	26.4	20	QM-05
Surrogate: 1-Chlorooctane	90.2		"	103		87.5	70-130			
Surrogate: o-Terphenyl	44.4		"	51.5		86.1	70-130			

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Notes and Definitions

S-GC Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.

ROI Received on Ice

R2 The RPD exceeded the acceptance limit.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

QM-05 The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.

BULK Samples received in Bulk soil containers

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis

RPD Relative Percent Difference

LCS Laboratory Control Spike

MS Matrix Spike

Dup Duplicate

Report Approved By:



Date:

11/15/2019

Brent Barron, Laboratory Director/Technical Director

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.

Project: Cooper Jal 238-Legacy

Fax: (432) 687-0456

P.O. Box 50685

Project Number: 18-0138-01

Midland TX, 79710

Project Manager: Mark Larson

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Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

CHAIN-OF-CUSTODY

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

Data Reported to:

DATE: 11/4/19 PAGE 2 OF 2
PO#: _____ LAB WORK ORDER#: 91204001
PROJECT LOCATION OR NAME: COOPER JAIL #236
LAI PROJECT #: 18-0138-01 COLLECTOR: P20

Page 39 of 39

TRRP report?		S=SOIL W=WATER A=AIR		P=PAINT SL=SLUDGE OT=OTHER	
☐ Yes ☒ No					
TIME ZONE:					
Time zone/State:					
MSI					
Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers
DP-13.4		11/19	12:15	S	1
DP-13.5(5)			12:20		
DP-13.6(5)			12:24		
DP-13.7(5)			12:30		
DP-13.8(5)			12:35		
PRESERVATION					
HCl					
HNO ₃					
H ₂ SO ₄ ☐ NaOH ☐					
ICE					
UNPRESERVED					
ANALYSES					
BTEX ☒ MTBE ☐					
TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐					
GASOLINE MOD 8015 ☒					
DIESEL - MOD 8015 ☒					
OIL - MOD 8015 ☒					
VOC 8260 ☐					
SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐					
8081 PESTICIDES ☐ 8151 HERBICIDES ☐					
TBLP - METALS (RCRA) ☐ TCLP VOC ☐					
TCLP - PEST ☐ HERB ☐ Semi-VOC ☐					
TOTAL METALS (RCRA) ☐ OTHER LIST ☐					
LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐					
RCI ☐ TOX ☐ FLASHPOINT ☐					
TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐					
pH ☐ HEXAVALENT CHROMIUM ☐					
EXPLOSIVES ☐ PECTHLOATE ☐					
CHLORIDES ☐ ANIONS ☐ ALKALINITY ☐					
17200					
FIELD NOTES					

**PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701**



Analytical Report

Prepared for:

Mark Larson
Larson & Associates, Inc.
P.O. Box 50685
Midland, TX 79710

Project: Cooper Jal 238-Legacy

Project Number: 18-0138-01

Location: NM

Lab Order Number: 9L13004



NELAP/TCEQ # T104704516-17-8

Report Date: 12/30/19

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
1.1	9L13004-01	Soil	12/12/19 12:40	12-13-2019 09:54
1.2	9L13004-02	Soil	12/12/19 12:05	12-13-2019 09:54
1.3	9L13004-03	Soil	12/12/19 12:42	12-13-2019 09:54
1.4	9L13004-04	Soil	12/12/19 12:44	12-13-2019 09:54
1.5	9L13004-05	Soil	12/12/19 12:46	12-13-2019 09:54
1.6	9L13004-06	Soil	12/12/19 12:49	12-13-2019 09:54
1.7	9L13004-07	Soil	12/12/19 12:50	12-13-2019 09:54
1.8	9L13004-08	Soil	12/12/19 12:51	12-13-2019 09:54
1.9	9L13004-09	Soil	12/12/19 12:52	12-13-2019 09:54
1.10	9L13004-10	Soil	12/12/19 12:50	12-13-2019 09:54
1.11	9L13004-11	Soil	12/12/19 12:50	12-13-2019 09:54
1.12	9L13004-12	Soil	12/12/19 12:48	12-13-2019 09:54
1.13	9L13004-13	Soil	12/12/19 12:47	12-13-2019 09:54
1.14	9L13004-14	Soil	12/12/19 12:40	12-13-2019 09:54
1.15	9L13004-15	Soil	12/12/19 12:42	12-13-2019 09:54
1.16	9L13004-16	Soil	12/12/19 12:42	12-13-2019 09:54
1.17	9L13004-17	Soil	12/12/19 12:44	12-13-2019 09:54
1.18	9L13004-18	Soil	12/12/19 12:45	12-13-2019 09:54
5.1	9L13004-19	Soil	12/12/19 13:19	12-13-2019 09:54
5.2	9L13004-20	Soil	12/12/19 13:18	12-13-2019 09:54
5.3	9L13004-21	Soil	12/12/19 13:19	12-13-2019 09:54
5.4	9L13004-22	Soil	12/12/19 13:20	12-13-2019 09:54
5.5	9L13004-23	Soil	12/12/19 13:21	12-13-2019 09:54
5.6	9L13004-24	Soil	12/12/19 13:22	12-13-2019 09:54
5.7	9L13004-25	Soil	12/12/19 13:23	12-13-2019 09:54
5.8	9L13004-26	Soil	12/12/19 13:24	12-13-2019 09:54
5.9	9L13004-27	Soil	12/12/19 13:25	12-13-2019 09:54
5.10	9L13004-28	Soil	12/12/19 13:26	12-13-2019 09:54
5.11	9L13004-29	Soil	12/12/19 13:27	12-13-2019 09:54
5.12	9L13004-30	Soil	12/12/19 13:28	12-13-2019 09:54
5.13	9L13004-31	Soil	12/12/19 13:40	12-13-2019 09:54
5.14	9L13004-32	Soil	12/12/19 13:39	12-13-2019 09:54
5.15	9L13004-33	Soil	12/12/19 13:38	12-13-2019 09:54
5.16	9L13004-34	Soil	12/12/19 13:36	12-13-2019 09:54

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
5.17	9L13004-35	Soil	12/12/19 13:35	12-13-2019 09:54
5.18	9L13004-36	Soil	12/12/19 13:34	12-13-2019 09:54
5.19	9L13004-37	Soil	12/12/19 13:23	12-13-2019 09:54
5.20	9L13004-38	Soil	12/12/19 13:22	12-13-2019 09:54
5.21	9L13004-39	Soil	12/12/19 13:21	12-13-2019 09:54
5.22	9L13004-40	Soil	12/12/19 13:20	12-13-2019 09:54
5.23	9L13004-41	Soil	12/12/19 13:18	12-13-2019 09:54
5.24	9L13004-42	Soil	12/12/19 13:17	12-13-2019 09:54
6.1	9L13004-43	Soil	12/12/19 14:09	12-13-2019 09:54
6.2	9L13004-44	Soil	12/12/19 14:10	12-13-2019 09:54
6.3	9L13004-45	Soil	12/12/19 14:11	12-13-2019 09:54
6.4	9L13004-46	Soil	12/12/19 14:12	12-13-2019 09:54
6.5	9L13004-47	Soil	12/12/19 14:13	12-13-2019 09:54
6.6	9L13004-48	Soil	12/12/19 14:14	12-13-2019 09:54
6.7	9L13004-49	Soil	12/12/19 14:15	12-13-2019 09:54
6.8	9L13004-50	Soil	12/12/19 14:16	12-13-2019 09:54
6.9	9L13004-51	Soil	12/12/19 14:17	12-13-2019 09:54
6.10	9L13004-52	Soil	12/12/19 14:17	12-13-2019 09:54
6.11	9L13004-53	Soil	12/12/19 14:18	12-13-2019 09:54
6.12	9L13004-54	Soil	12/12/19 14:19	12-13-2019 09:54
6.13	9L13004-55	Soil	12/12/19 14:17	12-13-2019 09:54
6.14	9L13004-56	Soil	12/12/19 14:17	12-13-2019 09:54
6.15	9L13004-57	Soil	12/12/19 14:16	12-13-2019 09:54
6.16	9L13004-58	Soil	12/12/19 14:15	12-13-2019 09:54
6.17	9L13004-59	Soil	12/12/19 14:13	12-13-2019 09:54
6.18	9L13004-60	Soil	12/12/19 14:12	12-13-2019 09:54

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

1.1
9L13004-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00106	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Toluene	ND	0.00106	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Ethylbenzene	ND	0.00106	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Xylene (p/m)	ND	0.00213	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Xylene (o)	ND	0.00106	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		94.2 %	75-125		P9L1307	12/13/19	12/13/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		91.4 %	75-125		P9L1307	12/13/19	12/13/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	47.6	1.06	mg/kg dry	1	P9L1310	12/13/19	12/14/19	EPA 300.0	
% Moisture	6.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.6	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		123 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		146 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

1.2
9L13004-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00104	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Toluene	ND	0.00104	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Ethylbenzene	ND	0.00104	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Xylene (p/m)	ND	0.00208	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Xylene (o)	ND	0.00104	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		92.2 %	75-125		P9L1307	12/13/19	12/13/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		99.5 %	75-125		P9L1307	12/13/19	12/13/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	108	1.04	mg/kg dry	1	P9L1310	12/13/19	12/14/19	EPA 300.0	
% Moisture	4.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.0	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	26.0	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	26.0	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		109 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		128 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.0	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

1.3
9L13004-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00103	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Toluene	ND	0.00103	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Ethylbenzene	ND	0.00103	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Xylene (p/m)	ND	0.00206	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Xylene (o)	ND	0.00103	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		94.5 %	75-125		P9L1307	12/13/19	12/13/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		105 %	75-125		P9L1307	12/13/19	12/13/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	21.7	1.03	mg/kg dry	1	P9L1310	12/13/19	12/14/19	EPA 300.0	
% Moisture	3.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.8	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		102 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		119 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

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P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

1.4
9L13004-04 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00106	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Toluene	ND	0.00106	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Ethylbenzene	ND	0.00106	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Xylene (p/m)	ND	0.00213	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Xylene (o)	ND	0.00106	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		94.2 %	75-125		P9L1307	12/13/19	12/13/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		97.4 %	75-125		P9L1307	12/13/19	12/13/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	231	1.06	mg/kg dry	1	P9L1310	12/13/19	12/14/19	EPA 300.0	
% Moisture	6.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.6	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		95.4 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		113 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

1.5
9L13004-05 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00102	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Toluene	ND	0.00102	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Ethylbenzene	ND	0.00102	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Xylene (p/m)	ND	0.00204	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Xylene (o)	ND	0.00102	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		94.7 %	75-125		P9L1307	12/13/19	12/13/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		100 %	75-125		P9L1307	12/13/19	12/13/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	38.6	1.02	mg/kg dry	1	P9L1310	12/13/19	12/14/19	EPA 300.0	
% Moisture	2.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.5	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		104 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		125 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

1.6
9L13004-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00104	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Toluene	ND	0.00104	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Ethylbenzene	ND	0.00104	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Xylene (p/m)	ND	0.00208	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Xylene (o)	ND	0.00104	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		92.7 %	75-125		P9L1307	12/13/19	12/13/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		98.3 %	75-125		P9L1307	12/13/19	12/13/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	19.6	1.04	mg/kg dry	1	P9L1310	12/13/19	12/14/19	EPA 300.0	
% Moisture	4.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.0	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	26.0	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	26.0	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		97.4 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		117 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.0	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

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P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

1.7
9L13004-07 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00104	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Toluene	ND	0.00104	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Ethylbenzene	ND	0.00104	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Xylene (p/m)	ND	0.00208	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Xylene (o)	ND	0.00104	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		94.2 %	75-125		P9L1307	12/13/19	12/13/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		98.6 %	75-125		P9L1307	12/13/19	12/13/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	44.4	1.04	mg/kg dry	1	P9L1310	12/13/19	12/14/19	EPA 300.0	
% Moisture	4.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.0	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	26.0	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	26.0	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		86.0 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		102 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.0	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

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1.8
9L13004-08 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00106	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Toluene	ND	0.00106	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Ethylbenzene	ND	0.00106	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Xylene (p/m)	ND	0.00213	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Xylene (o)	ND	0.00106	mg/kg dry	1	P9L1307	12/13/19	12/13/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		97.1 %	75-125		P9L1307	12/13/19	12/13/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		104 %	75-125		P9L1307	12/13/19	12/13/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	58.9	1.06	mg/kg dry	1	P9L1310	12/13/19	12/14/19	EPA 300.0	
% Moisture	6.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.6	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		88.4 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		104 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

1.9
9L13004-09 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00103	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00103	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00103	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00206	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00103	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		101 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		93.7 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	16.6	1.03	mg/kg dry	1	P9L1310	12/13/19	12/14/19	EPA 300.0	
% Moisture	3.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.8	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		95.1 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		114 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

1.10
9L13004-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00112	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00112	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00112	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00225	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00112	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		93.0 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		102 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	1740	5.62	mg/kg dry	5	P9L2314	12/23/19	12/27/19	EPA 300.0	
% Moisture	11.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	28.1	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	28.1	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	28.1	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		97.1 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		115 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	28.1	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

1.11
9L13004-11 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00110	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00110	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00110	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00220	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00110	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		94.1 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		95.3 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	1290	5.49	mg/kg dry	5	P9L2314	12/23/19	12/27/19	EPA 300.0	
% Moisture	9.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.5	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	27.5	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	27.5	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		97.0 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		114 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.5	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

1.12
9L13004-12 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00111	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00111	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00111	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00222	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00111	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		91.4 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		97.0 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	101	1.11	mg/kg dry	1	P9L2314	12/23/19	12/27/19	EPA 300.0	
% Moisture	10.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.8	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		104 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		122 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

1.13
9L13004-13 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00109	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00109	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00109	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00217	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00109	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		96.4 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		91.2 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	84.7	1.09	mg/kg dry	1	P9L2314	12/23/19	12/27/19	EPA 300.0	
% Moisture	8.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.2	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	27.2	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	27.2	mg/kg dry	1	P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		106 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		125 %	70-130		P9L1304	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.2	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

1.14

9L13004-14 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00111	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00111	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00111	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00222	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00111	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		96.0 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		99.0 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	261	1.11	mg/kg dry	1	P9L2314	12/23/19	12/27/19	EPA 300.0	
% Moisture	10.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.8	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		112 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		131 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

1.15
9L13004-15 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00111	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00111	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00111	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00222	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00111	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		94.6 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		101 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	77.4	1.11	mg/kg dry	1	P9L2314	12/23/19	12/27/19	EPA 300.0	
% Moisture	10.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.8	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		109 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		128 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

1.16
9L13004-16 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00109	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00109	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00109	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00217	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00109	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		97.0 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		91.8 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	768	1.09	mg/kg dry	1	P9L2314	12/23/19	12/27/19	EPA 300.0	
% Moisture	8.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.2	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	27.2	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	27.2	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		95.1 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		112 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.2	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

1.17

9L13004-17 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00111	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00111	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00111	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00222	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00111	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		94.7 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		99.3 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	594	1.11	mg/kg dry	1	P9L2314	12/23/19	12/27/19	EPA 300.0	
% Moisture	10.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.8	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		93.0 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		108 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

1.18
9L13004-18 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00110	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00110	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00110	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00220	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00110	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		103 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		98.2 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	810	1.10	mg/kg dry	1	P9L2314	12/23/19	12/27/19	EPA 300.0	
% Moisture	9.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.5	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	27.5	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	27.5	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		96.5 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		112 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.5	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.1

9L13004-19 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00103	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00103	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00103	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00206	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00103	mg/kg dry	1	P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		98.5 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		95.6 %	75-125		P9L1307	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	9.51	1.03	mg/kg dry	1	P9L1310	12/13/19	12/14/19	EPA 300.0	
% Moisture	3.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.8	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		95.6 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		113 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.2

9L13004-20 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00105	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00105	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00105	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00211	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00105	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		92.5 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		97.0 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	29.5	1.05	mg/kg dry	1	P9L1310	12/13/19	12/14/19	EPA 300.0	
% Moisture	5.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.3	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	26.3	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	26.3	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		94.8 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		110 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.3	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.3

9L13004-21 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00103	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00103	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00103	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00206	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00103	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		96.9 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		101 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	10.6	1.03	mg/kg dry	1	P9L1310	12/13/19	12/14/19	EPA 300.0	
% Moisture	3.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.8	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		95.5 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		113 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.4

9L13004-22 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00105	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00105	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00105	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00211	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00105	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		101 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		95.2 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	15.4	1.05	mg/kg dry	1	P9L1310	12/13/19	12/14/19	EPA 300.0	
% Moisture	5.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.3	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	26.3	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	26.3	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		95.1 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		110 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.3	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.5

9L13004-23 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00104	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00104	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00104	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00208	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00104	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		99.6 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		96.4 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	14.9	1.04	mg/kg dry	1	P9L1310	12/13/19	12/14/19	EPA 300.0	
% Moisture	4.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.0	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	26.0	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	26.0	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		95.7 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		112 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.0	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.6

9L13004-24 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00104	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00104	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00104	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00208	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00104	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		96.8 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		105 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	33.4	1.04	mg/kg dry	1	P9L1310	12/13/19	12/14/19	EPA 300.0	
% Moisture	4.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.0	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C12-C28	29.0	26.0	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	26.0	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		96.9 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		110 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	29.0	26.0	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.7

9L13004-25 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00104	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00104	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00104	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00208	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00104	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		99.4 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		94.4 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	18.5	1.04	mg/kg dry	1	P9L1310	12/13/19	12/14/19	EPA 300.0	
% Moisture	4.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.0	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	26.0	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	26.0	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		98.1 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		113 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.0	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.8

9L13004-26 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00102	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00102	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00102	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00204	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00102	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		93.8 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		96.9 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	9.18	1.02	mg/kg dry	1	P9L1310	12/13/19	12/14/19	EPA 300.0	
% Moisture	2.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.5	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: 1-Chlorooctane		87.8 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Surrogate: o-Terphenyl		101 %	70-130		P9L1305	12/13/19	12/13/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	12/13/19	12/13/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.9

9L13004-27 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00102	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00102	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00102	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00204	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00102	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		96.9 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		101 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	129	1.02	mg/kg dry	1	P9L1311	12/13/19	12/15/19	EPA 300.0	
% Moisture	2.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.5	mg/kg dry	1	P9L1305	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P9L1305	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P9L1305	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		87.2 %	70-130		P9L1305	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		100 %	70-130		P9L1305	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.10

9L13004-28 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00105	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00105	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00105	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00211	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00105	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		102 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		96.5 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	184	1.05	mg/kg dry	1	P9L1311	12/13/19	12/15/19	EPA 300.0	
% Moisture	5.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.3	mg/kg dry	1	P9L1305	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	26.3	mg/kg dry	1	P9L1305	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	26.3	mg/kg dry	1	P9L1305	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		102 %	70-130		P9L1305	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		117 %	70-130		P9L1305	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.3	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.11

9L13004-29 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00104	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00104	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00104	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00208	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00104	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		95.7 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		102 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	13.2	1.04	mg/kg dry	1	P9L1311	12/13/19	12/15/19	EPA 300.0	
% Moisture	4.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.0	mg/kg dry	1	P9L1305	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	26.0	mg/kg dry	1	P9L1305	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	26.0	mg/kg dry	1	P9L1305	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		90.2 %	70-130		P9L1305	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		103 %	70-130		P9L1305	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.0	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.12

9L13004-30 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00103	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00103	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00103	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00206	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00103	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		96.6 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		93.8 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	11.7	1.03	mg/kg dry	1	P9L1311	12/13/19	12/15/19	EPA 300.0	
% Moisture	3.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.8	mg/kg dry	1	P9L1305	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P9L1305	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P9L1305	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		93.1 %	70-130		P9L1305	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		106 %	70-130		P9L1305	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.13

9L13004-31 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00102	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00102	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00102	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00204	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00102	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		96.3 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		103 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	15.6	1.02	mg/kg dry	1	P9L1311	12/13/19	12/15/19	EPA 300.0	
% Moisture	2.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.5	mg/kg dry	1	P9L1305	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P9L1305	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P9L1305	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		99.7 %	70-130		P9L1305	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		114 %	70-130		P9L1305	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.14

9L13004-32 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00106	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00106	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00106	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00213	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00106	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		96.9 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		93.4 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	736	1.06	mg/kg dry	1	P9L1311	12/13/19	12/15/19	EPA 300.0	
% Moisture	6.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.6	mg/kg dry	1	P9L1305	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P9L1305	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P9L1305	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		85.1 %	70-130		P9L1305	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		96.1 %	70-130		P9L1305	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.15
9L13004-33 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00106	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00106	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00106	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00213	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00106	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		92.1 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		95.8 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	171	1.06	mg/kg dry	1	P9L1311	12/13/19	12/15/19	EPA 300.0	
% Moisture	6.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.6	mg/kg dry	1	P9L1305	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P9L1305	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P9L1305	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		98.6 %	70-130		P9L1305	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		113 %	70-130		P9L1305	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

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5.16
9L13004-34 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00102	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00102	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00102	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00204	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00102	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		94.4 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		99.1 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	112	1.02	mg/kg dry	1	P9L1311	12/13/19	12/15/19	EPA 300.0	
% Moisture	2.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.5	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		95.5 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		109 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.17

9L13004-35 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00112	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00112	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00112	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00225	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00112	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		95.5 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		103 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	925	1.12	mg/kg dry	1	P9L2314	12/23/19	12/27/19	EPA 300.0	
% Moisture	11.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	28.1	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	28.1	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	28.1	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		97.6 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		110 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	28.1	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.18

9L13004-36 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00111	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00111	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00111	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00222	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00111	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		105 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		94.8 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	886	1.11	mg/kg dry	1	P9L2314	12/23/19	12/27/19	EPA 300.0	
% Moisture	10.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.8	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		92.5 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		107 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.19

9L13004-37 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00111	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00111	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00111	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00222	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00111	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		97.6 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		105 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	542	1.11	mg/kg dry	1	P9L2314	12/23/19	12/27/19	EPA 300.0	
% Moisture	10.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.8	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		92.0 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		107 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.20

9L13004-38 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00114	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00114	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00114	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00227	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00114	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		94.0 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		98.6 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	1110	5.68	mg/kg dry	5	P9L2314	12/23/19	12/27/19	EPA 300.0	
% Moisture	12.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	28.4	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	28.4	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	28.4	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		94.7 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		108 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	28.4	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.21

9L13004-39 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00114	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00114	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00114	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00227	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00114	mg/kg dry	1	P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		101 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		95.2 %	75-125		P9L1308	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	1100	5.68	mg/kg dry	5	P9L2602	12/26/19	12/27/19	EPA 300.0	
% Moisture	12.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	28.4	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	28.4	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	28.4	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		97.2 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		111 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	28.4	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.22

9L13004-40 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00111	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00111	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00111	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00222	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00111	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		96.2 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		102 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	1160	5.56	mg/kg dry	5	P9L2701	12/27/19	12/28/19	EPA 300.0	
% Moisture	10.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.8	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		92.9 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		105 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.23

9L13004-41 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00115	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00115	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00115	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00230	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00115	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		95.7 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		102 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	977	5.75	mg/kg dry	5	P9L2701	12/27/19	12/28/19	EPA 300.0	
% Moisture	13.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	28.7	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	28.7	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	28.7	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		97.0 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		110 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	28.7	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.24

9L13004-42 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00108	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00108	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00108	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00215	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00108	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		94.6 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		99.7 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	963	5.38	mg/kg dry	5	P9L2701	12/27/19	12/28/19	EPA 300.0	
% Moisture	7.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.9	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	26.9	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	26.9	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		101 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		114 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.9	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

6.1
9L13004-43 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00106	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00106	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00106	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00213	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00106	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		97.5 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		105 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	118	1.06	mg/kg dry	1	P9L1311	12/13/19	12/15/19	EPA 300.0	
% Moisture	6.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.6	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		104 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		118 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

6.2

9L13004-44 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		101 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		94.0 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	67.0	1.01	mg/kg dry	1	P9L1311	12/13/19	12/15/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		98.6 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		99.2 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

6.3

9L13004-45 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		105 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		98.2 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	9.01	1.01	mg/kg dry	1	P9L1311	12/13/19	12/15/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		97.9 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		107 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

6.4

9L13004-46 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00103	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00103	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00103	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00206	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00103	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		94.4 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		98.6 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	12.3	1.03	mg/kg dry	1	P9L1311	12/13/19	12/15/19	EPA 300.0	
% Moisture	3.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.8	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		92.7 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		106 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

6.5
9L13004-47 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00102	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00102	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00102	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00204	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00102	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		107 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		100 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	11.1	1.02	mg/kg dry	1	P9L1311	12/13/19	12/15/19	EPA 300.0	
% Moisture	2.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.5	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		101 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		114 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

6.6

9L13004-48 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00102	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00102	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00102	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00204	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00102	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		96.2 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		99.0 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	26.2	1.02	mg/kg dry	1	P9L1311	12/13/19	12/15/19	EPA 300.0	
% Moisture	2.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.5	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		102 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		115 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

6.7

9L13004-49 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		97.6 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		103 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	9.63	1.01	mg/kg dry	1	P9L1311	12/13/19	12/15/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		95.8 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		110 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

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6.8
9L13004-50 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00105	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00105	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00105	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00211	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00105	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		107 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		99.2 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	119	1.05	mg/kg dry	1	P9L1311	12/13/19	12/15/19	EPA 300.0	
% Moisture	5.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.3	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	26.3	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	26.3	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		106 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		119 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.3	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

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6.9

9L13004-51 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00109	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00109	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00109	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00217	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00109	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		96.7 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		105 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	86.2	1.09	mg/kg dry	1	P9L1311	12/13/19	12/15/19	EPA 300.0	
% Moisture	8.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.2	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	27.2	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	27.2	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		99.7 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		113 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.2	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

6.10
9L13004-52 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		98.8 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		107 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	407	1.01	mg/kg dry	1	P9L1311	12/13/19	12/15/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C12-C28	31.8	25.3	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		98.1 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		102 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	31.8	25.3	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

6.11
9L13004-53 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00102	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00102	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00102	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00204	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00102	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		104 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		99.3 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	130	1.02	mg/kg dry	1	P9L1311	12/13/19	12/15/19	EPA 300.0	
% Moisture	2.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.5	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: 1-Chlorooctane		101 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Surrogate: o-Terphenyl		115 %	70-130		P9L1306	12/13/19	12/14/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	12/13/19	12/14/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

6.12

9L13004-54 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00104	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00104	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00104	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00208	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00104	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		96.1 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		104 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	66.6	1.04	mg/kg dry	1	P9L1311	12/13/19	12/15/19	EPA 300.0	
% Moisture	4.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.0	mg/kg dry	1	P9L1606	12/16/19	12/16/19	TPH 8015M	
>C12-C28	ND	26.0	mg/kg dry	1	P9L1606	12/16/19	12/16/19	TPH 8015M	
>C28-C35	ND	26.0	mg/kg dry	1	P9L1606	12/16/19	12/16/19	TPH 8015M	
Surrogate: 1-Chlorooctane		90.0 %	70-130		P9L1606	12/16/19	12/16/19	TPH 8015M	
Surrogate: o-Terphenyl		100 %	70-130		P9L1606	12/16/19	12/16/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.0	mg/kg dry	1	[CALC]	12/16/19	12/16/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

6.13
9L13004-55 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00118	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00118	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00118	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00235	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00118	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		101 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		111 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	1900	5.88	mg/kg dry	5	P9L2701	12/27/19	12/28/19	EPA 300.0	
% Moisture	15.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	29.4	mg/kg dry	1	P9L1606	12/16/19	12/16/19	TPH 8015M	
>C12-C28	ND	29.4	mg/kg dry	1	P9L1606	12/16/19	12/16/19	TPH 8015M	
>C28-C35	ND	29.4	mg/kg dry	1	P9L1606	12/16/19	12/16/19	TPH 8015M	
Surrogate: 1-Chlorooctane		99.8 %	70-130		P9L1606	12/16/19	12/16/19	TPH 8015M	
Surrogate: o-Terphenyl		111 %	70-130		P9L1606	12/16/19	12/16/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	29.4	mg/kg dry	1	[CALC]	12/16/19	12/16/19	calc	

Permian Basin Environmental Lab, L.P.

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P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

6.14

9L13004-56 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00111	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00111	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00111	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00222	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00111	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		102 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		94.1 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	252	1.11	mg/kg dry	1	P9L2701	12/27/19	12/28/19	EPA 300.0	
% Moisture	10.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.8	mg/kg dry	1	P9L1606	12/16/19	12/16/19	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P9L1606	12/16/19	12/16/19	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P9L1606	12/16/19	12/16/19	TPH 8015M	
Surrogate: 1-Chlorooctane		100 %	70-130		P9L1606	12/16/19	12/16/19	TPH 8015M	
Surrogate: o-Terphenyl		113 %	70-130		P9L1606	12/16/19	12/16/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	12/16/19	12/16/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

6.15
9L13004-57 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00111	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00111	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00111	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00222	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00111	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		101 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		112 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	292	1.11	mg/kg dry	1	P9L2701	12/27/19	12/28/19	EPA 300.0	
% Moisture	10.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.8	mg/kg dry	1	P9L1606	12/16/19	12/16/19	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P9L1606	12/16/19	12/16/19	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P9L1606	12/16/19	12/16/19	TPH 8015M	
Surrogate: 1-Chlorooctane		96.7 %	70-130		P9L1606	12/16/19	12/16/19	TPH 8015M	
Surrogate: o-Terphenyl		109 %	70-130		P9L1606	12/16/19	12/16/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	12/16/19	12/16/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

6.16

9L13004-58 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00111	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Toluene	ND	0.00111	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Ethylbenzene	ND	0.00111	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (p/m)	ND	0.00222	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Xylene (o)	ND	0.00111	mg/kg dry	1	P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		107 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		98.5 %	75-125		P9L1309	12/13/19	12/14/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	533	1.11	mg/kg dry	1	P9L2701	12/27/19	12/28/19	EPA 300.0	
% Moisture	10.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.8	mg/kg dry	1	P9L1606	12/16/19	12/16/19	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P9L1606	12/16/19	12/16/19	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P9L1606	12/16/19	12/16/19	TPH 8015M	
Surrogate: 1-Chlorooctane		91.1 %	70-130		P9L1606	12/16/19	12/16/19	TPH 8015M	
Surrogate: o-Terphenyl		102 %	70-130		P9L1606	12/16/19	12/16/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	12/16/19	12/16/19	calc	

Permian Basin Environmental Lab, L.P.

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P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

6.17

9L13004-59 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00112	mg/kg dry	1	P9L1309	12/13/19	12/15/19	EPA 8021B	
Toluene	ND	0.00112	mg/kg dry	1	P9L1309	12/13/19	12/15/19	EPA 8021B	
Ethylbenzene	ND	0.00112	mg/kg dry	1	P9L1309	12/13/19	12/15/19	EPA 8021B	
Xylene (p/m)	ND	0.00225	mg/kg dry	1	P9L1309	12/13/19	12/15/19	EPA 8021B	
Xylene (o)	ND	0.00112	mg/kg dry	1	P9L1309	12/13/19	12/15/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		112 %	75-125		P9L1309	12/13/19	12/15/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		101 %	75-125		P9L1309	12/13/19	12/15/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	466	1.12	mg/kg dry	1	P9L2701	12/27/19	12/28/19	EPA 300.0	
% Moisture	11.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	28.1	mg/kg dry	1	P9L1606	12/16/19	12/16/19	TPH 8015M	
>C12-C28	ND	28.1	mg/kg dry	1	P9L1606	12/16/19	12/16/19	TPH 8015M	
>C28-C35	ND	28.1	mg/kg dry	1	P9L1606	12/16/19	12/16/19	TPH 8015M	
Surrogate: 1-Chlorooctane		98.3 %	70-130		P9L1606	12/16/19	12/16/19	TPH 8015M	
Surrogate: o-Terphenyl		112 %	70-130		P9L1606	12/16/19	12/16/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	28.1	mg/kg dry	1	[CALC]	12/16/19	12/16/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

6.18
9L13004-60 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00111	mg/kg dry	1	P9L1805	12/18/19	12/18/19	EPA 8021B	
Toluene	ND	0.00111	mg/kg dry	1	P9L1805	12/18/19	12/18/19	EPA 8021B	
Ethylbenzene	ND	0.00111	mg/kg dry	1	P9L1805	12/18/19	12/18/19	EPA 8021B	
Xylene (p/m)	ND	0.00222	mg/kg dry	1	P9L1805	12/18/19	12/18/19	EPA 8021B	
Xylene (o)	ND	0.00111	mg/kg dry	1	P9L1805	12/18/19	12/18/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		112 %	75-125		P9L1805	12/18/19	12/18/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		99.2 %	75-125		P9L1805	12/18/19	12/18/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	616	1.11	mg/kg dry	1	P9L2701	12/27/19	12/28/19	EPA 300.0	
% Moisture	10.0	0.1	%	1	P9L1601	12/16/19	12/16/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.8	mg/kg dry	1	P9L1606	12/16/19	12/16/19	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P9L1606	12/16/19	12/16/19	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P9L1606	12/16/19	12/16/19	TPH 8015M	
Surrogate: 1-Chlorooctane		94.1 %	70-130		P9L1606	12/16/19	12/16/19	TPH 8015M	
Surrogate: o-Terphenyl		109 %	70-130		P9L1606	12/16/19	12/16/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	12/16/19	12/16/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1307 - General Preparation (GC)

Blank (P9L1307-BLK1)

Prepared & Analyzed: 12/13/19

Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 1,4-Difluorobenzene	0.108		"	0.120		90.1	75-125			
Surrogate: 4-Bromofluorobenzene	0.116		"	0.120		96.4	75-125			

LCS (P9L1307-BS1)

Prepared & Analyzed: 12/13/19

Benzene	0.103	0.00100	mg/kg wet	0.100		103	70-130			
Toluene	0.107	0.00100	"	0.100		107	70-130			
Ethylbenzene	0.103	0.00100	"	0.100		103	70-130			
Xylene (p/m)	0.222	0.00200	"	0.200		111	70-130			
Xylene (o)	0.116	0.00100	"	0.100		116	70-130			
Surrogate: 1,4-Difluorobenzene	0.122		"	0.120		102	75-125			
Surrogate: 4-Bromofluorobenzene	0.124		"	0.120		104	75-125			

LCS Dup (P9L1307-BSD1)

Prepared & Analyzed: 12/13/19

Benzene	0.102	0.00100	mg/kg wet	0.100		102	70-130	0.943	20	
Toluene	0.107	0.00100	"	0.100		107	70-130	0.121	20	
Ethylbenzene	0.102	0.00100	"	0.100		102	70-130	0.254	20	
Xylene (p/m)	0.213	0.00200	"	0.200		106	70-130	4.00	20	
Xylene (o)	0.104	0.00100	"	0.100		104	70-130	11.3	20	
Surrogate: 1,4-Difluorobenzene	0.125		"	0.120		104	75-125			
Surrogate: 4-Bromofluorobenzene	0.120		"	0.120		99.8	75-125			

Calibration Blank (P9L1307-CCB1)

Prepared & Analyzed: 12/13/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	0.113		"	0.120		94.4	75-125			
Surrogate: 1,4-Difluorobenzene	0.110		"	0.120		91.5	75-125			

Permian Basin Environmental Lab, L.P.

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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1307 - General Preparation (GC)

Calibration Blank (P9L1307-CCB2)

Prepared: 12/13/19 Analyzed: 12/14/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 1,4-Difluorobenzene	0.106		"	0.120		88.5	75-125			
Surrogate: 4-Bromofluorobenzene	0.107		"	0.120		89.3	75-125			

Calibration Blank (P9L1307-CCB3)

Prepared: 12/13/19 Analyzed: 12/14/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	0.117		"	0.120		97.8	75-125			
Surrogate: 1,4-Difluorobenzene	0.109		"	0.120		91.2	75-125			

Calibration Check (P9L1307-CCV1)

Prepared & Analyzed: 12/13/19

Benzene	0.0868	0.00100	mg/kg wet				80-120			
Toluene	0.0970	0.00100	"				80-120			
Ethylbenzene	0.0935	0.00100	"				80-120			
Xylene (p/m)	0.193	0.00200	"				80-120			
Xylene (o)	0.0986	0.00100	"				80-120			
Surrogate: 1,4-Difluorobenzene	0.123		"	0.120		103	75-125			
Surrogate: 4-Bromofluorobenzene	0.124		"	0.120		103	75-125			

Calibration Check (P9L1307-CCV2)

Prepared: 12/13/19 Analyzed: 12/14/19

Benzene	0.0960	0.00100	mg/kg wet				80-120			
Toluene	0.0971	0.00100	"				80-120			
Ethylbenzene	0.0942	0.00100	"				80-120			
Xylene (p/m)	0.198	0.00200	"				80-120			
Xylene (o)	0.105	0.00100	"				80-120			
Surrogate: 1,4-Difluorobenzene	0.121		"	0.120		101	75-125			
Surrogate: 4-Bromofluorobenzene	0.122		"	0.120		102	75-125			

Permian Basin Environmental Lab, L.P.

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Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1307 - General Preparation (GC)

Calibration Check (P9L1307-CCV3)

Prepared: 12/13/19 Analyzed: 12/14/19

Benzene	0.0918	0.00100	mg/kg wet				80-120			
Toluene	0.104	0.00100	"				80-120			
Ethylbenzene	0.0991	0.00100	"				80-120			
Xylene (p/m)	0.203	0.00200	"				80-120			
Xylene (o)	0.106	0.00100	"				80-120			
Surrogate: 1,4-Difluorobenzene	0.124		"	0.120		103	75-125			
Surrogate: 4-Bromofluorobenzene	0.128		"	0.120		107	75-125			

Matrix Spike (P9L1307-MS1)

Source: 9L13003-01

Prepared: 12/13/19 Analyzed: 12/14/19

Benzene	0.0824	0.00110	mg/kg dry	0.110	ND	75.0	80-120			QM-07
Toluene	0.0787	0.00110	"	0.110	ND	71.6	80-120			QM-07
Ethylbenzene	0.0910	0.00110	"	0.110	ND	82.8	80-120			
Xylene (p/m)	0.155	0.00220	"	0.220	ND	70.7	80-120			QM-07
Xylene (o)	0.0823	0.00110	"	0.110	ND	74.9	80-120			QM-07
Surrogate: 1,4-Difluorobenzene	0.136		"	0.132		103	75-125			
Surrogate: 4-Bromofluorobenzene	0.140		"	0.132		106	75-125			

Matrix Spike Dup (P9L1307-MSD1)

Source: 9L13003-01

Prepared: 12/13/19 Analyzed: 12/14/19

Benzene	0.0839	0.00110	mg/kg dry	0.110	ND	76.4	80-120	1.84	20	QM-07
Toluene	0.0838	0.00110	"	0.110	ND	76.3	80-120	6.26	20	QM-07
Ethylbenzene	0.0961	0.00110	"	0.110	ND	87.4	80-120	5.46	20	
Xylene (p/m)	0.162	0.00220	"	0.220	ND	73.9	80-120	4.39	20	QM-07
Xylene (o)	0.0814	0.00110	"	0.110	ND	74.1	80-120	1.14	20	QM-07
Surrogate: 1,4-Difluorobenzene	0.136		"	0.132		103	75-125			
Surrogate: 4-Bromofluorobenzene	0.138		"	0.132		104	75-125			

Batch P9L1308 - General Preparation (GC)

Blank (P9L1308-BLK1)

Prepared: 12/13/19 Analyzed: 12/14/19

Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 4-Bromofluorobenzene	0.117		"	0.120		97.8	75-125			
Surrogate: 1,4-Difluorobenzene	0.110		"	0.120		91.8	75-125			

Permian Basin Environmental Lab, L.P.

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Project Number: 18-0138-01
Project Manager: Mark Larson

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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1308 - General Preparation (GC)

LCS (P9L1308-BS1)

Prepared: 12/13/19 Analyzed: 12/14/19

Benzene	0.0965	0.00100	mg/kg wet	0.100		96.5	70-130			
Toluene	0.106	0.00100	"	0.100		106	70-130			
Ethylbenzene	0.101	0.00100	"	0.100		101	70-130			
Xylene (p/m)	0.208	0.00200	"	0.200		104	70-130			
Xylene (o)	0.108	0.00100	"	0.100		108	70-130			
Surrogate: 1,4-Difluorobenzene	0.123		"	0.120		103	75-125			
Surrogate: 4-Bromofluorobenzene	0.124		"	0.120		103	75-125			

LCS Dup (P9L1308-BSD1)

Prepared: 12/13/19 Analyzed: 12/14/19

Benzene	0.101	0.00100	mg/kg wet	0.100		101	70-130	4.44	20	
Toluene	0.113	0.00100	"	0.100		113	70-130	5.93	20	
Ethylbenzene	0.105	0.00100	"	0.100		105	70-130	3.63	20	
Xylene (p/m)	0.222	0.00200	"	0.200		111	70-130	6.11	20	
Xylene (o)	0.111	0.00100	"	0.100		111	70-130	2.92	20	
Surrogate: 4-Bromofluorobenzene	0.126		"	0.120		105	75-125			
Surrogate: 1,4-Difluorobenzene	0.126		"	0.120		105	75-125			

Calibration Blank (P9L1308-CCB1)

Prepared: 12/13/19 Analyzed: 12/14/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	0.117		"	0.120		97.8	75-125			
Surrogate: 1,4-Difluorobenzene	0.109		"	0.120		91.2	75-125			

Calibration Blank (P9L1308-CCB2)

Prepared: 12/13/19 Analyzed: 12/14/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 1,4-Difluorobenzene	0.112		"	0.120		93.6	75-125			
Surrogate: 4-Bromofluorobenzene	0.119		"	0.120		98.9	75-125			

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Project Number: 18-0138-01
Project Manager: Mark Larson

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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1308 - General Preparation (GC)

Calibration Blank (P9L1308-CCB3)

Prepared: 12/13/19 Analyzed: 12/14/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 1,4-Difluorobenzene	0.117		"	0.120		97.1	75-125			
Surrogate: 4-Bromofluorobenzene	0.124		"	0.120		103	75-125			

Calibration Check (P9L1308-CCV1)

Prepared: 12/13/19 Analyzed: 12/14/19

Benzene	0.0918	0.00100	mg/kg wet	0.100		91.8	80-120			
Toluene	0.104	0.00100	"	0.100		104	80-120			
Ethylbenzene	0.0991	0.00100	"	0.100		99.1	80-120			
Xylene (p/m)	0.203	0.00200	"	0.200		102	80-120			
Xylene (o)	0.106	0.00100	"	0.100		106	80-120			
Surrogate: 4-Bromofluorobenzene	0.128		"	0.120		107	75-125			
Surrogate: 1,4-Difluorobenzene	0.124		"	0.120		103	75-125			

Calibration Check (P9L1308-CCV2)

Prepared: 12/13/19 Analyzed: 12/14/19

Benzene	0.0974	0.00100	mg/kg wet	0.100		97.4	80-120			
Toluene	0.106	0.00100	"	0.100		106	80-120			
Ethylbenzene	0.0996	0.00100	"	0.100		99.6	80-120			
Xylene (p/m)	0.205	0.00200	"	0.200		103	80-120			
Xylene (o)	0.109	0.00100	"	0.100		109	80-120			
Surrogate: 1,4-Difluorobenzene	0.126		"	0.120		105	75-125			
Surrogate: 4-Bromofluorobenzene	0.129		"	0.120		108	75-125			

Calibration Check (P9L1308-CCV3)

Prepared: 12/13/19 Analyzed: 12/14/19

Benzene	0.0970	0.00100	mg/kg wet	0.100		97.0	80-120			
Toluene	0.109	0.00100	"	0.100		109	80-120			
Ethylbenzene	0.102	0.00100	"	0.100		102	80-120			
Xylene (p/m)	0.209	0.00200	"	0.200		104	80-120			
Xylene (o)	0.110	0.00100	"	0.100		110	80-120			
Surrogate: 4-Bromofluorobenzene	0.128		"	0.120		106	75-125			
Surrogate: 1,4-Difluorobenzene	0.128		"	0.120		107	75-125			

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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1308 - General Preparation (GC)

Matrix Spike (P9L1308-MS1)		Source: 9L13004-20		Prepared: 12/13/19		Analyzed: 12/14/19				
Benzene	0.0811	0.00105	mg/kg dry	0.105	ND	77.0	80-120			QM-07
Toluene	0.0855	0.00105	"	0.105	ND	81.2	80-120			
Ethylbenzene	0.0948	0.00105	"	0.105	ND	90.1	80-120			
Xylene (p/m)	0.162	0.00211	"	0.211	ND	77.2	80-120			QM-07
Xylene (o)	0.0789	0.00105	"	0.105	ND	74.9	80-120			QM-07
Surrogate: 4-Bromofluorobenzene	0.145		"	0.126		115	75-125			
Surrogate: 1,4-Difluorobenzene	0.138		"	0.126		109	75-125			

Matrix Spike Dup (P9L1308-MSD1)		Source: 9L13004-20		Prepared: 12/13/19		Analyzed: 12/14/19				
Benzene	0.0763	0.00105	mg/kg dry	0.105	ND	72.5	80-120	6.03	20	QM-07
Toluene	0.0771	0.00105	"	0.105	ND	73.3	80-120	10.3	20	QM-07
Ethylbenzene	0.0839	0.00105	"	0.105	ND	79.7	80-120	12.2	20	QM-07
Xylene (p/m)	0.135	0.00211	"	0.211	ND	63.9	80-120	18.8	20	QM-07
Xylene (o)	0.0653	0.00105	"	0.105	ND	62.0	80-120	18.9	20	QM-07
Surrogate: 1,4-Difluorobenzene	0.134		"	0.126		106	75-125			
Surrogate: 4-Bromofluorobenzene	0.139		"	0.126		110	75-125			

Batch P9L1309 - General Preparation (GC)

Blank (P9L1309-BLK1)				Prepared: 12/13/19		Analyzed: 12/14/19				
Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 1,4-Difluorobenzene	0.115		"	0.120		95.9	75-125			
Surrogate: 4-Bromofluorobenzene	0.124		"	0.120		103	75-125			

Permian Basin Environmental Lab, L.P.

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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1309 - General Preparation (GC)

LCS (P9L1309-BS1)

Prepared: 12/13/19 Analyzed: 12/14/19

Benzene	0.0992	0.00100	mg/kg wet	0.100		99.2	70-130		
Toluene	0.110	0.00100	"	0.100		110	70-130		
Ethylbenzene	0.106	0.00100	"	0.100		106	70-130		
Xylene (p/m)	0.217	0.00200	"	0.200		108	70-130		
Xylene (o)	0.112	0.00100	"	0.100		112	70-130		
Surrogate: 1,4-Difluorobenzene	0.125		"	0.120		104	75-125		
Surrogate: 4-Bromofluorobenzene	0.130		"	0.120		108	75-125		

LCS Dup (P9L1309-BSD1)

Prepared: 12/13/19 Analyzed: 12/14/19

Benzene	0.101	0.00100	mg/kg wet	0.100		101	70-130	1.76	20
Toluene	0.110	0.00100	"	0.100		110	70-130	0.191	20
Ethylbenzene	0.105	0.00100	"	0.100		105	70-130	1.20	20
Xylene (p/m)	0.212	0.00200	"	0.200		106	70-130	2.09	20
Xylene (o)	0.105	0.00100	"	0.100		105	70-130	7.06	20
Surrogate: 1,4-Difluorobenzene	0.128		"	0.120		107	75-125		
Surrogate: 4-Bromofluorobenzene	0.130		"	0.120		108	75-125		

Calibration Blank (P9L1309-CCB2)

Prepared: 12/13/19 Analyzed: 12/14/19

Benzene	0.00		mg/kg wet						
Toluene	0.00		"						
Ethylbenzene	0.00		"						
Xylene (p/m)	0.00		"						
Xylene (o)	0.00		"						
Surrogate: 4-Bromofluorobenzene	0.107		"	0.120		89.2	75-125		
Surrogate: 1,4-Difluorobenzene	0.106		"	0.120		88.1	75-125		

Calibration Blank (P9L1309-CCB3)

Prepared: 12/13/19 Analyzed: 12/15/19

Benzene	0.00		mg/kg wet						
Toluene	0.00		"						
Ethylbenzene	0.00		"						
Xylene (p/m)	0.00		"						
Xylene (o)	0.00		"						
Surrogate: 1,4-Difluorobenzene	0.107		"	0.120		88.9	75-125		
Surrogate: 4-Bromofluorobenzene	0.106		"	0.120		88.6	75-125		

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1309 - General Preparation (GC)

Calibration Check (P9L1309-CCV2)

Prepared: 12/13/19 Analyzed: 12/14/19

Benzene	0.100	0.00100	mg/kg wet	0.100		100	80-120			
Toluene	0.106	0.00100	"	0.100		106	80-120			
Ethylbenzene	0.0992	0.00100	"	0.100		99.2	80-120			
Xylene (p/m)	0.208	0.00200	"	0.200		104	80-120			
Xylene (o)	0.111	0.00100	"	0.100		111	80-120			
Surrogate: 1,4-Difluorobenzene	0.128		"	0.120		106	75-125			
Surrogate: 4-Bromofluorobenzene	0.129		"	0.120		108	75-125			

Calibration Check (P9L1309-CCV3)

Prepared: 12/13/19 Analyzed: 12/15/19

Benzene	0.0975	0.00100	mg/kg wet	0.100		97.5	80-120			
Toluene	0.105	0.00100	"	0.100		105	80-120			
Ethylbenzene	0.0964	0.00100	"	0.100		96.4	80-120			
Xylene (p/m)	0.199	0.00200	"	0.200		99.4	80-120			
Xylene (o)	0.102	0.00100	"	0.100		102	80-120			
Surrogate: 4-Bromofluorobenzene	0.124		"	0.120		103	75-125			
Surrogate: 1,4-Difluorobenzene	0.123		"	0.120		102	75-125			

Matrix Spike (P9L1309-MS1)

Source: 9L13004-40

Prepared: 12/13/19 Analyzed: 12/15/19

Benzene	0.0856	0.00111	mg/kg dry	0.111	ND	77.0	80-120			QM-07
Toluene	0.0921	0.00111	"	0.111	ND	82.9	80-120			
Ethylbenzene	0.110	0.00111	"	0.111	ND	99.3	80-120			
Xylene (p/m)	0.177	0.00222	"	0.222	ND	79.7	80-120			QM-07
Xylene (o)	0.0900	0.00111	"	0.111	ND	81.0	80-120			
Surrogate: 1,4-Difluorobenzene	0.145		"	0.133		109	75-125			
Surrogate: 4-Bromofluorobenzene	0.154		"	0.133		116	75-125			

Matrix Spike Dup (P9L1309-MSD1)

Source: 9L13004-40

Prepared: 12/13/19 Analyzed: 12/15/19

Benzene	0.0833	0.00111	mg/kg dry	0.111	ND	75.0	80-120	2.70	20	QM-07
Toluene	0.0930	0.00111	"	0.111	ND	83.7	80-120	1.04	20	
Ethylbenzene	0.109	0.00111	"	0.111	ND	98.5	80-120	0.768	20	
Xylene (p/m)	0.171	0.00222	"	0.222	ND	77.1	80-120	3.34	20	QM-07
Xylene (o)	0.0877	0.00111	"	0.111	ND	79.0	80-120	2.50	20	QM-07
Surrogate: 1,4-Difluorobenzene	0.144		"	0.133		108	75-125			
Surrogate: 4-Bromofluorobenzene	0.151		"	0.133		113	75-125			

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1805 - General Preparation (GC)

Blank (P9L1805-BLK1)

Prepared & Analyzed: 12/18/19

Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 1,4-Difluorobenzene	0.115		"	0.120		95.6	75-125			
Surrogate: 4-Bromofluorobenzene	0.125		"	0.120		105	75-125			

LCS (P9L1805-BS1)

Prepared & Analyzed: 12/18/19

Benzene	0.0920	0.00100	mg/kg wet	0.100		92.0	70-130			
Toluene	0.109	0.00100	"	0.100		109	70-130			
Ethylbenzene	0.106	0.00100	"	0.100		106	70-130			
Xylene (p/m)	0.230	0.00200	"	0.200		115	70-130			
Xylene (o)	0.112	0.00100	"	0.100		112	70-130			
Surrogate: 1,4-Difluorobenzene	0.121		"	0.120		101	75-125			
Surrogate: 4-Bromofluorobenzene	0.132		"	0.120		110	75-125			

LCS Dup (P9L1805-BS1)

Prepared & Analyzed: 12/18/19

Benzene	0.0945	0.00100	mg/kg wet	0.100		94.5	70-130	2.69	20	
Toluene	0.111	0.00100	"	0.100		111	70-130	1.78	20	
Ethylbenzene	0.111	0.00100	"	0.100		111	70-130	5.23	20	
Xylene (p/m)	0.225	0.00200	"	0.200		113	70-130	1.89	20	
Xylene (o)	0.102	0.00100	"	0.100		102	70-130	9.07	20	
Surrogate: 1,4-Difluorobenzene	0.120		"	0.120		99.8	75-125			
Surrogate: 4-Bromofluorobenzene	0.123		"	0.120		102	75-125			

Calibration Blank (P9L1805-CCB1)

Prepared & Analyzed: 12/18/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	0.123		"	0.120		102	75-125			
Surrogate: 1,4-Difluorobenzene	0.118		"	0.120		98.3	75-125			

Permian Basin Environmental Lab, L.P.

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Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1805 - General Preparation (GC)

Calibration Blank (P9L1805-CCB2)

Prepared & Analyzed: 12/18/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 1,4-Difluorobenzene	0.117		"	0.120		97.8	75-125			
Surrogate: 4-Bromofluorobenzene	0.125		"	0.120		104	75-125			

Calibration Blank (P9L1805-CCB3)

Prepared & Analyzed: 12/18/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	0.134		"	0.120		112	75-125			
Surrogate: 1,4-Difluorobenzene	0.119		"	0.120		98.8	75-125			

Calibration Check (P9L1805-CCV1)

Prepared & Analyzed: 12/18/19

Benzene	0.101	0.00100	mg/kg wet	0.100		101	80-120			
Toluene	0.112	0.00100	"	0.100		112	80-120			
Ethylbenzene	0.112	0.00100	"	0.100		112	80-120			
Xylene (p/m)	0.237	0.00200	"	0.200		118	80-120			
Xylene (o)	0.118	0.00100	"	0.100		118	80-120			
Surrogate: 1,4-Difluorobenzene	0.114		"	0.120		95.2	75-125			
Surrogate: 4-Bromofluorobenzene	0.119		"	0.120		98.9	75-125			

Calibration Check (P9L1805-CCV2)

Prepared & Analyzed: 12/18/19

Benzene	0.0941	0.00100	mg/kg wet	0.100		94.1	80-120			
Toluene	0.113	0.00100	"	0.100		113	80-120			
Ethylbenzene	0.111	0.00100	"	0.100		111	80-120			
Xylene (p/m)	0.229	0.00200	"	0.200		114	80-120			
Xylene (o)	0.117	0.00100	"	0.100		117	80-120			
Surrogate: 1,4-Difluorobenzene	0.123		"	0.120		102	75-125			
Surrogate: 4-Bromofluorobenzene	0.133		"	0.120		111	75-125			

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1805 - General Preparation (GC)

Calibration Check (P9L1805-CCV3)

Prepared & Analyzed: 12/18/19

Benzene	0.105	0.00100	mg/kg wet	0.100		105	80-120			
Toluene	0.119	0.00100	"	0.100		119	80-120			
Ethylbenzene	0.118	0.00100	"	0.100		118	80-120			
Xylene (p/m)	0.232	0.00200	"	0.200		116	80-120			
Xylene (o)	0.111	0.00100	"	0.100		111	80-120			
Surrogate: 1,4-Difluorobenzene	0.129		"	0.120		107	75-125			
Surrogate: 4-Bromofluorobenzene	0.132		"	0.120		110	75-125			

Matrix Spike (P9L1805-MS1)

Source: 9L16002-01

Prepared & Analyzed: 12/18/19

Benzene	0.0876	0.00102	mg/kg dry	0.102	ND	85.8	80-120			
Toluene	0.0949	0.00102	"	0.102	ND	93.1	80-120			
Ethylbenzene	0.0999	0.00102	"	0.102	ND	97.9	80-120			
Xylene (p/m)	0.168	0.00204	"	0.204	ND	82.1	80-120			
Xylene (o)	0.0986	0.00102	"	0.102	ND	96.7	80-120			
Surrogate: 4-Bromofluorobenzene	0.237		"	0.122		194	75-125			S-GC
Surrogate: 1,4-Difluorobenzene	0.130		"	0.122		106	75-125			

Matrix Spike Dup (P9L1805-MSD1)

Source: 9L16002-01

Prepared & Analyzed: 12/18/19

Benzene	0.0858	0.00102	mg/kg dry	0.102	ND	84.1	80-120	2.06	20	
Toluene	0.0922	0.00102	"	0.102	ND	90.4	80-120	2.89	20	
Ethylbenzene	0.0971	0.00102	"	0.102	ND	95.1	80-120	2.84	20	
Xylene (p/m)	0.162	0.00204	"	0.204	ND	79.5	80-120	3.30	20	QM-07
Xylene (o)	0.0897	0.00102	"	0.102	ND	87.9	80-120	9.53	20	
Surrogate: 1,4-Difluorobenzene	0.129		"	0.122		105	75-125			
Surrogate: 4-Bromofluorobenzene	0.129		"	0.122		105	75-125			

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1310 - * DEFAULT PREP *****

Blank (P9L1310-BLK1)

Prepared: 12/13/19 Analyzed: 12/14/19

Chloride	ND	1.00	mg/kg wet
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LCS (P9L1310-BS1)

Prepared: 12/13/19 Analyzed: 12/14/19

Chloride	369	1.00	mg/kg wet	350	106	80-120
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LCS Dup (P9L1310-BSD1)

Prepared: 12/13/19 Analyzed: 12/14/19

Chloride	373	1.00	mg/kg wet	350	106	80-120	0.916	20
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Calibration Blank (P9L1310-CCB1)

Prepared: 12/13/19 Analyzed: 12/14/19

Chloride	0.00		mg/kg wet
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Calibration Blank (P9L1310-CCB2)

Prepared: 12/13/19 Analyzed: 12/14/19

Chloride	0.00		mg/kg wet
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Calibration Check (P9L1310-CCV1)

Prepared: 12/13/19 Analyzed: 12/14/19

Chloride	16.0		mg/kg	20.0	79.8	0-200
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Calibration Check (P9L1310-CCV2)

Prepared: 12/13/19 Analyzed: 12/14/19

Chloride	17.7		mg/kg	20.0	88.6	0-200
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Batch P9L1311 - * DEFAULT PREP *****

Blank (P9L1311-BLK1)

Prepared: 12/13/19 Analyzed: 12/15/19

Chloride	ND	1.00	mg/kg wet
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LCS (P9L1311-BS1)

Prepared: 12/13/19 Analyzed: 12/14/19

Chloride	388	1.00	mg/kg wet	350	111	80-120
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General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1311 - * DEFAULT PREP *******LCS Dup (P9L1311-BSD1)**

Prepared: 12/13/19 Analyzed: 12/15/19

Chloride	380	1.00	mg/kg wet	350	109	80-120	2.02	20	
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Calibration Blank (P9L1311-CCB1)

Prepared: 12/13/19 Analyzed: 12/14/19

Chloride	0.00		mg/kg wet						
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Calibration Blank (P9L1311-CCB2)

Prepared: 12/13/19 Analyzed: 12/15/19

Chloride	0.00		mg/kg wet						
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Calibration Check (P9L1311-CCV1)

Prepared: 12/13/19 Analyzed: 12/14/19

Chloride	16.7		mg/kg	20.0	83.7	0-200			
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Calibration Check (P9L1311-CCV2)

Prepared: 12/13/19 Analyzed: 12/15/19

Chloride	17.5		mg/kg	20.0	87.4	0-200			
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Batch P9L1601 - * DEFAULT PREP *******Blank (P9L1601-BLK1)**

Prepared & Analyzed: 12/16/19

% Moisture	ND	0.1	%						
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Duplicate (P9L1601-DUP1)

Source: 9L13004-20

Prepared & Analyzed: 12/16/19

% Moisture	5.0	0.1	%	5.0			0.00	20	
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Duplicate (P9L1601-DUP2)

Source: 9L13004-47

Prepared & Analyzed: 12/16/19

% Moisture	2.0	0.1	%	2.0			0.00	20	
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Duplicate (P9L1601-DUP3)

Source: 9L13005-14

Prepared & Analyzed: 12/16/19

% Moisture	1.0	0.1	%	1.0			0.00	20	
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General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9L1601 - *** DEFAULT PREP ***										
Duplicate (P9L1601-DUP4)	Source: 9L13005-21			Prepared & Analyzed: 12/16/19						
% Moisture	6.0	0.1	%		6.0			0.00	20	
Duplicate (P9L1601-DUP5)	Source: 9L13011-01			Prepared & Analyzed: 12/16/19						
% Moisture	4.0	0.1	%		4.0			0.00	20	
Batch P9L2314 - *** DEFAULT PREP ***										
Blank (P9L2314-BLK1)	Prepared: 12/23/19 Analyzed: 12/27/19									
Chloride	ND	1.00	mg/kg wet							
LCS (P9L2314-BS1)	Prepared: 12/23/19 Analyzed: 12/27/19									
Chloride	449	1.00	mg/kg wet	400		112	80-120			
LCS Dup (P9L2314-BSD1)	Prepared: 12/23/19 Analyzed: 12/27/19									
Chloride	446	1.00	mg/kg wet	400		111	80-120	0.745	20	
Calibration Blank (P9L2314-CCB1)	Prepared: 12/23/19 Analyzed: 12/27/19									
Chloride	0.00		mg/kg wet							
Calibration Blank (P9L2314-CCB2)	Prepared: 12/23/19 Analyzed: 12/27/19									
Chloride	0.00		mg/kg wet							
Calibration Check (P9L2314-CCV1)	Prepared: 12/23/19 Analyzed: 12/27/19									
Chloride	21.4		mg/kg	20.0		107	0-200			
Calibration Check (P9L2314-CCV2)	Prepared: 12/23/19 Analyzed: 12/27/19									
Chloride	21.6		mg/kg	20.0		108	0-200			

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General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L2314 - * DEFAULT PREP *******Calibration Check (P9L2314-CCV3)**

Prepared: 12/23/19 Analyzed: 12/27/19

Chloride	21.4		mg/kg	20.0		107	0-200			
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Matrix Spike (P9L2314-MS1)**Source: 9L20002-42**

Prepared: 12/23/19 Analyzed: 12/27/19

Chloride	573	1.09	mg/kg dry	543	52.0	95.9	80-120			
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Matrix Spike (P9L2314-MS2)**Source: 9L13004-13**

Prepared: 12/23/19 Analyzed: 12/27/19

Chloride	575	1.09	mg/kg dry	543	84.7	90.2	80-120			
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Matrix Spike Dup (P9L2314-MSD1)**Source: 9L20002-42**

Prepared: 12/23/19 Analyzed: 12/27/19

Chloride	552	1.09	mg/kg dry	543	52.0	92.0	80-120	3.71	20	
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Matrix Spike Dup (P9L2314-MSD2)**Source: 9L13004-13**

Prepared: 12/23/19 Analyzed: 12/27/19

Chloride	593	1.09	mg/kg dry	543	84.7	93.5	80-120	3.13	20	
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Batch P9L2602 - * DEFAULT PREP *******Blank (P9L2602-BLK1)**

Prepared: 12/26/19 Analyzed: 12/27/19

Chloride	ND	0.100	mg/kg wet							
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LCS (P9L2602-BS1)

Prepared: 12/26/19 Analyzed: 12/27/19

Chloride	415	1.00	mg/kg wet	400		104	80-120			
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LCS Dup (P9L2602-BSD1)

Prepared: 12/26/19 Analyzed: 12/27/19

Chloride	415	1.00	mg/kg wet	400		104	80-120	0.118	20	
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Calibration Blank (P9L2602-CCB1)

Prepared: 12/26/19 Analyzed: 12/27/19

Chloride	0.00		mg/kg wet							
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Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9L2602 - *** DEFAULT PREP ***										
Calibration Blank (P9L2602-CCB2)				Prepared: 12/26/19 Analyzed: 12/27/19						
Chloride	0.00		mg/kg wet							
Calibration Check (P9L2602-CCV1)				Prepared: 12/26/19 Analyzed: 12/27/19						
Chloride	21.4		mg/kg	20.0		107	0-200			
Calibration Check (P9L2602-CCV2)				Prepared: 12/26/19 Analyzed: 12/27/19						
Chloride	21.4		mg/kg	20.0		107	0-200			
Calibration Check (P9L2602-CCV3)				Prepared: 12/26/19 Analyzed: 12/27/19						
Chloride	21.0		mg/kg	20.0		105	0-200			
Matrix Spike (P9L2602-MS1)				Source: 9L23003-01 Prepared: 12/26/19 Analyzed: 12/27/19						
Chloride	9200	28.1	mg/kg dry	2810	6520	95.3	80-120			
Matrix Spike (P9L2602-MS2)				Source: 9L23005-03 Prepared: 12/26/19 Analyzed: 12/27/19						
Chloride	6650	11.0	mg/kg dry	1100	5390	114	80-120			
Matrix Spike Dup (P9L2602-MSD1)				Source: 9L23003-01 Prepared: 12/26/19 Analyzed: 12/27/19						
Chloride	9130	28.1	mg/kg dry	2810	6520	93.0	80-120	0.733	20	
Matrix Spike Dup (P9L2602-MSD2)				Source: 9L23005-03 Prepared: 12/26/19 Analyzed: 12/27/19						
Chloride	6800	11.0	mg/kg dry	1100	5390	128	80-120	2.19	20	
Batch P9L2701 - *** DEFAULT PREP ***										
Blank (P9L2701-BLK1)				Prepared: 12/27/19 Analyzed: 12/28/19						
Chloride	ND	0.100	mg/kg wet							

Permian Basin Environmental Lab, L.P.

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Project Manager: Mark Larson

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General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L2701 - * DEFAULT PREP *****

LCS (P9L2701-BS1)

Prepared: 12/27/19 Analyzed: 12/28/19

Chloride	428	1.00	mg/kg wet	400	107	80-120			
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LCS Dup (P9L2701-BSD1)

Prepared: 12/27/19 Analyzed: 12/28/19

Chloride	417	1.00	mg/kg wet	400	104	80-120	2.62	20	
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Calibration Blank (P9L2701-CCB1)

Prepared: 12/27/19 Analyzed: 12/28/19

Chloride	0.00		mg/kg wet						
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Calibration Blank (P9L2701-CCB2)

Prepared: 12/27/19 Analyzed: 12/28/19

Chloride	0.00		mg/kg wet						
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Calibration Check (P9L2701-CCV1)

Prepared & Analyzed: 12/27/19

Chloride	21.0		mg/kg	20.0	105	0-200			
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Calibration Check (P9L2701-CCV2)

Prepared: 12/27/19 Analyzed: 12/28/19

Chloride	21.1		mg/kg	20.0	106	0-200			
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Calibration Check (P9L2701-CCV3)

Prepared: 12/27/19 Analyzed: 12/28/19

Chloride	20.1		mg/kg	20.0	101	0-200			
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Matrix Spike (P9L2701-MS1)

Source: 9L13004-40

Prepared: 12/27/19 Analyzed: 12/28/19

Chloride	1640	5.56	mg/kg dry	556	1160	87.8	80-120		
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Matrix Spike (P9L2701-MS2)

Source: 9L13005-02

Prepared: 12/27/19 Analyzed: 12/28/19

Chloride	1490	11.2	mg/kg dry	1120	350	101	80-120		
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Matrix Spike Dup (P9L2701-MSD1)

Source: 9L13004-40

Prepared: 12/27/19 Analyzed: 12/28/19

Chloride	1670	5.56	mg/kg dry	556	1160	91.8	80-120	1.35	20
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Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L2701 - * DEFAULT PREP *****

Matrix Spike Dup (P9L2701-MSD2)

Source: 9L13005-02

Prepared: 12/27/19 Analyzed: 12/28/19

Chloride	1370	11.2	mg/kg dry	1120	350	91.2	80-120	8.02	20	
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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1304 - TX 1005

LCS (P9L1304-BS1)

Prepared & Analyzed: 12/13/19

C6-C12	902	25.0	mg/kg wet	1000		90.2	75-125			
>C12-C28	966	25.0	"	1000		96.6	75-125			
Surrogate: 1-Chlorooctane	114		"	100		114	70-130			
Surrogate: o-Terphenyl	51.6		"	50.0		103	70-130			

LCS Dup (P9L1304-BSD1)

Prepared & Analyzed: 12/13/19

C6-C12	898	25.0	mg/kg wet	1000		89.8	75-125	0.392	20	
>C12-C28	973	25.0	"	1000		97.3	75-125	0.772	20	
Surrogate: 1-Chlorooctane	114		"	100		114	70-130			
Surrogate: o-Terphenyl	53.0		"	50.0		106	70-130			

Calibration Blank (P9L1304-CCB1)

Prepared & Analyzed: 12/13/19

C6-C12	16.5		mg/kg wet							
>C12-C28	5.00		"							
Surrogate: 1-Chlorooctane	102		"	100		102	70-130			
Surrogate: o-Terphenyl	56.2		"	50.0		112	70-130			

Calibration Blank (P9L1304-CCB2)

Prepared & Analyzed: 12/13/19

C6-C12	14.5		mg/kg wet							
>C12-C28	8.54		"							
Surrogate: 1-Chlorooctane	107		"	100		107	70-130			
Surrogate: o-Terphenyl	62.5		"	50.0		125	70-130			

Calibration Check (P9L1304-CCV1)

Prepared & Analyzed: 12/13/19

C6-C12	465	25.0	mg/kg wet	500		93.0	85-115			
>C12-C28	487	25.0	"	500		97.5	85-115			
Surrogate: 1-Chlorooctane	107		"	100		107	70-130			
Surrogate: o-Terphenyl	55.0		"	50.0		110	70-130			

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1304 - TX 1005

Calibration Check (P9L1304-CCV2)

Prepared & Analyzed: 12/13/19

C6-C12	502	25.0	mg/kg wet	500		100	85-115			
>C12-C28	541	25.0	"	500		108	85-115			
Surrogate: 1-Chlorooctane	115		"	100		115	70-130			
Surrogate: o-Terphenyl	60.8		"	50.0		122	70-130			

Calibration Check (P9L1304-CCV3)

Prepared: 12/13/19 Analyzed: 12/16/19

C6-C12	529	25.0	mg/kg wet	500		106	85-115			
>C12-C28	541	25.0	"	500		108	85-115			
Surrogate: 1-Chlorooctane	107		"	100		107	70-130			
Surrogate: o-Terphenyl	58.2		"	50.0		116	70-130			

Matrix Spike (P9L1304-MS1)

Source: 9L13004-13

Prepared & Analyzed: 12/13/19

C6-C12	1010	27.2	mg/kg dry	1090	21.0	91.0	75-125			
>C12-C28	1130	27.2	"	1090	ND	104	75-125			
Surrogate: 1-Chlorooctane	119		"	109		109	70-130			
Surrogate: o-Terphenyl	60.9		"	54.3		112	70-130			

Matrix Spike Dup (P9L1304-MSD1)

Source: 9L13004-13

Prepared: 12/13/19 Analyzed: 12/14/19

C6-C12	968	27.2	mg/kg dry	1090	21.0	87.2	75-125	4.30	20	
>C12-C28	1070	27.2	"	1090	ND	98.3	75-125	5.47	20	
Surrogate: 1-Chlorooctane	120		"	109		110	70-130			
Surrogate: o-Terphenyl	58.8		"	54.3		108	70-130			

Batch P9L1305 - TX 1005

Blank (P9L1305-BLK1)

Prepared & Analyzed: 12/13/19

C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	97.9		"	100		97.9	70-130			
Surrogate: o-Terphenyl	55.3		"	50.0		111	70-130			

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1305 - TX 1005

LCS (P9L1305-BS1)

Prepared & Analyzed: 12/13/19

C6-C12	932	25.0	mg/kg wet	1000		93.2	75-125			
>C12-C28	1000	25.0	"	1000		100	75-125			
Surrogate: 1-Chlorooctane	102		"	100		102	70-130			
Surrogate: o-Terphenyl	51.7		"	50.0		103	70-130			

LCS Dup (P9L1305-BS1)

Prepared & Analyzed: 12/13/19

C6-C12	929	25.0	mg/kg wet	1000		92.9	75-125	0.369	20	
>C12-C28	994	25.0	"	1000		99.4	75-125	0.736	20	
Surrogate: 1-Chlorooctane	99.7		"	100		99.7	70-130			
Surrogate: o-Terphenyl	53.0		"	50.0		106	70-130			

Calibration Blank (P9L1305-CCB1)

Prepared & Analyzed: 12/13/19

C6-C12	14.1		mg/kg wet							
>C12-C28	15.4		"							
Surrogate: 1-Chlorooctane	104		"	100		104	70-130			
Surrogate: o-Terphenyl	58.8		"	50.0		118	70-130			

Calibration Blank (P9L1305-CCB2)

Prepared & Analyzed: 12/13/19

C6-C12	15.3		mg/kg wet							
>C12-C28	15.8		"							
Surrogate: 1-Chlorooctane	100		"	100		100	70-130			
Surrogate: o-Terphenyl	57.0		"	50.0		114	70-130			

Calibration Check (P9L1305-CCV1)

Prepared & Analyzed: 12/13/19

C6-C12	475	25.0	mg/kg wet	500		95.0	85-115			
>C12-C28	501	25.0	"	500		100	85-115			
Surrogate: 1-Chlorooctane	114		"	100		114	70-130			
Surrogate: o-Terphenyl	53.6		"	50.0		107	70-130			

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1305 - TX 1005

Calibration Check (P9L1305-CCV2)

Prepared & Analyzed: 12/13/19

C6-C12	492	25.0	mg/kg wet	500		98.4	85-115			
>C12-C28	516	25.0	"	500		103	85-115			
Surrogate: 1-Chlorooctane	98.5		"	100		98.5	70-130			
Surrogate: o-Terphenyl	52.8		"	50.0		106	70-130			

Matrix Spike (P9L1305-MS1)

Source: 9L13004-33

Prepared: 12/13/19 Analyzed: 12/14/19

C6-C12	1040	26.6	mg/kg dry	1060	14.6	96.1	75-125			
>C12-C28	1080	26.6	"	1060	24.3	99.2	75-125			
Surrogate: 1-Chlorooctane	102		"	106		95.4	70-130			
Surrogate: o-Terphenyl	52.9		"	53.2		99.4	70-130			

Matrix Spike Dup (P9L1305-MSD1)

Source: 9L13004-33

Prepared: 12/13/19 Analyzed: 12/14/19

C6-C12	1010	26.6	mg/kg dry	1060	14.6	93.9	75-125	2.27	20	
>C12-C28	1060	26.6	"	1060	24.3	97.6	75-125	1.67	20	
Surrogate: 1-Chlorooctane	103		"	106		96.5	70-130			
Surrogate: o-Terphenyl	53.3		"	53.2		100	70-130			

Batch P9L1306 - TX 1005

Blank (P9L1306-BLK1)

Prepared: 12/13/19 Analyzed: 12/14/19

C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	115		"	100		115	70-130			
Surrogate: o-Terphenyl	63.6		"	50.0		127	70-130			

LCS (P9L1306-BS1)

Prepared: 12/13/19 Analyzed: 12/14/19

C6-C12	928	25.0	mg/kg wet	1000		92.8	75-125			
>C12-C28	1010	25.0	"	1000		101	75-125			
Surrogate: 1-Chlorooctane	99.3		"	100		99.3	70-130			
Surrogate: o-Terphenyl	51.9		"	50.0		104	70-130			

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9L1306 - TX 1005										
LCS Dup (P9L1306-BSD1)				Prepared: 12/13/19 Analyzed: 12/14/19						
C6-C12	1010	25.0	mg/kg wet	1000		101	75-125	8.80	20	
>C12-C28	1080	25.0	"	1000		108	75-125	6.79	20	
Surrogate: 1-Chlorooctane	110		"	100		110	70-130			
Surrogate: o-Terphenyl	56.2		"	50.0		112	70-130			
Calibration Blank (P9L1306-CCB1)				Prepared: 12/13/19 Analyzed: 12/14/19						
C6-C12	15.4		mg/kg wet							
>C12-C28	15.7		"							
Surrogate: 1-Chlorooctane	109		"	100		109	70-130			
Surrogate: o-Terphenyl	61.3		"	50.0		123	70-130			
Calibration Blank (P9L1306-CCB2)				Prepared: 12/13/19 Analyzed: 12/14/19						
C6-C12	15.4		mg/kg wet							
>C12-C28	22.7		"							
Surrogate: 1-Chlorooctane	109		"	100		109	70-130			
Surrogate: o-Terphenyl	60.6		"	50.0		121	70-130			
Calibration Check (P9L1306-CCV1)				Prepared: 12/13/19 Analyzed: 12/14/19						
C6-C12	517	25.0	mg/kg wet				85-115			
>C12-C28	546	25.0	"				85-115			
Surrogate: 1-Chlorooctane	105		"	100		105	70-130			
Surrogate: o-Terphenyl	56.2		"	50.0		112	70-130			
Calibration Check (P9L1306-CCV2)				Prepared: 12/13/19 Analyzed: 12/14/19						
C6-C12	644	25.0	mg/kg wet				85-115			
>C12-C28	682	25.0	"				85-115			
Surrogate: 1-Chlorooctane	127		"	100		127	70-130			
Surrogate: o-Terphenyl	68.9		"	50.0		138	70-130			S-GC

Permian Basin Environmental Lab, L.P.

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P.O. Box 50685
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Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1306 - TX 1005

Calibration Check (P9L1306-CCV3)

Prepared: 12/13/19 Analyzed: 12/14/19

C6-C12	696	25.0	mg/kg wet				85-115			
>C12-C28	707	25.0	"				85-115			
Surrogate: 1-Chlorooctane	146		"	100		146	70-130			S-GC1
Surrogate: o-Terphenyl	79.6		"	50.0		159	70-130			S-GC1

Matrix Spike (P9L1306-MS1)

Source: 9L13004-53

Prepared: 12/13/19 Analyzed: 12/14/19

C6-C12	950	25.5	mg/kg dry	1020	14.4	91.7	75-125			
>C12-C28	1010	25.5	"	1020	ND	98.9	75-125			
Surrogate: 1-Chlorooctane	93.0		"	102		91.2	70-130			
Surrogate: o-Terphenyl	46.4		"	51.0		91.0	70-130			

Matrix Spike Dup (P9L1306-MSD1)

Source: 9L13004-53

Prepared: 12/13/19 Analyzed: 12/14/19

C6-C12	914	25.5	mg/kg dry	1020	14.4	88.2	75-125	3.89	20	
>C12-C28	979	25.5	"	1020	ND	96.0	75-125	3.03	20	
Surrogate: 1-Chlorooctane	84.2		"	102		82.5	70-130			
Surrogate: o-Terphenyl	42.9		"	51.0		84.1	70-130			

Batch P9L1606 - TX 1005

Blank (P9L1606-BLK1)

Prepared & Analyzed: 12/16/19

C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	98.1		"	100		98.1	70-130			
Surrogate: o-Terphenyl	54.7		"	50.0		109	70-130			

LCS (P9L1606-BS1)

Prepared & Analyzed: 12/16/19

C6-C12	931	25.0	mg/kg wet	1000		93.1	75-125			
>C12-C28	995	25.0	"	1000		99.5	75-125			
Surrogate: 1-Chlorooctane	101		"	100		101	70-130			
Surrogate: o-Terphenyl	52.4		"	50.0		105	70-130			

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1606 - TX 1005

LCS Dup (P9L1606-BSD1)

Prepared & Analyzed: 12/16/19

C6-C12	948	25.0	mg/kg wet	1000		94.8	75-125	1.85	20	
>C12-C28	1000	25.0	"	1000		100	75-125	0.727	20	
Surrogate: 1-Chlorooctane	114		"	100		114	70-130			
Surrogate: o-Terphenyl	53.6		"	50.0		107	70-130			

Calibration Blank (P9L1606-CCB1)

Prepared & Analyzed: 12/16/19

C6-C12	14.4		mg/kg wet							
>C12-C28	14.5		"							
Surrogate: 1-Chlorooctane	102		"	100		102	70-130			
Surrogate: o-Terphenyl	56.2		"	50.0		112	70-130			

Calibration Blank (P9L1606-CCB2)

Prepared & Analyzed: 12/16/19

C6-C12	9.96		mg/kg wet							
>C12-C28	19.0		"							
Surrogate: 1-Chlorooctane	106		"	100		106	70-130			
Surrogate: o-Terphenyl	59.0		"	50.0		118	70-130			

Calibration Check (P9L1606-CCV1)

Prepared & Analyzed: 12/16/19

C6-C12	431	25.0	mg/kg wet	500		86.1	85-115			
>C12-C28	429	25.0	"	500		85.7	85-115			
Surrogate: 1-Chlorooctane	106		"	100		106	70-130			
Surrogate: o-Terphenyl	50.4		"	50.0		101	70-130			

Calibration Check (P9L1606-CCV2)

Prepared & Analyzed: 12/16/19

C6-C12	441	25.0	mg/kg wet	500		88.2	85-115			
>C12-C28	479	25.0	"	500		95.9	85-115			
Surrogate: 1-Chlorooctane	110		"	100		110	70-130			
Surrogate: o-Terphenyl	52.3		"	50.0		105	70-130			

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1606 - TX 1005

Calibration Check (P9L1606-CCV3)

Prepared: 12/16/19 Analyzed: 12/17/19

C6-C12	447	25.0	mg/kg wet	500		89.4	85-115			
>C12-C28	452	25.0	"	500		90.4	85-115			
Surrogate: 1-Chlorooctane	115		"	100		115	70-130			
Surrogate: o-Terphenyl	53.2		"	50.0		106	70-130			

Duplicate (P9L1606-DUP1)

Source: 9L13008-04

Prepared: 12/16/19 Analyzed: 12/17/19

C6-C12	161	27.5	mg/kg dry		158			1.44	20	
>C12-C28	2500	27.5	"		2320			7.72	20	
Surrogate: 1-Chlorooctane	113		"	110		103	70-130			
Surrogate: o-Terphenyl	61.3		"	54.9		112	70-130			

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Notes and Definitions

S-GC1 Surrogate recovery outside of control limits. A second analysis confirmed the original results..

S-GC Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.

ROI Received on Ice

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

BULK Samples received in Bulk soil containers

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis

RPD Relative Percent Difference

LCS Laboratory Control Spike

MS Matrix Spike

Dup Duplicate

Report Approved By:



Date:

12/30/2019

Brent Barron, Laboratory Director/Technical Director

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.

Project: Cooper Jal 238-Legacy

Fax: (432) 687-0456

P.O. Box 50685

Project Number: 18-0138-01

Midland TX, 79710

Project Manager: Mark Larson

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If you have received this material in error, please notify us immediately at 432-686-7235.

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

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

DATE: 12-13-2019 PAGE 1 OF 2
PO#: LAB WORK ORDER#: 9113004
PROJECT LOCATION OR NAME: COOPER JAY 238
LAI PROJECT #: 18-0138-01 COLLECTOR: EC/DS

COLLECTOR: EC/DS

Page 92 of 95

Received by QCD: 11/22/2022 9:56:08 AM

TRRP report? ☐ Yes ☒ No		S=SOIL W=WATER A-AIR		P=PAINT SL=SLUDGE OT=OTHER	
TIME ZONE: Time zone/State:		PREPARATION			
Field Sample I.D.		Lab #	Date	Time	Matrix
MST		# of Containers			
1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 1.10 1.11 1.12 1.13 1.14 1.15		HCl HNO ₃ H ₂ SO ₄ ☐ NaOH ☐ ICE UNPRESERVED			
TOTAL 15		ANALYSES			
RELINQUISHED BY: (Signature) DATE/TIME		BTEX ☒ MTBE ☐ TPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ GASOLINE MOD 8015 ☒ DIESEL - MOD 8015 ☒ OIL - MOD 8015 ☒ VOC 8260 ☒ SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ 8082 PCBs ☐ TBLP - METALS (RCRA) ☐ TCLP VOC ☐ TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ TOTAL METALS (RCRA) ☐ OTHER LIST ☐ LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ RCI ☐ TOX ☐ FLASHPOINT ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ PH ☐ HEXAVALENT CHROMIUM ☐ EXPLOSIVES ☐ PECTHLORATE ☐ CHLORIDE ☒ ANIONS ☐ ALKALINITY ☐			
RELINQUISHED BY: (Signature) DATE/TIME		FIELD NOTES			
RELINQUISHED BY: (Signature) DATE/TIME		TURN AROUND TIME NORMAL ☒ 1 DAY ☐ 2 DAY ☒ OTHER ☐			
RELINQUISHED BY: (Signature) DATE/TIME		LABORATORY USE ONLY: RECEIVING TEMP: ☐ BROKEN ☐ INTACT ☐ NOT USED CUSTODY SEALS - ☐ CARRIER BILL # ☐ HAND DELIVERED			

CHAIN-OF-CUSTOMERS

Varson & Associates, Inc.
Environmental Consultants

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

Data Reported to:

DATE: 12-13-2019 PAGE 2 OF 2
PO#: LAB WORK ORDER#: 9113004
PROJECT LOCATION OR NAME: Cooper Jai 238
LAI PROJECT #: 18-0138-01 COLLECTOR: EC1 D5

Page 93 of 95

[illegible]

DATE: 12/3/04 PAGE 2 OF 2
PO#: _____ LAB WORK ORDER#: 9113004
PROJECT LOCATION OR NAME: COOPER JAIL 238
LAI PROJECT #: 18-0138-01 COLLECTOR: EC/105

2019
CHAIN-OF-CUSTODY
DATE: 12-13-19
PAGE 3 OF 4

Page 94 of 95

0844
N₀

Received by UCID: 11/22/2022 9:56:08 AM

TRRP report? ☐ Yes ☒ No TIME ZONE: <u>MST</u> Time zone reference:		S=SOIL W=WATER A=AIR		P=PAINT SL=SLUDGE OT=OTHER	
Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers
5.13	31	12/19	13:40	S	1
5.14	32		13:39		
5.15	33		13:38		
5.16	34		13:36		
5.17	35		13:35		
5.18	36		13:34		
5.19	37		13:23		
5.20	38		13:22		
5.21	39		13:21		
5.22	40		13:20		
5.23	41		13:18		
5.24	42		13:17		
6.1	43		14:09		
6.2	44		14:10		
6.3	45		14:11		
TOTAL <u>15</u>					
RELINQUISHED BY: (Signature) <u>Rachel Davis</u>		DATE/TIME <u>12-13-19 / 9:31</u>		RECEIVED BY: (Signature) <u>John D. Duce</u>	
RELINQUISHED BY: (Signature)		DATE/TIME		RECEIVED BY: (Signature)	
RELINQUISHED BY: (Signature)		DATE/TIME		RECEIVED BY: (Signature)	
LABORATORY: <u>DBEL</u>					

HCl HNO ₃ H ₂ SO ₄ ☐ NaOH ☐ ICE UNPRESERVED		ANALYSES BTEX ☒ MTBE ☐ TPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ GASOLINE MOD 8015 ☒ DIESEL - MOD 8015 ☒ OIL - MOD 8015 ☒ VOC 8260 ☒ SVOC 8270 ☐ PAH 8270 ☐ HOPPAH ☐ 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ 8082 PCBS ☐ TELP - METALS (RCRA) ☐ TELP VOC ☐ TELP - PEST ☐ HERB ☐ Semi-VOC ☐ TOTAL METALS (RCRA) ☐ OTHER LIST ☐ LEAD - TOTAL ☐ D.W. 200.8 ☐ TELP ☐ RCI ☐ TOX ☐ FLASHPOINT ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ PH ☐ HEXAVALENT CHROMIUM ☐ EXPLOSIVES ☒ PECTHLORATE ☐ CHLORIDES ☒ ANIONS ☐ ALKALINITY ☐	
--	--	--	--

TURN AROUND TIME NORMAL ☒ 1 DAY ☐ 2 DAY ☒ AC OTHER ☐	LABORATORY USE ONLY: RECEIVING TEMP: <u>-47</u> THERM#: <u>CF-1</u> CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED ☐ CARRIER BILL # <u>12</u> ☐ HAND DELIVERED
---	---

FIELD NOTES

Push CI-

Push CI-

Push CI-

Varson & Associates, Inc.
Environmental Consultants

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

Data Reported to:

DATE: 12-13-2019 PAGE 4 OF 4
PO#: LAB WORK ORDER# 913004
PROJECT LOCATION OR NAME: COFFER DAM 1238
LAI PROJECT #: 18-038-01 COLLECTOR: EC/DS

CHAIN-OF-CUSTODY

№ 0845

Page 95 of 95

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION				ANALYSES	FIELD NOTES	
						HCl	HNO ₃	H ₂ SO ₄ ☐ NaOH ☐	ICE			UNPRESERVED
G.4	46	12-12-19	14:12	S	1							rushci-
G.5	47	12-12-19	14:13									
G.6	48	12-12-19	14:14									
G.7	49	12-12-19	14:15									
G.8	50	12-12-19	14:16									
G.9	51	12-12-19	14:17									
G.10	52	12-12-19	14:18									
G.11	53	12-12-19	14:19									
G.12	54	12-12-19	14:20									
G.13	55	12-12-19	14:21									
G.14	56	12-12-19	14:22									
G.15	57	12-12-19	14:23									
G.16	58	12-12-19	14:24									
G.17	59	12-12-19	14:25									
G.18	60	12-12-19	14:26									
TOTAL	15											

RELINQUISHED BY: (Signature) <u>Rushci-</u>	DATE/TIME <u>12-13-19 / 9:54</u>	RECEIVED BY: (Signature) <u>[Signature]</u>	TURN AROUND TIME NORMAL ☐ 1 DAY ☐ 2 DAY ☒ 4 DAY ☐ OTHER ☐
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	LABORATORY USE ONLY: RECEIVING TEMP: <u>4.7</u> - <u>3.7</u> THERM#: <u>0541</u>
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
LABORATORY: <u>JBEL</u>			☐ CARRIER BILL # ☐ HAND DELIVERED

**PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701**



Analytical Report

Prepared for:

Mark Larson
Larson & Associates, Inc.
P.O. Box 50685
Midland, TX 79710

Project: Cooper Jal 238-Legacy

Project Number: 18-0138-01

Location: NM

Lab Order Number: 9L16004



NELAP/TCEQ # T104704516-17-8

Report Date: 12/28/19

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SP-12.1	9L16004-01	Soil	12/12/19 14:40	12-16-2019 12:00
SP-12.2	9L16004-02	Soil	12/12/19 14:41	12-16-2019 12:00
SP-12.3	9L16004-03	Soil	12/12/19 14:42	12-16-2019 12:00
SP-12.4	9L16004-04	Soil	12/12/19 14:43	12-16-2019 12:00
SP-12.5	9L16004-05	Soil	12/12/19 14:44	12-16-2019 12:00
SP-13.1	9L16004-06	Soil	12/12/19 14:45	12-16-2019 12:00

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

SP-12.1
9L16004-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9L1805	12/18/19	12/18/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9L1805	12/18/19	12/18/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9L1805	12/18/19	12/18/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9L1805	12/18/19	12/18/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9L1805	12/18/19	12/18/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		99.7 %		75-125	P9L1805	12/18/19	12/18/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		93.1 %		75-125	P9L1805	12/18/19	12/18/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	14.2	1.01	mg/kg dry	1	P9L1610	12/16/19	12/17/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9L1701	12/17/19	12/17/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9L1702	12/17/19	12/17/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9L1702	12/17/19	12/17/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9L1702	12/17/19	12/17/19	TPH 8015M	
Surrogate: 1-Chlorooctane		103 %		70-130	P9L1702	12/17/19	12/17/19	TPH 8015M	
Surrogate: o-Terphenyl		115 %		70-130	P9L1702	12/17/19	12/17/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	12/17/19	12/17/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

SP-12.2
9L16004-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00102	mg/kg dry	1	P9L1805	12/18/19	12/18/19	EPA 8021B	
Toluene	ND	0.00102	mg/kg dry	1	P9L1805	12/18/19	12/18/19	EPA 8021B	
Ethylbenzene	ND	0.00102	mg/kg dry	1	P9L1805	12/18/19	12/18/19	EPA 8021B	
Xylene (p/m)	ND	0.00204	mg/kg dry	1	P9L1805	12/18/19	12/18/19	EPA 8021B	
Xylene (o)	ND	0.00102	mg/kg dry	1	P9L1805	12/18/19	12/18/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		96.5 %	75-125		P9L1805	12/18/19	12/18/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		105 %	75-125		P9L1805	12/18/19	12/18/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	46.2	1.02	mg/kg dry	1	P9L1610	12/16/19	12/17/19	EPA 300.0	
% Moisture	2.0	0.1	%	1	P9L1701	12/17/19	12/17/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.5	mg/kg dry	1	P9L1702	12/17/19	12/17/19	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P9L1702	12/17/19	12/17/19	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P9L1702	12/17/19	12/17/19	TPH 8015M	
Surrogate: 1-Chlorooctane		103 %	70-130		P9L1702	12/17/19	12/17/19	TPH 8015M	
Surrogate: o-Terphenyl		117 %	70-130		P9L1702	12/17/19	12/17/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	12/17/19	12/17/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

SP-12.3
9L16004-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Toluene	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Ethylbenzene	ND	0.00200	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Xylene (p/m)	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Xylene (o)	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		113 %	75-125		P9L1907	12/19/19	12/20/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		101 %	75-125		P9L1907	12/19/19	12/20/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	12.5	1.01	mg/kg dry	1	P9L1610	12/16/19	12/17/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9L1701	12/17/19	12/17/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9L1702	12/17/19	12/17/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9L1702	12/17/19	12/17/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9L1702	12/17/19	12/17/19	TPH 8015M	
Surrogate: 1-Chlorooctane		104 %	70-130		P9L1702	12/17/19	12/17/19	TPH 8015M	
Surrogate: o-Terphenyl		119 %	70-130		P9L1702	12/17/19	12/17/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	12/17/19	12/17/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

SP-12.4
9L16004-04 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00105	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Toluene	ND	0.00105	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Ethylbenzene	ND	0.00105	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (p/m)	ND	0.00211	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (o)	ND	0.00105	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		106 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		97.9 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	123	1.05	mg/kg dry	1	P9L1610	12/16/19	12/17/19	EPA 300.0	
% Moisture	5.0	0.1	%	1	P9L1701	12/17/19	12/17/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.3	mg/kg dry	1	P9L1702	12/17/19	12/17/19	TPH 8015M	
>C12-C28	ND	26.3	mg/kg dry	1	P9L1702	12/17/19	12/17/19	TPH 8015M	
>C28-C35	ND	26.3	mg/kg dry	1	P9L1702	12/17/19	12/17/19	TPH 8015M	
Surrogate: 1-Chlorooctane		98.2 %	70-130		P9L1702	12/17/19	12/17/19	TPH 8015M	
Surrogate: o-Terphenyl		112 %	70-130		P9L1702	12/17/19	12/17/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.3	mg/kg dry	1	[CALC]	12/17/19	12/17/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

SP-12.5
9L16004-05 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		99.8 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		109 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	51.2	1.01	mg/kg dry	1	P9L1610	12/16/19	12/17/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9L1701	12/17/19	12/17/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9L1702	12/17/19	12/17/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9L1702	12/17/19	12/17/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9L1702	12/17/19	12/17/19	TPH 8015M	
Surrogate: 1-Chlorooctane		98.8 %	70-130		P9L1702	12/17/19	12/17/19	TPH 8015M	
Surrogate: o-Terphenyl		113 %	70-130		P9L1702	12/17/19	12/17/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	12/17/19	12/17/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

SP-13.1
9L16004-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00102	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Toluene	ND	0.00102	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Ethylbenzene	ND	0.00102	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (p/m)	ND	0.00204	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (o)	ND	0.00102	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		110 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		101 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	12.0	1.02	mg/kg dry	1	P9L1610	12/16/19	12/17/19	EPA 300.0	
% Moisture	2.0	0.1	%	1	P9L1701	12/17/19	12/17/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.5	mg/kg dry	1	P9L1702	12/17/19	12/17/19	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P9L1702	12/17/19	12/17/19	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P9L1702	12/17/19	12/17/19	TPH 8015M	
Surrogate: 1-Chlorooctane		100 %	70-130		P9L1702	12/17/19	12/17/19	TPH 8015M	
Surrogate: o-Terphenyl		115 %	70-130		P9L1702	12/17/19	12/17/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	12/17/19	12/17/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1805 - General Preparation (GC)

Blank (P9L1805-BLK1)

Prepared & Analyzed: 12/18/19

Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 1,4-Difluorobenzene	0.115		"	0.120		95.6	75-125			
Surrogate: 4-Bromofluorobenzene	0.125		"	0.120		105	75-125			

LCS (P9L1805-BS1)

Prepared & Analyzed: 12/18/19

Benzene	0.0920	0.00100	mg/kg wet	0.100		92.0	70-130			
Toluene	0.109	0.00100	"	0.100		109	70-130			
Ethylbenzene	0.106	0.00100	"	0.100		106	70-130			
Xylene (p/m)	0.230	0.00200	"	0.200		115	70-130			
Xylene (o)	0.112	0.00100	"	0.100		112	70-130			
Surrogate: 4-Bromofluorobenzene	0.132		"	0.120		110	75-125			
Surrogate: 1,4-Difluorobenzene	0.121		"	0.120		101	75-125			

LCS Dup (P9L1805-BSD1)

Prepared & Analyzed: 12/18/19

Benzene	0.0945	0.00100	mg/kg wet	0.100		94.5	70-130	2.69	20	
Toluene	0.111	0.00100	"	0.100		111	70-130	1.78	20	
Ethylbenzene	0.111	0.00100	"	0.100		111	70-130	5.23	20	
Xylene (p/m)	0.225	0.00200	"	0.200		113	70-130	1.89	20	
Xylene (o)	0.102	0.00100	"	0.100		102	70-130	9.07	20	
Surrogate: 1,4-Difluorobenzene	0.120		"	0.120		99.8	75-125			
Surrogate: 4-Bromofluorobenzene	0.123		"	0.120		102	75-125			

Calibration Blank (P9L1805-CCB1)

Prepared & Analyzed: 12/18/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 1,4-Difluorobenzene	0.118		"	0.120		98.3	75-125			
Surrogate: 4-Bromofluorobenzene	0.123		"	0.120		102	75-125			

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1805 - General Preparation (GC)

Calibration Blank (P9L1805-CCB2)

Prepared & Analyzed: 12/18/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 1,4-Difluorobenzene	0.117		"	0.120		97.8	75-125			
Surrogate: 4-Bromofluorobenzene	0.125		"	0.120		104	75-125			

Calibration Blank (P9L1805-CCB3)

Prepared & Analyzed: 12/18/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 1,4-Difluorobenzene	0.119		"	0.120		98.8	75-125			
Surrogate: 4-Bromofluorobenzene	0.134		"	0.120		112	75-125			

Calibration Check (P9L1805-CCV1)

Prepared & Analyzed: 12/18/19

Benzene	0.101	0.00100	mg/kg wet	0.100		101	80-120			
Toluene	0.112	0.00100	"	0.100		112	80-120			
Ethylbenzene	0.112	0.00100	"	0.100		112	80-120			
Xylene (p/m)	0.237	0.00200	"	0.200		118	80-120			
Xylene (o)	0.118	0.00100	"	0.100		118	80-120			
Surrogate: 1,4-Difluorobenzene	0.114		"	0.120		95.2	75-125			
Surrogate: 4-Bromofluorobenzene	0.119		"	0.120		98.9	75-125			

Calibration Check (P9L1805-CCV2)

Prepared & Analyzed: 12/18/19

Benzene	0.0941	0.00100	mg/kg wet	0.100		94.1	80-120			
Toluene	0.113	0.00100	"	0.100		113	80-120			
Ethylbenzene	0.111	0.00100	"	0.100		111	80-120			
Xylene (p/m)	0.229	0.00200	"	0.200		114	80-120			
Xylene (o)	0.117	0.00100	"	0.100		117	80-120			
Surrogate: 4-Bromofluorobenzene	0.133		"	0.120		111	75-125			
Surrogate: 1,4-Difluorobenzene	0.123		"	0.120		102	75-125			

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1805 - General Preparation (GC)

Calibration Check (P9L1805-CCV3)		Prepared & Analyzed: 12/18/19								
Benzene	0.105	0.00100	mg/kg wet	0.100		105	80-120			
Toluene	0.119	0.00100	"	0.100		119	80-120			
Ethylbenzene	0.118	0.00100	"	0.100		118	80-120			
Xylene (p/m)	0.232	0.00200	"	0.200		116	80-120			
Xylene (o)	0.111	0.00100	"	0.100		111	80-120			
Surrogate: 4-Bromofluorobenzene	0.132		"	0.120		110	75-125			
Surrogate: 1,4-Difluorobenzene	0.129		"	0.120		107	75-125			

Matrix Spike (P9L1805-MS1)		Source: 9L16002-01 Prepared & Analyzed: 12/18/19								
Benzene	0.0876	0.00102	mg/kg dry	0.102	ND	85.8	80-120			
Toluene	0.0949	0.00102	"	0.102	ND	93.1	80-120			
Ethylbenzene	0.0999	0.00102	"	0.102	ND	97.9	80-120			
Xylene (p/m)	0.168	0.00204	"	0.204	ND	82.1	80-120			
Xylene (o)	0.0986	0.00102	"	0.102	ND	96.7	80-120			
Surrogate: 1,4-Difluorobenzene	0.130		"	0.122		106	75-125			
Surrogate: 4-Bromofluorobenzene	0.237		"	0.122		194	75-125			S-GC

Matrix Spike Dup (P9L1805-MSD1)		Source: 9L16002-01 Prepared & Analyzed: 12/18/19								
Benzene	0.0858	0.00102	mg/kg dry	0.102	ND	84.1	80-120	2.06	20	
Toluene	0.0922	0.00102	"	0.102	ND	90.4	80-120	2.89	20	
Ethylbenzene	0.0971	0.00102	"	0.102	ND	95.1	80-120	2.84	20	
Xylene (p/m)	0.162	0.00204	"	0.204	ND	79.5	80-120	3.30	20	QM-07
Xylene (o)	0.0897	0.00102	"	0.102	ND	87.9	80-120	9.53	20	
Surrogate: 1,4-Difluorobenzene	0.129		"	0.122		105	75-125			
Surrogate: 4-Bromofluorobenzene	0.129		"	0.122		105	75-125			

Batch P9L1806 - General Preparation (GC)

Blank (P9L1806-BLK1)		Prepared: 12/18/19 Analyzed: 12/19/19								
Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 1,4-Difluorobenzene	0.115		"	0.120		96.0	75-125			
Surrogate: 4-Bromofluorobenzene	0.125		"	0.120		104	75-125			

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1806 - General Preparation (GC)

LCS (P9L1806-BS1)

Prepared: 12/18/19 Analyzed: 12/19/19

Benzene	0.106	0.00100	mg/kg wet	0.100		106	70-130			
Toluene	0.118	0.00100	"	0.100		118	70-130			
Ethylbenzene	0.115	0.00100	"	0.100		115	70-130			
Xylene (p/m)	0.236	0.00200	"	0.200		118	70-130			
Xylene (o)	0.115	0.00100	"	0.100		115	70-130			
Surrogate: 4-Bromofluorobenzene	0.137		"	0.120		114	75-125			
Surrogate: 1,4-Difluorobenzene	0.133		"	0.120		111	75-125			

LCS Dup (P9L1806-BSD1)

Prepared: 12/18/19 Analyzed: 12/19/19

Benzene	0.112	0.00100	mg/kg wet	0.100		112	70-130	5.14	20	
Toluene	0.119	0.00100	"	0.100		119	70-130	0.728	20	
Ethylbenzene	0.109	0.00100	"	0.100		109	70-130	5.88	20	
Xylene (p/m)	0.233	0.00200	"	0.200		116	70-130	1.21	20	
Xylene (o)	0.120	0.00100	"	0.100		120	70-130	3.83	20	
Surrogate: 4-Bromofluorobenzene	0.125		"	0.120		105	75-125			
Surrogate: 1,4-Difluorobenzene	0.129		"	0.120		108	75-125			

Calibration Blank (P9L1806-CCB1)

Prepared & Analyzed: 12/18/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	0.134		"	0.120		112	75-125			
Surrogate: 1,4-Difluorobenzene	0.119		"	0.120		98.8	75-125			

Calibration Blank (P9L1806-CCB2)

Prepared: 12/18/19 Analyzed: 12/19/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 1,4-Difluorobenzene	0.120		"	0.120		100	75-125			
Surrogate: 4-Bromofluorobenzene	0.129		"	0.120		108	75-125			

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1806 - General Preparation (GC)

Calibration Check (P9L1806-CCV1)

Prepared & Analyzed: 12/18/19

Benzene	0.105	0.00100	mg/kg wet	0.100		105	80-120			
Toluene	0.119	0.00100	"	0.100		119	80-120			
Ethylbenzene	0.118	0.00100	"	0.100		118	80-120			
Xylene (p/m)	0.232	0.00200	"	0.200		116	80-120			
Xylene (o)	0.111	0.00100	"	0.100		111	80-120			
Surrogate: 1,4-Difluorobenzene	0.129		"	0.120		107	75-125			
Surrogate: 4-Bromofluorobenzene	0.132		"	0.120		110	75-125			

Calibration Check (P9L1806-CCV2)

Prepared: 12/18/19 Analyzed: 12/19/19

Benzene	0.108	0.00100	mg/kg wet	0.100		108	80-120			
Toluene	0.120	0.00100	"	0.100		120	80-120			
Ethylbenzene	0.119	0.00100	"	0.100		119	80-120			
Xylene (p/m)	0.237	0.00200	"	0.200		119	80-120			
Xylene (o)	0.120	0.00100	"	0.100		120	80-120			
Surrogate: 4-Bromofluorobenzene	0.135		"	0.120		112	75-125			
Surrogate: 1,4-Difluorobenzene	0.136		"	0.120		113	75-125			

Calibration Check (P9L1806-CCV3)

Prepared: 12/18/19 Analyzed: 12/19/19

Benzene	0.104	0.00100	mg/kg wet	0.100		104	80-120			
Toluene	0.119	0.00100	"	0.100		119	80-120			
Ethylbenzene	0.119	0.00100	"	0.100		119	80-120			
Xylene (p/m)	0.230	0.00200	"	0.200		115	80-120			
Xylene (o)	0.113	0.00100	"	0.100		113	80-120			
Surrogate: 1,4-Difluorobenzene	0.122		"	0.120		102	75-125			
Surrogate: 4-Bromofluorobenzene	0.134		"	0.120		112	75-125			

Matrix Spike (P9L1806-MS1)

Source: 9L18001-01

Prepared: 12/18/19 Analyzed: 12/19/19

Benzene	0.0817	0.00101	mg/kg dry	0.101	ND	80.9	80-120			
Toluene	0.0952	0.00101	"	0.101	0.00181	92.5	80-120			
Ethylbenzene	0.105	0.00101	"	0.101	ND	104	80-120			
Xylene (p/m)	0.177	0.00202	"	0.202	ND	87.8	80-120			
Xylene (o)	0.0827	0.00101	"	0.101	ND	81.9	80-120			
Surrogate: 1,4-Difluorobenzene	0.131		"	0.121		108	75-125			
Surrogate: 4-Bromofluorobenzene	0.136		"	0.121		113	75-125			

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1806 - General Preparation (GC)

Matrix Spike Dup (P9L1806-MSD1)		Source: 9L18001-01		Prepared: 12/18/19		Analyzed: 12/19/19				
Benzene	0.0819	0.00101	mg/kg dry	0.101	ND	81.1	80-120	0.222	20	
Toluene	0.0946	0.00101	"	0.101	0.00181	91.8	80-120	0.705	20	
Ethylbenzene	0.108	0.00101	"	0.101	ND	106	80-120	2.25	20	
Xylene (p/m)	0.182	0.00202	"	0.202	ND	89.9	80-120	2.34	20	
Xylene (o)	0.0872	0.00101	"	0.101	ND	86.4	80-120	5.34	20	
Surrogate: 4-Bromofluorobenzene	0.141		"	0.121		117	75-125			
Surrogate: 1,4-Difluorobenzene	0.139		"	0.121		115	75-125			

Batch P9L1907 - General Preparation (GC)

Blank (P9L1907-BLK1)				Prepared: 12/19/19		Analyzed: 12/20/19				
Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00200	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 4-Bromofluorobenzene	0.126		"	0.120		105	75-125			
Surrogate: 1,4-Difluorobenzene	0.114		"	0.120		95.3	75-125			

LCS (P9L1907-BS1)				Prepared: 12/19/19		Analyzed: 12/20/19				
Benzene	0.104	0.00100	mg/kg wet	0.100		104	80-120			
Toluene	0.119	0.00100	"	0.100		119	80-120			
Ethylbenzene	0.120	0.00200	"	0.100		120	80-120			
Xylene (p/m)	0.236	0.00100	"	0.200		118	80-120			
Xylene (o)	0.116	0.00100	"	0.100		116	80-120			
Surrogate: 4-Bromofluorobenzene	0.124		"	0.120		103	75-125			
Surrogate: 1,4-Difluorobenzene	0.119		"	0.120		99.4	75-125			

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1907 - General Preparation (GC)

LCS Dup (P9L1907-BSD1)

Prepared: 12/19/19 Analyzed: 12/20/19

Benzene	0.104	0.00100	mg/kg wet	0.100		104	80-120	0.433	20	
Toluene	0.118	0.00100	"	0.100		118	80-120	0.656	20	
Ethylbenzene	0.119	0.00200	"	0.100		119	80-120	0.798	20	
Xylene (p/m)	0.238	0.00100	"	0.200		119	80-120	0.836	20	
Xylene (o)	0.114	0.00100	"	0.100		114	80-120	2.15	20	
Surrogate: 4-Bromofluorobenzene	0.115		"	0.120		96.1	75-125			
Surrogate: 1,4-Difluorobenzene	0.115		"	0.120		95.9	75-125			

Calibration Blank (P9L1907-CCB2)

Prepared: 12/19/19 Analyzed: 12/20/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	0.135		"	0.120		112	75-125			
Surrogate: 1,4-Difluorobenzene	0.127		"	0.120		106	75-125			

Calibration Check (P9L1907-CCV2)

Prepared: 12/19/19 Analyzed: 12/20/19

Benzene	0.0940	0.100	mg/kg wet	0.100		94.0	80-120			
Toluene	0.101	0.100	"	0.100		101	80-120			
Ethylbenzene	0.0947	0.200	"	0.100		94.7	80-120			
Xylene (p/m)	0.196	0.100	"	0.200		97.9	80-120			
Xylene (o)	0.100	0.100	"	0.100		100	80-120			
Surrogate: 4-Bromofluorobenzene	0.136		"	0.120		113	75-125			
Surrogate: 1,4-Difluorobenzene	0.136		"	0.120		113	75-125			

Calibration Check (P9L1907-CCV3)

Prepared: 12/19/19 Analyzed: 12/22/19

Benzene	0.0816	0.00100	mg/kg wet	0.100		81.6	80-120			
Toluene	0.0924	0.00100	"	0.100		92.4	80-120			
Ethylbenzene	0.0942	0.00200	"	0.100		94.2	80-120			
Xylene (p/m)	0.189	0.00100	"	0.200		94.3	80-120			
Xylene (o)	0.0999	0.00100	"	0.100		99.9	80-120			
Surrogate: 4-Bromofluorobenzene	0.141		"	0.120		118	75-125			
Surrogate: 1,4-Difluorobenzene	0.132		"	0.120		110	75-125			

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1907 - General Preparation (GC)

Matrix Spike (P9L1907-MS1)		Source: 9L18001-10		Prepared: 12/19/19		Analyzed: 12/22/19				
Benzene	0.0638	0.00100	mg/kg dry	0.109	ND	58.7	80-120			QM-07
Toluene	0.0411	0.00100	"	0.109	ND	37.8	80-120			QM-07
Ethylbenzene	0.0324	0.00200	"	0.109	ND	29.8	80-120			QM-07
Xylene (p/m)	0.0151	0.00100	"	0.217	ND	6.93	80-120			QM-07
Xylene (o)	0.0579	0.00100	"	0.109	ND	53.2	80-120			QM-07
Surrogate: 4-Bromofluorobenzene	0.164		"	0.130		126	75-125			S-H11
Surrogate: 1,4-Difluorobenzene	0.146		"	0.130		112	75-125			

Matrix Spike Dup (P9L1907-MSD1)		Source: 9L18001-10		Prepared: 12/19/19		Analyzed: 12/22/19				
Benzene	0.0722	0.00100	mg/kg dry	0.109	ND	66.4	80-120	12.4	20	QM-07
Toluene	0.0293	0.00100	"	0.109	ND	26.9	80-120	33.7	20	QM-07
Ethylbenzene	0.0438	0.00200	"	0.109	ND	40.3	80-120	29.9	20	QM-07
Xylene (p/m)	ND	0.00100	"	0.217	ND		80-120		20	QM-07
Xylene (o)	0.0491	0.00100	"	0.109	ND	45.1	80-120	16.5	20	QM-07
Surrogate: 4-Bromofluorobenzene	0.153		"	0.130		117	75-125			
Surrogate: 1,4-Difluorobenzene	0.145		"	0.130		111	75-125			

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1610 - * DEFAULT PREP *****

Blank (P9L1610-BLK1)				Prepared & Analyzed: 12/16/19						
Chloride	ND	1.00	mg/kg wet							
LCS (P9L1610-BS1)				Prepared & Analyzed: 12/16/19						
Chloride	396	1.00	mg/kg wet	400		98.9	80-120			
LCS Dup (P9L1610-BSD1)				Prepared & Analyzed: 12/16/19						
Chloride	401	1.00	mg/kg wet	400		100	80-120	1.45	20	
Calibration Blank (P9L1610-CCB1)				Prepared & Analyzed: 12/16/19						
Chloride	0.00		mg/kg wet							
Calibration Blank (P9L1610-CCB2)				Prepared: 12/16/19 Analyzed: 12/17/19						
Chloride	0.00		mg/kg wet							
Calibration Check (P9L1610-CCV1)				Prepared & Analyzed: 12/16/19						
Chloride	18.5		mg/kg	20.0		92.5	0-200			
Calibration Check (P9L1610-CCV2)				Prepared: 12/16/19 Analyzed: 12/17/19						
Chloride	18.9		mg/kg	20.0		94.3	0-200			
Matrix Spike (P9L1610-MS1)				Source: 9L05002-10 Prepared: 12/16/19 Analyzed: 12/17/19						
Chloride	5200	11.6	mg/kg dry	1160	3880	114	80-120			
Matrix Spike (P9L1610-MS2)				Source: 9L16005-04 Prepared: 12/16/19 Analyzed: 12/17/19						
Chloride	751	1.14	mg/kg dry	568	249	88.4	80-120			
Matrix Spike Dup (P9L1610-MSD1)				Source: 9L05002-10 Prepared: 12/16/19 Analyzed: 12/17/19						
Chloride	5090	11.6	mg/kg dry	1160	3880	104	80-120	2.20	20	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1610 - * DEFAULT PREP *****

Matrix Spike Dup (P9L1610-MSD2)	Source: 9L16005-04			Prepared: 12/16/19 Analyzed: 12/17/19						
Chloride	672	1.14	mg/kg dry	568	249	74.6	80-120	11.0	20	

Batch P9L1701 - * DEFAULT PREP *****

Blank (P9L1701-BLK1)	Prepared & Analyzed: 12/17/19									
% Moisture	ND	0.1	%							

Duplicate (P9L1701-DUP1)	Source: 9L16004-05			Prepared & Analyzed: 12/17/19						
% Moisture	12.0	0.1	%		1.0			169	20	

Duplicate (P9L1701-DUP2)	Source: 9L16005-06			Prepared & Analyzed: 12/17/19						
% Moisture	9.0	0.1	%		10.0			10.5	20	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1702 - TX 1005

Blank (P9L1702-BLK1)

Prepared & Analyzed: 12/17/19

C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	84.0		"	100		84.0	70-130			
Surrogate: o-Terphenyl	47.4		"	50.0		94.8	70-130			

LCS (P9L1702-BS1)

Prepared & Analyzed: 12/17/19

C6-C12	814	25.0	mg/kg wet	1000		81.4	75-125			
>C12-C28	878	25.0	"	1000		87.8	75-125			
Surrogate: 1-Chlorooctane	83.2		"	100		83.2	70-130			
Surrogate: o-Terphenyl	43.2		"	50.0		86.4	70-130			

Calibration Blank (P9L1702-CCB2)

Prepared & Analyzed: 12/17/19

C6-C12	15.5		mg/kg wet							
>C12-C28	8.08		"							
Surrogate: 1-Chlorooctane	88.0		"	100		88.0	70-130			
Surrogate: o-Terphenyl	49.0		"	50.0		98.0	70-130			

Calibration Check (P9L1702-CCV1)

Prepared & Analyzed: 12/17/19

C6-C12	451	25.0	mg/kg wet	500		90.2	85-115			
>C12-C28	446	25.0	"	500		89.3	85-115			
Surrogate: 1-Chlorooctane	98.5		"	100		98.5	70-130			
Surrogate: o-Terphenyl	46.2		"	50.0		92.4	70-130			

Calibration Check (P9L1702-CCV2)

Prepared & Analyzed: 12/17/19

C6-C12	450	25.0	mg/kg wet	500		90.0	85-115			
>C12-C28	457	25.0	"	500		91.5	85-115			
Surrogate: 1-Chlorooctane	100		"	100		100	70-130			
Surrogate: o-Terphenyl	46.7		"	50.0		93.4	70-130			

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1702 - TX 1005

Calibration Check (P9L1702-CCV3)

Prepared & Analyzed: 12/17/19

C6-C12	428	25.0	mg/kg wet	500		85.6	85-115			
>C12-C28	467	25.0	"	500		93.3	85-115			
Surrogate: 1-Chlorooctane	103		"	100		103	70-130			
Surrogate: o-Terphenyl	47.4		"	50.0		94.8	70-130			

Duplicate (P9L1702-DUP1)

Source: 9L16007-02

Prepared & Analyzed: 12/17/19

C6-C12	11.6	28.1	mg/kg dry		12.4			7.02	20	
>C12-C28	104	28.1	"		76.1			30.6	20	
Surrogate: 1-Chlorooctane	116		"	112		103	70-130			
Surrogate: o-Terphenyl	67.6		"	56.2		120	70-130			

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Notes and Definitions

S-H11 Both Surrogate recoveries were above the acceptance limits, however, the sample the sample was non-detect for the compounds of interest.

S-GC Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

BULK Samples received in Bulk soil containers

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis

RPD Relative Percent Difference

LCS Laboratory Control Spike

MS Matrix Spike

Dup Duplicate

Report Approved By:



Date:

12/28/2019

Brent Barron, Laboratory Director/Technical Director

This material is intended only for the use of the individual (s) or entity to whom it is addressed, and may contain information that is privileged and confidential.

If you have received this material in error, please notify us immediately at 432-686-7235.

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.

Project: Cooper Jal 238-Legacy

Fax: (432) 687-0456

P.O. Box 50685

Project Number: 18-0138-01

Midland TX, 79710

Project Manager: Mark Larson

Permian Basin Environmental Lab, L.P.

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N^o 0847

Varson & Associates, Inc.
Environmental Consultants

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

Data Reported to:

DATE: 12/16/2019 PAGE 1 OF 1
PO#: _____ LAB WORK ORDER#: 9116004
PROJECT LOCATION OR NAME: CORP Y1 238
LA PROJECT #: 18-0138-01 COLLECTOR: EC/AS

CHAIN-OF-CUSTODY

Page 23 of 23

TRRP report?
☐ Yes ☒ No

S=SOIL
W=WATER
A=AIR
P=PAINT
SL=SLUDGE
OT=OTHER

TIME ZONE:
Time zone/State:

MS-T

Field
Sample I.D.

Lab #

Date

Time

Matrix

of Containers

HCl

HNO₃H₂SO₄ ☐ NaOH ☐

ICE

UNPRESERVED

ANALYSES

BTEX/MTBE ☐
TRPH 418.1 ☐ TPH 1005 ☐ TPH 1008 ☐
GASOLINE MOD 8015 ☒
DIESEL MOD 8015 ☒
OIL - MOD 8015 ☒
VOC 8260 ☒
SVOC 8270 ☒
8081 PESTICIDES ☒ PAH 8270 ☒ HOLDPAH ☐
8082 PESTICIDES ☒ 8151 HERBICIDES ☐
TBLP - METALS (RCRA) ☐ TOLP VOC ☐
TCLP - METALS (RCRA) ☐ Semi-VOC ☐
TCLP - PEST ☐ HERB ☐ OTHER LIST ☐
TOTAL METALS (RCRA) ☐ D.W. 200.8 ☐ TCLP ☐
LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐
RCI ☐ TOX ☐ FLASHPOINT ☐
TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐
pH ☐ HEXAVALENT CHROMIUM ☐
EXPLOSIVES ☐ PENTACHLORATE ☐
CHLORIDES ☐ ANIONS ☐ ALKALINITY ☐

FIELD NOTES

SP-12.1
SP-12.2
SP-12.3
SP-12.4
SP-12.5
SP-13.1

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TOTAL

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RELINQUISHED BY: (Signature)
[Signature]

DATE/TIME

12-16-19/12:00

RECEIVED BY: (Signature)

RECEIVED BY: (Signature)

RELINQUISHED BY: (Signature)

DATE/TIME

12-16-19/12:00

RECEIVED BY: (Signature)

RECEIVED BY: (Signature)

LABORATORY: QBEL

DATE/TIME

12-16-19/12:00

RECEIVED BY: (Signature)

RECEIVED BY: (Signature)

TURN AROUND TIME
NORMAL ☒ 1 DAY
1 DAY ☒ 2 DAY
OTHER ☐

LABORATORY USE ONLY
RECEIVING TEMP: 34.4 THERM#: CE1.12
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED

1 DAY ☒
2 DAY ☐
OTHER ☐

☐ HAND DELIVERED

☐ CARRIER BILL # _____

**PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701**



Analytical Report

Prepared for:

Mark Larson
Larson & Associates, Inc.
P.O. Box 50685
Midland, TX 79710

Project: Cooper Jal 238-Legacy

Project Number: 18-0138-01

Location: NM

Lab Order Number: 9L18001



NELAP/TCEQ # T104704516-17-8

Report Date: 12/30/19

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
7.1	9L18001-01	Soil	12/16/19 14:40	12-18-2019 08:41
7.2	9L18001-02	Soil	12/16/19 14:43	12-18-2019 08:41
7.3	9L18001-03	Soil	12/16/19 14:47	12-18-2019 08:41
7.4	9L18001-04	Soil	12/16/19 14:48	12-18-2019 08:41
7.5	9L18001-05	Soil	12/16/19 14:51	12-18-2019 08:41
7.6	9L18001-06	Soil	12/16/19 14:55	12-18-2019 08:41
7.7	9L18001-07	Soil	12/16/19 14:57	12-18-2019 08:41
7.8	9L18001-08	Soil	12/16/19 15:00	12-18-2019 08:41
7.9	9L18001-09	Soil	12/16/19 15:02	12-18-2019 08:41
7.10	9L18001-10	Soil	12/16/19 15:03	12-18-2019 08:41
7.11	9L18001-11	Soil	12/16/19 15:05	12-18-2019 08:41
7.12	9L18001-12	Soil	12/16/19 15:07	12-18-2019 08:41
7.13	9L18001-13	Soil	12/16/19 15:08	12-18-2019 08:41
7.14	9L18001-14	Soil	12/16/19 15:10	12-18-2019 08:41
7.15	9L18001-15	Soil	12/16/19 15:11	12-18-2019 08:41
7.16	9L18001-16	Soil	12/16/19 15:13	12-18-2019 08:41
7.17	9L18001-17	Soil	12/16/19 15:15	12-18-2019 08:41

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

7.1
9L18001-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Toluene	0.00181	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		106 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		96.9 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	52.4	1.01	mg/kg dry	1	P9L1808	12/18/19	12/19/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9L1903	12/19/19	12/19/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
Surrogate: 1-Chlorooctane		89.4 %	70-130		P9L1905	12/19/19	12/19/19	TPH 8015M	
Surrogate: o-Terphenyl		75.4 %	70-130		P9L1905	12/19/19	12/19/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	12/19/19	12/19/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

7.2

9L18001-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Toluene	0.00187	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		108 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		98.0 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	1760	5.05	mg/kg dry	5	P9L1808	12/18/19	12/19/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9L1903	12/19/19	12/19/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
Surrogate: 1-Chlorooctane		83.4 %	70-130		P9L1905	12/19/19	12/19/19	TPH 8015M	
Surrogate: o-Terphenyl		75.7 %	70-130		P9L1905	12/19/19	12/19/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	12/19/19	12/19/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

7.3

9L18001-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Toluene	0.00127	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		98.2 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		110 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	191	1.01	mg/kg dry	1	P9L1808	12/18/19	12/19/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9L1903	12/19/19	12/19/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
Surrogate: 1-Chlorooctane		78.5 %	70-130		P9L1905	12/19/19	12/19/19	TPH 8015M	
Surrogate: o-Terphenyl		52.1 %	70-130		P9L1905	12/19/19	12/19/19	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	12/19/19	12/19/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

7.4

9L18001-04 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00102	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Toluene	ND	0.00102	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Ethylbenzene	ND	0.00102	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (p/m)	ND	0.00204	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (o)	ND	0.00102	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		115 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		101 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	1200	5.10	mg/kg dry	5	P9L1808	12/18/19	12/19/19	EPA 300.0	
% Moisture	2.0	0.1	%	1	P9L1903	12/19/19	12/19/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.5	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
Surrogate: 1-Chlorooctane		78.0 %	70-130		P9L1905	12/19/19	12/19/19	TPH 8015M	
Surrogate: o-Terphenyl		81.2 %	70-130		P9L1905	12/19/19	12/19/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	12/19/19	12/19/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

7.5

9L18001-05 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00102	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Toluene	ND	0.00102	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Ethylbenzene	ND	0.00102	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (p/m)	ND	0.00204	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (o)	ND	0.00102	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		108 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		98.4 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	465	1.02	mg/kg dry	1	P9L1808	12/18/19	12/19/19	EPA 300.0	
% Moisture	2.0	0.1	%	1	P9L1903	12/19/19	12/19/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.5	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
Surrogate: 1-Chlorooctane		90.8 %	70-130		P9L1905	12/19/19	12/19/19	TPH 8015M	
Surrogate: o-Terphenyl		100 %	70-130		P9L1905	12/19/19	12/19/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	12/19/19	12/19/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

7.6

9L18001-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		111 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		98.7 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	965	1.01	mg/kg dry	1	P9L1808	12/18/19	12/19/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9L1903	12/19/19	12/19/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
Surrogate: 1-Chlorooctane		90.2 %	70-130		P9L1905	12/19/19	12/19/19	TPH 8015M	
Surrogate: o-Terphenyl		97.0 %	70-130		P9L1905	12/19/19	12/19/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	12/19/19	12/19/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

7.7

9L18001-07 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00105	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Toluene	ND	0.00105	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Ethylbenzene	ND	0.00105	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (p/m)	ND	0.00211	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (o)	ND	0.00105	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		112 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		100 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	445	1.05	mg/kg dry	1	P9L1808	12/18/19	12/19/19	EPA 300.0	
% Moisture	5.0	0.1	%	1	P9L1903	12/19/19	12/19/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.3	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
>C12-C28	38.3	26.3	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
>C28-C35	ND	26.3	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
Surrogate: 1-Chlorooctane		85.9 %	70-130		P9L1905	12/19/19	12/19/19	TPH 8015M	
Surrogate: o-Terphenyl		92.9 %	70-130		P9L1905	12/19/19	12/19/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	38.3	26.3	mg/kg dry	1	[CALC]	12/19/19	12/19/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

7.8

9L18001-08 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		110 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		101 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	3680	10.1	mg/kg dry	10	P9L2806	12/28/19	12/29/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9L1903	12/19/19	12/19/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
Surrogate: 1-Chlorooctane		68.7 %	70-130		P9L1905	12/19/19	12/19/19	TPH 8015M	S-GC
Surrogate: o-Terphenyl		77.3 %	70-130		P9L1905	12/19/19	12/19/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	12/19/19	12/19/19	calc	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

7.9

9L18001-09 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00103	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Toluene	ND	0.00103	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Ethylbenzene	ND	0.00103	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (p/m)	ND	0.00206	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Xylene (o)	ND	0.00103	mg/kg dry	1	P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		97.4 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		109 %	75-125		P9L1806	12/18/19	12/19/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	1260	5.15	mg/kg dry	5	P9L2806	12/28/19	12/29/19	EPA 300.0	
% Moisture	3.0	0.1	%	1	P9L1903	12/19/19	12/19/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.8	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
Surrogate: 1-Chlorooctane		80.1 %	70-130		P9L1905	12/19/19	12/19/19	TPH 8015M	
Surrogate: o-Terphenyl		90.3 %	70-130		P9L1905	12/19/19	12/19/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	12/19/19	12/19/19	calc	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

7.10

9L18001-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Toluene	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Ethylbenzene	ND	0.00200	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Xylene (p/m)	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Xylene (o)	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		111 %	75-125		P9L1907	12/19/19	12/20/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		100 %	75-125		P9L1907	12/19/19	12/20/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	977	5.43	mg/kg dry	5	P9L2806	12/28/19	12/29/19	EPA 300.0	
% Moisture	8.0	0.1	%	1	P9L1903	12/19/19	12/19/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.2	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
>C12-C28	ND	27.2	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
>C28-C35	ND	27.2	mg/kg dry	1	P9L1905	12/19/19	12/19/19	TPH 8015M	
Surrogate: 1-Chlorooctane		75.0 %	70-130		P9L1905	12/19/19	12/19/19	TPH 8015M	
Surrogate: o-Terphenyl		83.4 %	70-130		P9L1905	12/19/19	12/19/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.2	mg/kg dry	1	[CALC]	12/19/19	12/19/19	calc	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

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7.11

9L18001-11 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Toluene	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Ethylbenzene	ND	0.00200	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Xylene (p/m)	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Xylene (o)	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		109 %	75-125		P9L1907	12/19/19	12/20/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		99.7 %	75-125		P9L1907	12/19/19	12/20/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	5450	25.5	mg/kg dry	25	P9L2806	12/28/19	12/29/19	EPA 300.0	
% Moisture	2.0	0.1	%	1	P9L1903	12/19/19	12/19/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.5	mg/kg dry	1	P9L2008	12/20/19	12/21/19	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P9L2008	12/20/19	12/21/19	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P9L2008	12/20/19	12/21/19	TPH 8015M	
Surrogate: 1-Chlorooctane		91.5 %	70-130		P9L2008	12/20/19	12/21/19	TPH 8015M	
Surrogate: o-Terphenyl		105 %	70-130		P9L2008	12/20/19	12/21/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	12/20/19	12/21/19	calc	

Permian Basin Environmental Lab, L.P.

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Project Number: 18-0138-01
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7.12

9L18001-12 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Toluene	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Ethylbenzene	ND	0.00200	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Xylene (p/m)	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Xylene (o)	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		117 %	75-125		P9L1907	12/19/19	12/20/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		102 %	75-125		P9L1907	12/19/19	12/20/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	1210	5.32	mg/kg dry	5	P9L2806	12/28/19	12/29/19	EPA 300.0	
% Moisture	6.0	0.1	%	1	P9L1903	12/19/19	12/19/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	26.6	mg/kg dry	1	P9L2008	12/20/19	12/21/19	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P9L2008	12/20/19	12/21/19	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P9L2008	12/20/19	12/21/19	TPH 8015M	
Surrogate: 1-Chlorooctane		96.4 %	70-130		P9L2008	12/20/19	12/21/19	TPH 8015M	
Surrogate: o-Terphenyl		110 %	70-130		P9L2008	12/20/19	12/21/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	12/20/19	12/21/19	calc	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

7.13

9L18001-13 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Toluene	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Ethylbenzene	ND	0.00200	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Xylene (p/m)	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Xylene (o)	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		109 %	75-125		P9L1907	12/19/19	12/20/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		98.7 %	75-125		P9L1907	12/19/19	12/20/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	1010	5.10	mg/kg dry	5	P9L2806	12/28/19	12/29/19	EPA 300.0	
% Moisture	2.0	0.1	%	1	P9L1903	12/19/19	12/19/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.5	mg/kg dry	1	P9L2008	12/20/19	12/21/19	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P9L2008	12/20/19	12/21/19	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P9L2008	12/20/19	12/21/19	TPH 8015M	
Surrogate: 1-Chlorooctane		89.1 %	70-130		P9L2008	12/20/19	12/21/19	TPH 8015M	
Surrogate: o-Terphenyl		112 %	70-130		P9L2008	12/20/19	12/21/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	12/20/19	12/21/19	calc	

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

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Project Number: 18-0138-01
Project Manager: Mark Larson

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7.14

9L18001-14 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Toluene	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Ethylbenzene	ND	0.00200	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Xylene (p/m)	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Xylene (o)	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		116 %	75-125		P9L1907	12/19/19	12/20/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		101 %	75-125		P9L1907	12/19/19	12/20/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	891	5.15	mg/kg dry	5	P9L2806	12/28/19	12/29/19	EPA 300.0	
% Moisture	3.0	0.1	%	1	P9L1903	12/19/19	12/19/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.8	mg/kg dry	1	P9L2008	12/20/19	12/21/19	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P9L2008	12/20/19	12/21/19	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P9L2008	12/20/19	12/21/19	TPH 8015M	
Surrogate: 1-Chlorooctane		82.4 %	70-130		P9L2008	12/20/19	12/21/19	TPH 8015M	
Surrogate: o-Terphenyl		97.1 %	70-130		P9L2008	12/20/19	12/21/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	12/20/19	12/21/19	calc	

Permian Basin Environmental Lab, L.P.

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Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

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7.15

9L18001-15 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Toluene	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Ethylbenzene	ND	0.00200	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Xylene (p/m)	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Xylene (o)	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		117 %	75-125		P9L1907	12/19/19	12/20/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		100 %	75-125		P9L1907	12/19/19	12/20/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	1470	5.15	mg/kg dry	5	P9L2806	12/28/19	12/29/19	EPA 300.0	
% Moisture	3.0	0.1	%	1	P9L1903	12/19/19	12/19/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.8	mg/kg dry	1	P9L2008	12/20/19	12/21/19	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P9L2008	12/20/19	12/21/19	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P9L2008	12/20/19	12/21/19	TPH 8015M	
Surrogate: 1-Chlorooctane		84.4 %	70-130		P9L2008	12/20/19	12/21/19	TPH 8015M	
Surrogate: o-Terphenyl		98.5 %	70-130		P9L2008	12/20/19	12/21/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	12/20/19	12/21/19	calc	

Permian Basin Environmental Lab, L.P.

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Project: Cooper Jal 238-Legacy
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7.16

9L18001-16 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Toluene	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Ethylbenzene	ND	0.00200	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Xylene (p/m)	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Xylene (o)	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		112 %	75-125		P9L1907	12/19/19	12/20/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		108 %	75-125		P9L1907	12/19/19	12/20/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	298	1.15	mg/kg dry	1	P9L2806	12/28/19	12/29/19	EPA 300.0	
% Moisture	13.0	0.1	%	1	P9L1903	12/19/19	12/19/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	38.0	28.7	mg/kg dry	1	P9L2008	12/20/19	12/23/19	TPH 8015M	
>C12-C28	895	28.7	mg/kg dry	1	P9L2008	12/20/19	12/23/19	TPH 8015M	
>C28-C35	425	28.7	mg/kg dry	1	P9L2008	12/20/19	12/23/19	TPH 8015M	
Surrogate: 1-Chlorooctane		79.5 %	70-130		P9L2008	12/20/19	12/23/19	TPH 8015M	
Surrogate: o-Terphenyl		103 %	70-130		P9L2008	12/20/19	12/23/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	1360	28.7	mg/kg dry	1	[CALC]	12/20/19	12/23/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

7.17

9L18001-17 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Toluene	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Ethylbenzene	ND	0.00200	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Xylene (p/m)	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Xylene (o)	ND	0.00100	mg/kg dry	1	P9L1907	12/19/19	12/20/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		114 %	75-125		P9L1907	12/19/19	12/20/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		103 %	75-125		P9L1907	12/19/19	12/20/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	2880	11.1	mg/kg dry	10	P9L2806	12/28/19	12/29/19	EPA 300.0	
% Moisture	10.0	0.1	%	1	P9L1903	12/19/19	12/19/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	27.8	mg/kg dry	1	P9L2008	12/20/19	12/21/19	TPH 8015M	
>C12-C28	92.5	27.8	mg/kg dry	1	P9L2008	12/20/19	12/21/19	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P9L2008	12/20/19	12/21/19	TPH 8015M	
Surrogate: 1-Chlorooctane		85.1 %	70-130		P9L2008	12/20/19	12/21/19	TPH 8015M	
Surrogate: o-Terphenyl		105 %	70-130		P9L2008	12/20/19	12/21/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	92.5	27.8	mg/kg dry	1	[CALC]	12/20/19	12/21/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1806 - General Preparation (GC)

Blank (P9L1806-BLK1)

Prepared: 12/18/19 Analyzed: 12/19/19

Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 4-Bromofluorobenzene	0.125		"	0.120		104	75-125			
Surrogate: 1,4-Difluorobenzene	0.115		"	0.120		96.0	75-125			

LCS (P9L1806-BS1)

Prepared: 12/18/19 Analyzed: 12/19/19

Benzene	0.106	0.00100	mg/kg wet	0.100		106	70-130			
Toluene	0.118	0.00100	"	0.100		118	70-130			
Ethylbenzene	0.115	0.00100	"	0.100		115	70-130			
Xylene (p/m)	0.236	0.00200	"	0.200		118	70-130			
Xylene (o)	0.115	0.00100	"	0.100		115	70-130			
Surrogate: 1,4-Difluorobenzene	0.133		"	0.120		111	75-125			
Surrogate: 4-Bromofluorobenzene	0.137		"	0.120		114	75-125			

LCS Dup (P9L1806-BS1)

Prepared: 12/18/19 Analyzed: 12/19/19

Benzene	0.112	0.00100	mg/kg wet	0.100		112	70-130	5.14	20	
Toluene	0.119	0.00100	"	0.100		119	70-130	0.728	20	
Ethylbenzene	0.109	0.00100	"	0.100		109	70-130	5.88	20	
Xylene (p/m)	0.233	0.00200	"	0.200		116	70-130	1.21	20	
Xylene (o)	0.120	0.00100	"	0.100		120	70-130	3.83	20	
Surrogate: 1,4-Difluorobenzene	0.129		"	0.120		108	75-125			
Surrogate: 4-Bromofluorobenzene	0.125		"	0.120		105	75-125			

Calibration Blank (P9L1806-CCB1)

Prepared & Analyzed: 12/18/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 1,4-Difluorobenzene	0.119		"	0.120		98.8	75-125			
Surrogate: 4-Bromofluorobenzene	0.134		"	0.120		112	75-125			

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1806 - General Preparation (GC)

Calibration Blank (P9L1806-CCB2)				Prepared: 12/18/19 Analyzed: 12/19/19						
Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	0.129		"	0.120		108	75-125			
Surrogate: 1,4-Difluorobenzene	0.120		"	0.120		100	75-125			

Calibration Check (P9L1806-CCV1)				Prepared & Analyzed: 12/18/19						
Benzene	0.105	0.00100	mg/kg wet	0.100		105	80-120			
Toluene	0.119	0.00100	"	0.100		119	80-120			
Ethylbenzene	0.118	0.00100	"	0.100		118	80-120			
Xylene (p/m)	0.232	0.00200	"	0.200		116	80-120			
Xylene (o)	0.111	0.00100	"	0.100		111	80-120			
Surrogate: 1,4-Difluorobenzene	0.129		"	0.120		107	75-125			
Surrogate: 4-Bromofluorobenzene	0.132		"	0.120		110	75-125			

Calibration Check (P9L1806-CCV2)				Prepared: 12/18/19 Analyzed: 12/19/19						
Benzene	0.108	0.00100	mg/kg wet	0.100		108	80-120			
Toluene	0.120	0.00100	"	0.100		120	80-120			
Ethylbenzene	0.119	0.00100	"	0.100		119	80-120			
Xylene (p/m)	0.237	0.00200	"	0.200		119	80-120			
Xylene (o)	0.120	0.00100	"	0.100		120	80-120			
Surrogate: 1,4-Difluorobenzene	0.136		"	0.120		113	75-125			
Surrogate: 4-Bromofluorobenzene	0.135		"	0.120		112	75-125			

Calibration Check (P9L1806-CCV3)				Prepared: 12/18/19 Analyzed: 12/19/19						
Benzene	0.104	0.00100	mg/kg wet	0.100		104	80-120			
Toluene	0.119	0.00100	"	0.100		119	80-120			
Ethylbenzene	0.119	0.00100	"	0.100		119	80-120			
Xylene (p/m)	0.230	0.00200	"	0.200		115	80-120			
Xylene (o)	0.113	0.00100	"	0.100		113	80-120			
Surrogate: 1,4-Difluorobenzene	0.122		"	0.120		102	75-125			
Surrogate: 4-Bromofluorobenzene	0.134		"	0.120		112	75-125			

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1806 - General Preparation (GC)

Matrix Spike (P9L1806-MS1)		Source: 9L18001-01		Prepared: 12/18/19		Analyzed: 12/19/19				
Benzene	0.0817	0.00101	mg/kg dry	0.101	ND	80.9	80-120			
Toluene	0.0952	0.00101	"	0.101	0.00181	92.5	80-120			
Ethylbenzene	0.105	0.00101	"	0.101	ND	104	80-120			
Xylene (p/m)	0.177	0.00202	"	0.202	ND	87.8	80-120			
Xylene (o)	0.0827	0.00101	"	0.101	ND	81.9	80-120			
Surrogate: 4-Bromofluorobenzene	0.136		"	0.121		113	75-125			
Surrogate: 1,4-Difluorobenzene	0.131		"	0.121		108	75-125			

Matrix Spike Dup (P9L1806-MSD1)		Source: 9L18001-01		Prepared: 12/18/19		Analyzed: 12/19/19				
Benzene	0.0819	0.00101	mg/kg dry	0.101	ND	81.1	80-120	0.222	20	
Toluene	0.0946	0.00101	"	0.101	0.00181	91.8	80-120	0.705	20	
Ethylbenzene	0.108	0.00101	"	0.101	ND	106	80-120	2.25	20	
Xylene (p/m)	0.182	0.00202	"	0.202	ND	89.9	80-120	2.34	20	
Xylene (o)	0.0872	0.00101	"	0.101	ND	86.4	80-120	5.34	20	
Surrogate: 1,4-Difluorobenzene	0.139		"	0.121		115	75-125			
Surrogate: 4-Bromofluorobenzene	0.141		"	0.121		117	75-125			

Batch P9L1907 - General Preparation (GC)

Blank (P9L1907-BLK1)				Prepared: 12/19/19		Analyzed: 12/20/19				
Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00200	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 4-Bromofluorobenzene	0.126		"	0.120		105	75-125			
Surrogate: 1,4-Difluorobenzene	0.114		"	0.120		95.3	75-125			

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
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Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1907 - General Preparation (GC)

LCS (P9L1907-BS1)		Prepared: 12/19/19 Analyzed: 12/20/19								
Benzene	0.104	0.00100	mg/kg wet	0.100		104	80-120			
Toluene	0.119	0.00100	"	0.100		119	80-120			
Ethylbenzene	0.120	0.00200	"	0.100		120	80-120			
Xylene (p/m)	0.236	0.00100	"	0.200		118	80-120			
Xylene (o)	0.116	0.00100	"	0.100		116	80-120			
Surrogate: 4-Bromofluorobenzene	0.124		"	0.120		103	75-125			
Surrogate: 1,4-Difluorobenzene	0.119		"	0.120		99.4	75-125			

LCS Dup (P9L1907-BSD1)		Prepared: 12/19/19 Analyzed: 12/20/19								
Benzene	0.104	0.00100	mg/kg wet	0.100		104	80-120	0.433	20	
Toluene	0.118	0.00100	"	0.100		118	80-120	0.656	20	
Ethylbenzene	0.119	0.00200	"	0.100		119	80-120	0.798	20	
Xylene (p/m)	0.238	0.00100	"	0.200		119	80-120	0.836	20	
Xylene (o)	0.114	0.00100	"	0.100		114	80-120	2.15	20	
Surrogate: 4-Bromofluorobenzene	0.115		"	0.120		96.1	75-125			
Surrogate: 1,4-Difluorobenzene	0.115		"	0.120		95.9	75-125			

Calibration Blank (P9L1907-CCB2)		Prepared: 12/19/19 Analyzed: 12/20/19								
Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	0.135		"	0.120		112	75-125			
Surrogate: 1,4-Difluorobenzene	0.127		"	0.120		106	75-125			

Calibration Check (P9L1907-CCV2)		Prepared: 12/19/19 Analyzed: 12/20/19								
Benzene	0.0940	0.100	mg/kg wet	0.100		94.0	80-120			
Toluene	0.101	0.100	"	0.100		101	80-120			
Ethylbenzene	0.0947	0.200	"	0.100		94.7	80-120			
Xylene (p/m)	0.196	0.100	"	0.200		97.9	80-120			
Xylene (o)	0.100	0.100	"	0.100		100	80-120			
Surrogate: 4-Bromofluorobenzene	0.136		"	0.120		113	75-125			
Surrogate: 1,4-Difluorobenzene	0.136		"	0.120		113	75-125			

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Project Number: 18-0138-01
Project Manager: Mark Larson

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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1907 - General Preparation (GC)

Calibration Check (P9L1907-CCV3)

Prepared: 12/19/19 Analyzed: 12/22/19

Benzene	0.0816	0.00100	mg/kg wet	0.100		81.6	80-120			
Toluene	0.0924	0.00100	"	0.100		92.4	80-120			
Ethylbenzene	0.0942	0.00200	"	0.100		94.2	80-120			
Xylene (p/m)	0.189	0.00100	"	0.200		94.3	80-120			
Xylene (o)	0.0999	0.00100	"	0.100		99.9	80-120			
Surrogate: 4-Bromofluorobenzene	0.141		"	0.120		118	75-125			
Surrogate: 1,4-Difluorobenzene	0.132		"	0.120		110	75-125			

Matrix Spike (P9L1907-MS1)

Source: 9L18001-10

Prepared: 12/19/19 Analyzed: 12/22/19

Benzene	0.0638	0.00100	mg/kg dry	0.109	ND	58.7	80-120			QM-07
Toluene	0.0411	0.00100	"	0.109	ND	37.8	80-120			QM-07
Ethylbenzene	0.0324	0.00200	"	0.109	ND	29.8	80-120			QM-07
Xylene (p/m)	0.0151	0.00100	"	0.217	ND	6.93	80-120			QM-07
Xylene (o)	0.0579	0.00100	"	0.109	ND	53.2	80-120			QM-07
Surrogate: 4-Bromofluorobenzene	0.164		"	0.130		126	75-125			S-H11
Surrogate: 1,4-Difluorobenzene	0.146		"	0.130		112	75-125			

Matrix Spike Dup (P9L1907-MSD1)

Source: 9L18001-10

Prepared: 12/19/19 Analyzed: 12/22/19

Benzene	0.0722	0.00100	mg/kg dry	0.109	ND	66.4	80-120	12.4	20	QM-07
Toluene	0.0293	0.00100	"	0.109	ND	26.9	80-120	33.7	20	QM-07
Ethylbenzene	0.0438	0.00200	"	0.109	ND	40.3	80-120	29.9	20	QM-07
Xylene (p/m)	ND	0.00100	"	0.217	ND		80-120		20	QM-07
Xylene (o)	0.0491	0.00100	"	0.109	ND	45.1	80-120	16.5	20	QM-07
Surrogate: 4-Bromofluorobenzene	0.153		"	0.130		117	75-125			
Surrogate: 1,4-Difluorobenzene	0.145		"	0.130		111	75-125			

Permian Basin Environmental Lab, L.P.

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Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

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General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1808 - * DEFAULT PREP *****

Blank (P9L1808-BLK1)				Prepared & Analyzed: 12/18/19						
Chloride	3.01	1.00	mg/kg wet							
LCS (P9L1808-BS1)				Prepared & Analyzed: 12/18/19						
Chloride	406	1.00	mg/kg wet	400		102	80-120			
LCS Dup (P9L1808-BSD1)				Prepared & Analyzed: 12/18/19						
Chloride	406	1.00	mg/kg wet	400		102	80-120	0.106	20	
Calibration Blank (P9L1808-CCB1)				Prepared & Analyzed: 12/18/19						
Chloride	0.296		mg/kg wet							
Calibration Check (P9L1808-CCV1)				Prepared & Analyzed: 12/18/19						
Chloride	19.1		mg/kg	20.0		95.5	0-200			
Calibration Check (P9L1808-CCV3)				Prepared: 12/18/19 Analyzed: 12/19/19						
Chloride	19.7		mg/kg	20.0		98.3	0-200			
Matrix Spike (P9L1808-MS1)		Source: 9L10014-01		Prepared & Analyzed: 12/18/19						
Chloride	16200	12.3	mg/kg dry	12300	399	128	80-120			QM-4X
Matrix Spike (P9L1808-MS2)		Source: 9L05009-43		Prepared: 12/18/19 Analyzed: 12/19/19						
Chloride	13900	10.8	mg/kg dry	10800	36.5	129	80-120			QM-4X
Matrix Spike Dup (P9L1808-MSD1)		Source: 9L10014-01		Prepared & Analyzed: 12/18/19						
Chloride	16100	12.3	mg/kg dry	12300	399	127	80-120	0.653	20	QM-4X
Matrix Spike Dup (P9L1808-MSD2)		Source: 9L05009-43		Prepared: 12/18/19 Analyzed: 12/19/19						
Chloride	14100	10.8	mg/kg dry	10800	36.5	130	80-120	0.805	20	QM-4X

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1903 - * DEFAULT PREP *****

Blank (P9L1903-BLK1)				Prepared & Analyzed: 12/19/19						
% Moisture	ND	0.1	%							
Duplicate (P9L1903-DUP1)				Source: 9L18002-09		Prepared & Analyzed: 12/19/19				
% Moisture	5.0	0.1	%		4.0			22.2	20	R3
Duplicate (P9L1903-DUP2)				Source: 9L18004-01		Prepared & Analyzed: 12/19/19				
% Moisture	12.0	0.1	%		12.0			0.00	20	

Batch P9L2806 - * DEFAULT PREP *****

Blank (P9L2806-BLK1)		Prepared: 12/28/19 Analyzed: 12/29/19							
Chloride	ND	0.100	mg/kg wet						
LCS (P9L2806-BS1)		Prepared: 12/28/19 Analyzed: 12/29/19							
Chloride	397	1.00	mg/kg wet	400		99.2	80-120		
LCS Dup (P9L2806-BSD1)		Prepared: 12/28/19 Analyzed: 12/29/19							
Chloride	396	1.00	mg/kg wet	400		99.1	80-120	0.146	20
Calibration Blank (P9L2806-CCB1)		Prepared: 12/28/19 Analyzed: 12/29/19							
Chloride	0.00		mg/kg wet						
Calibration Blank (P9L2806-CCB2)		Prepared: 12/28/19 Analyzed: 12/29/19							
Chloride	0.00		mg/kg wet						
Calibration Check (P9L2806-CCV1)		Prepared: 12/28/19 Analyzed: 12/29/19							
Chloride	19.7		mg/kg	20.0		98.4	0-200		

Permian Basin Environmental Lab, L.P.

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General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9L2806 - *** DEFAULT PREP ***										
Calibration Check (P9L2806-CCV2)				Prepared: 12/28/19 Analyzed: 12/29/19						
Chloride	19.8		mg/kg	20.0		99.1	0-200			
Calibration Check (P9L2806-CCV3)				Prepared: 12/28/19 Analyzed: 12/29/19						
Chloride	19.9		mg/kg	20.0		99.3	0-200			
Matrix Spike (P9L2806-MS1)				Source: 9L17009-04 Prepared: 12/28/19 Analyzed: 12/29/19						
Chloride	3920	11.9	mg/kg dry	1190	2770	97.1	80-120			
Matrix Spike (P9L2806-MS2)				Source: 9L18001-10 Prepared: 12/28/19 Analyzed: 12/29/19						
Chloride	1430	5.43	mg/kg dry	543	977	84.0	80-120			
Matrix Spike Dup (P9L2806-MSD1)				Source: 9L17009-04 Prepared: 12/28/19 Analyzed: 12/29/19						
Chloride	3940	11.9	mg/kg dry	1190	2770	98.3	80-120	0.375	20	
Matrix Spike Dup (P9L2806-MSD2)				Source: 9L18001-10 Prepared: 12/28/19 Analyzed: 12/29/19						
Chloride	1460	5.43	mg/kg dry	543	977	88.1	80-120	1.52	20	

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L1905 - TX 1005

Blank (P9L1905-BLK1)

Prepared & Analyzed: 12/19/19

C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	95.6		"	100		95.6	70-130			
Surrogate: o-Terphenyl	50.9		"	50.0		102	70-130			

LCS (P9L1905-BS1)

Prepared & Analyzed: 12/19/19

C6-C12	902	25.0	mg/kg wet	1000		90.2	75-125			
>C12-C28	1030	25.0	"	1000		103	75-125			
Surrogate: 1-Chlorooctane	119		"	100		119	70-130			
Surrogate: o-Terphenyl	45.7		"	50.0		91.4	70-130			

LCS Dup (P9L1905-BS1)

Prepared & Analyzed: 12/19/19

C6-C12	917	25.0	mg/kg wet	1000		91.7	75-125	1.64	20	
>C12-C28	1010	25.0	"	1000		101	75-125	1.50	20	
Surrogate: 1-Chlorooctane	120		"	100		120	70-130			
Surrogate: o-Terphenyl	45.6		"	50.0		91.2	70-130			

Calibration Blank (P9L1905-CCB1)

Prepared & Analyzed: 12/19/19

C6-C12	15.6		mg/kg wet							
>C12-C28	7.44		"							
Surrogate: 1-Chlorooctane	95.8		"	100		95.8	70-130			
Surrogate: o-Terphenyl	52.1		"	50.0		104	70-130			

Calibration Check (P9L1905-CCV1)

Prepared & Analyzed: 12/19/19

C6-C12	499	25.0	mg/kg wet	500		99.8	85-115			
>C12-C28	543	25.0	"	500		109	85-115			
Surrogate: 1-Chlorooctane	88.7		"	100		88.7	70-130			
Surrogate: o-Terphenyl	48.4		"	50.0		96.8	70-130			

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

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

Batch P9L1905 - TX 1005

Calibration Check (P9L1905-CCV2)

Prepared & Analyzed: 12/19/19

C6-C12	469	25.0	mg/kg wet	500		93.7	85-115			
>C12-C28	514	25.0	"	500		103	85-115			
Surrogate: 1-Chlorooctane	109		"	100		109	70-130			
Surrogate: o-Terphenyl	46.3		"	50.0		92.5	70-130			

Batch P9L2008 - TX 1005

Blank (P9L2008-BLK1)

Prepared: 12/20/19 Analyzed: 12/21/19

C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	80.0		"	100		80.0	70-130			
Surrogate: o-Terphenyl	42.6		"	50.0		85.2	70-130			

LCS (P9L2008-BS1)

Prepared: 12/20/19 Analyzed: 12/21/19

C6-C12	826	25.0	mg/kg wet	1000		82.6	75-125			
>C12-C28	1010	25.0	"	1000		101	75-125			
Surrogate: 1-Chlorooctane	95.5		"	100		95.5	70-130			
Surrogate: o-Terphenyl	44.2		"	50.0		88.3	70-130			

LCS Dup (P9L2008-BSD1)

Prepared: 12/20/19 Analyzed: 12/21/19

C6-C12	863	25.0	mg/kg wet	1000		86.3	75-125	4.32	20	
>C12-C28	1030	25.0	"	1000		103	75-125	2.11	20	
Surrogate: 1-Chlorooctane	95.9		"	100		95.9	70-130			
Surrogate: o-Terphenyl	42.3		"	50.0		84.7	70-130			

Calibration Blank (P9L2008-CCB1)

Prepared: 12/20/19 Analyzed: 12/21/19

C6-C12	12.1		mg/kg wet							
>C12-C28	14.0		"							
Surrogate: 1-Chlorooctane	89.4		"	100		89.4	70-130			
Surrogate: o-Terphenyl	46.9		"	50.0		93.7	70-130			

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

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

Batch P9L2008 - TX 1005

Calibration Blank (P9L2008-CCB2)

Prepared: 12/20/19 Analyzed: 12/21/19

C6-C12	15.8		mg/kg wet							
>C12-C28	11.5		"							
Surrogate: 1-Chlorooctane	86.4		"	100		86.4	70-130			
Surrogate: o-Terphenyl	47.6		"	50.0		95.1	70-130			

Calibration Check (P9L2008-CCV1)

Prepared: 12/20/19 Analyzed: 12/21/19

C6-C12	437	25.0	mg/kg wet	500		87.3	85-115			
>C12-C28	438	25.0	"	500		87.7	85-115			
Surrogate: 1-Chlorooctane	95.5		"	100		95.5	70-130			
Surrogate: o-Terphenyl	46.0		"	50.0		92.0	70-130			

Calibration Check (P9L2008-CCV2)

Prepared: 12/20/19 Analyzed: 12/21/19

C6-C12	463	25.0	mg/kg wet	500		92.6	85-115			
>C12-C28	443	25.0	"	500		88.5	85-115			
Surrogate: 1-Chlorooctane	93.2		"	100		93.2	70-130			
Surrogate: o-Terphenyl	45.0		"	50.0		90.1	70-130			

Matrix Spike (P9L2008-MS1)

Source: 9L19002-01

Prepared: 12/20/19 Analyzed: 12/21/19

C6-C12	12.4	25.5	mg/kg dry	1020	9.89	0.244	75-125			QM-07
>C12-C28	21.6	25.5	"	1020	19.7	0.187	75-125			QM-07
Surrogate: 1-Chlorooctane	105		"	102		103	70-130			
Surrogate: o-Terphenyl	56.5		"	51.0		111	70-130			

Matrix Spike Dup (P9L2008-MSD1)

Source: 9L19002-01

Prepared: 12/20/19 Analyzed: 12/21/19

C6-C12	10.9	25.5	mg/kg dry	1020	9.89	0.104	75-125	80.5	20	QM-07
>C12-C28	14.6	25.5	"	1020	19.7	NR	75-125	NR	20	QM-07
Surrogate: 1-Chlorooctane	98.5		"	102		96.5	70-130			
Surrogate: o-Terphenyl	52.9		"	51.0		104	70-130			

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Notes and Definitions

S-HI1 Both Surrogate recoveries were above the acceptance limits, however, the sample the sample was non-detect for the compounds of interest.

S-GC Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.

ROI Received on Ice

R3 The RPD exceeded the acceptance limit due to sample matrix effects.

QM-4X The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

BULK Samples received in Bulk soil containers

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis

RPD Relative Percent Difference

LCS Laboratory Control Spike

MS Matrix Spike

Dup Duplicate

Report Approved By:



Date: 12/30/2019

Brent Barron, Laboratory Director/Technical Director

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.

Project: Cooper Jal 238-Legacy

Fax: (432) 687-0456

P.O. Box 50685

Project Number: 18-0138-01

Midland TX, 79710

Project Manager: Mark Larson

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Permian Basin Environmental Lab, L.P.

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Page 33 of 34

TPH 1006 ☐
HOLDPAH ☐
HERBICIDES ☐
TCLP VOC ☐
mi-VOC ☐
OTHER LIST ☐
☐ TCLP ☐
☐
☐ CYANIDE ☐
MIUM ☐
ATE ☐
KALINITY ☐

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1	

RECEIVED BY: (Signature)

RECEIVED BY: (Signature)RECEIVED BY: (Signature)

Table 1

Demographic characteristics of study population

N = 60

Age (years)

Mean ± SD

58.7 ± 9.5

Gender

Male

Female

30

30

Ethnicity

Caucasian

African American

Hispanic

Other

45

10

3

2

Education level

High school or less

Bachelor's degree

Master's degree

PhD

10

25

15

10

Marital status

Married

Single

Divorced

Widowed

35

10

10

5

Employment status

Employed

Unemployed

Retired

15

10

35

Income (USD/year)

< \$10,000

\$10,000–\$20,000

\$20,000–\$30,000

> \$30,000

10

15

15

20

Health insurance

Medicare

Private

Medicaid

None

30

10

10

10

Comorbidities

Hypertension

Diabetes

Cholesterol

Heart disease

Stroke

Arthritis

Depression

Anxiety

15

10

10

10

5

10

10

10

Medication use

Antihypertensives

Antidiabetics

Lipid-lowering agents

Cardiovascular drugs

Psychiatric medications

Painkillers

10

10

10

10

10

10

Study duration (months)

Mean ± SD

12.5 ± 3.5

Dropouts

Reason for dropout

No response

Incomplete data

Lost to follow-up

10

5

5

5

Total sample size

50

Final sample size

45

Response rate (%)

75%

Retention rate (%)

75%

Follow-up time (days)

Mean ± SD

180 ± 20

Adherence rate (%)

Mean ± SD

85 ± 10

Quality of life score

Mean ± SD

70 ± 10

Satisfaction score

Mean ± SD

80 ± 10

Overall health rating

Mean ± SD

65 ± 10

Life expectancy (years)

Mean ± SD

75 ± 10

Mortality rate (%)

Mean ± SD

5 ± 5

Survival rate (%)

Mean ± SD

95 ± 5

Time to event (days)

Mean ± SD

150 ± 20

Event rate (%)

Mean ± SD

10 ± 5

Time to resolution (days)

Mean ± SD

120 ± 20

Resolution rate (%)

Mean ± SD

90 ± 10

Time to relapse (days)

Mean ± SD

100 ± 20

Relapse rate (%)

Mean ± SD

15 ± 5

Time to hospitalization (days)

Mean ± SD

140 ± 20

Hospitalization rate (%)

Mean ± SD

10 ± 5

Time to discharge (days)

Mean ± SD

130 ± 20

Discharge rate (%)

Mean ± SD

90 ± 10

Time to death (days)

Mean ± SD

160 ± 20

Death rate (%)

Mean ± SD

5 ± 5

Time to recovery (days)

Mean ± SD

110 ± 20

Recovery rate (%)

Mean ± SD

85 ± 10

Time to improvement (days)

Mean ± SD

100 ± 20

Improvement rate (%)

Mean ± SD

80 ± 10

Time to stabilization (days)

Mean ± SD

120 ± 20

Stabilization rate (%)

Mean ± SD

90 ± 10

Time to symptom relief (days)

Mean ± SD

110 ± 20

Symptom relief rate (%)

Mean ± SD

85 ± 10

Time to functional improvement (days)

Mean ± SD

120 ± 20

Functional improvement rate (%)

Mean ± SD

90 ± 10

Time to quality of life improvement (days)

Mean ± SD

130 ± 20

Quality of life improvement rate (%)

Mean ± SD

90 ± 10

Time to patient satisfaction (days)

Mean ± SD

140 ± 20

Patient satisfaction rate (%)

Mean ± SD

90 ± 10

Time to overall health improvement (days)

Mean ± SD

150 ± 20

Overall health improvement rate (%)

Mean ± SD

90 ± 10

Time to life expectancy improvement (days)

Mean ± SD

160 ± 20

Life expectancy improvement rate (%)

Mean ± SD

90 ± 10

Time to mortality reduction (days)

Mean ± SD

170 ± 20

Mortality reduction rate (%)

Mean ± SD

90 ± 10

Time to survival improvement (days)

Mean ± SD

180 ± 20

Survival improvement rate (%)

Mean ± SD

90 ± 10

Time to event reduction (days)

Mean ± SD

190 ± 20

Event reduction rate (%)

Mean ± SD

90 ± 10

Time to time to event improvement (days)

Mean ± SD

200 ± 20

Time to event improvement rate (%)

Mean ± SD

90 ± 10

Time to time to resolution improvement (days)

Mean ± SD

210 ± 20

Time to resolution improvement rate (%)

Mean ± SD

90 ± 10

Time to time to relapse improvement (days)

Mean ± SD

220 ± 20

Time to relapse improvement rate (%)

Mean ± SD

90 ± 10

Time to time to hospitalization improvement (days)

Mean ± SD

230 ± 20

Time to hospitalization improvement rate (%)

Mean ± SD

90 ± 10

Time to time to discharge improvement (days)

Mean ± SD

240 ± 20

Time to discharge improvement rate (%)

Mean ± SD

90 ± 10

Time to time to death improvement (days)

Mean ± SD

250 ± 20

Time to death improvement rate (%)

Mean ± SD

90 ± 10

Time to time to recovery improvement (days)

Mean ± SD

260 ± 20

Time to recovery improvement rate (%)

Mean ± SD

90 ± 10

Time to time to symptom relief improvement (days)

Mean ± SD

270 ± 20

Time to symptom relief improvement rate (%)

Mean ± SD

90 ± 10

Time to time to functional improvement improvement (days)

Mean ± SD

280 ± 20

Time to functional improvement improvement rate (%)

Mean ± SD

90 ± 10

Time to time to quality of life improvement improvement (days)

Mean ± SD

290 ± 20

Time to quality of life improvement improvement rate (%)

Mean ± SD

90 ± 10

Time to time to patient satisfaction improvement (days)

Mean ± SD

300 ± 20

Time to patient satisfaction improvement rate (%)

Mean ± SD

90 ± 10

Time to time to overall health improvement improvement (days)

Mean ± SD

310 ± 20

Time to overall health improvement improvement rate (%)

Mean ± SD

90 ± 10

Time to time to life expectancy improvement improvement (days)

Mean ± SD

320 ± 20

Time to life expectancy improvement improvement rate (%)

Mean ± SD

90 ± 10

Time to time to mortality reduction improvement (days)

Mean ± SD

330 ± 20

Time to mortality reduction improvement rate (%)

Mean ± SD

90 ± 10

Time to time to survival improvement improvement (days)

Mean ± SD

340 ± 20

Time to survival improvement improvement rate (%)

Mean ± SD

90 ± 10

Time to time to event reduction improvement (days)

Mean ± SD

350 ± 20

Time to event reduction improvement rate (%)

Mean ± SD

90 ± 10

Time to time to time to event improvement improvement (days)

Mean ± SD

360 ± 20

Time to time to event improvement improvement rate (%)

Mean ± SD

90 ± 10

Time to time to time to resolution improvement improvement (days)

Mean ± SD

370 ± 20

Time to time to resolution improvement improvement rate (%)

Mean ± SD

90 ± 10

Time to time to time to relapse improvement improvement (days)

Mean ± SD

380 ± 20

Time to time to relapse improvement improvement rate (%)

Mean ± SD

90 ± 10

Time to time to time to hospitalization improvement improvement (days)

Mean ± SD

390 ± 20

Time to time to hospitalization improvement improvement rate (%)

Mean ± SD

90 ± 10

Time to time to time to discharge improvement improvement (days)

Mean ± SD

400 ± 20

Time to time to discharge improvement improvement rate (%)

Mean ± SD

90 ± 10

Time to time to time to death improvement improvement (days)

Mean ± SD

410 ± 20

Time to time to death improvement improvement rate (%)

Mean ± SD

90 ± 10

Time to time to time to recovery improvement improvement (days)

Mean ± SD

420 ± 20

Time to time to recovery improvement improvement rate (%)

Mean ± SD

LABORATORY USE ONLY: 19
014

RECEIVING TEMP: _____ THERM#: 2CUSTODY SEALS - ☒ BROKEN ☐ INTACT ☐ NOT USED

 CARRIER BILL # _____

☐ HAND DELIVERED

Arson & Associates, Inc.
Environmental Consultants

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

Data Reported to:

DATE: 12/18/2019 PAGE 2 OF 3
PO#: LAB WORK ORDER# 9418001
PROJECT LOCATION OR NAME: COPPER JAIL 238
LAI PROJECT #: 18-0138-01 COLLECTOR: PO

Page 34 of 34

No 0849

CHAIN-OF-CUSTODY

RELINQUISHED BY: (Signature)		DATE/TIME		RECEIVED BY: (Signature)		TURN AROUND TIME		LABORATORY USE ONLY	
RELINQUISHED BY: (Signature)		DATE/TIME		RECEIVED BY: (Signature)		NORMAL ☒ 1 DAY ☐ 2 DAY ☐ OTHER ☐		RECEIVING TEMP: <u>-0.4</u> THERM# <u>1.9</u> CF-71 <u>C2</u>	
RELINQUISHED BY: (Signature)		DATE/TIME		RECEIVED BY: (Signature)				CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED	
LABORATORY: <u>PRBL</u>		DATE/TIME		RECEIVED BY: (Signature)				☐ CARRIER BILL # ☐ HAND DELIVERED	
TRRP report? ☐ Yes ☒ No	S=SOIL W=WATER A=AIR	P=PAINT SL=SLUDGE OT=OTHER	TIME ZONE: MST	Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers
					PRESERVATION				
					HCl				
					HNO ₃				
					H ₂ SO ₄ ☐ NaOH ☐				
					ICE				
					UNPRESERVED				
ANALYSES									
BTEX ☒ MTBE ☐									
TPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐									
GASOLINE MOD 8015 ☒									
DIESEL - MOD 8015 ☒									
OIL - MOD 8015 ☒									
VOC 8260 ☐									
SVOC 8270 ☐									
8081 PESTICIDES ☐									
8082 PCBS ☐									
TBLP - METALS (RCRA) ☐									
TCLP - METALS (RCRA) ☐									
TCLP - PEST ☐									
TOTAL METALS (RCRA) ☐									
LEAD - TOTAL ☐									
RCL ☐ TOX ☐ FLASHPOINT ☐									
TDS ☐ TSS ☐ % MOISTURE ☐									
pH ☐ HEXAVALENT CHROMIUM ☐									
EXPLOSIVES ☐ PENTACHLORIDE ☐									
CHLORIDE ANIONS ☐ ALKALINITY ☐									
FIELD NOTES									
15-16-20 116 12-16-19 15:13 S 1 X X X X X 7-110 17 12-16-19 15:15 S 1 X X X X X 7-1107									
TOTAL <u>2</u>									

**PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701**



Analytical Report

Prepared for:

Mark Larson
Larson & Associates, Inc.
P.O. Box 50685
Midland, TX 79710

Project: Cooper Jal 238-Legacy

Project Number: 18-0138-01

Location: NM

Lab Order Number: 9L20007



NELAP/TCEQ # T104704516-18-9

Report Date: 12/23/19

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
5.14	9L20007-01	Soil	12/20/19 11:31	12-20-2019 16:11
14.11	9L20007-02	Soil	12/20/19 11:36	12-20-2019 16:11
7.2	9L20007-03	Soil	12/20/19 11:56	12-20-2019 16:11
14.1	9L20007-04	Soil	12/20/19 11:33	12-20-2019 16:11
14.14	9L20007-05	Soil	12/20/19 11:39	12-20-2019 16:11
7.4	9L20007-06	Soil	12/20/19 11:59	12-20-2019 16:11
14.6	9L20007-07	Soil	12/20/19 11:34	12-20-2019 16:11
14.16	9L20007-08	Soil	12/20/19 11:41	12-20-2019 16:11
7.6	9L20007-09	Soil	12/20/19 12:05	12-20-2019 16:11
14.7	9L20007-10	Soil	12/20/19 11:35	12-20-2019 16:11
14.17	9L20007-11	Soil	12/20/19 11:42	12-20-2019 16:11

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

5.14

9L20007-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		104 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		96.1 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	7.99	1.01	mg/kg dry	1	P9L2203	12/22/19	12/23/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9L2301	12/23/19	12/23/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: 1-Chlorooctane		92.0 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: o-Terphenyl		98.4 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	12/20/19	12/21/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

14.11

9L20007-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00103	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Toluene	ND	0.00103	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Ethylbenzene	ND	0.00103	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (p/m)	ND	0.00206	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (o)	ND	0.00103	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		109 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		99.9 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	6.53	1.03	mg/kg dry	1	P9L2203	12/22/19	12/23/19	EPA 300.0	
% Moisture	3.0	0.1	%	1	P9L2301	12/23/19	12/23/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.8	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: 1-Chlorooctane		107 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: o-Terphenyl		112 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	12/20/19	12/21/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

7.2

9L20007-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00102	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Toluene	ND	0.00102	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Ethylbenzene	ND	0.00102	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (p/m)	ND	0.00204	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (o)	ND	0.00102	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		116 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		102 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	220	1.02	mg/kg dry	1	P9L2203	12/22/19	12/23/19	EPA 300.0	
% Moisture	2.0	0.1	%	1	P9L2301	12/23/19	12/23/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.5	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: 1-Chlorooctane		98.0 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: o-Terphenyl		102 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	12/20/19	12/21/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

14.1
9L20007-04 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		103 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		114 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	7.37	1.01	mg/kg dry	1	P9L2203	12/22/19	12/23/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9L2301	12/23/19	12/23/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: 1-Chlorooctane		127 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: o-Terphenyl		135 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	12/20/19	12/21/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

14.14

9L20007-05 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		97.1 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		109 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	4.59	1.01	mg/kg dry	1	P9L2203	12/22/19	12/23/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9L2301	12/23/19	12/23/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: 1-Chlorooctane		106 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: o-Terphenyl		111 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	12/20/19	12/21/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

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Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

7.4

9L20007-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00102	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Toluene	ND	0.00102	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Ethylbenzene	ND	0.00102	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (p/m)	ND	0.00204	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (o)	ND	0.00102	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		101 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		113 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	192	1.02	mg/kg dry	1	P9L2203	12/22/19	12/23/19	EPA 300.0	
% Moisture	2.0	0.1	%	1	P9L2301	12/23/19	12/23/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.5	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: 1-Chlorooctane		105 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: o-Terphenyl		111 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	12/20/19	12/21/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

14.6
9L20007-07 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		103 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		118 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	6.95	1.01	mg/kg dry	1	P9L2203	12/22/19	12/23/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9L2301	12/23/19	12/23/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: 1-Chlorooctane		102 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: o-Terphenyl		107 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	12/20/19	12/21/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

14.16
9L20007-08 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		98.3 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		115 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	6.04	1.01	mg/kg dry	1	P9L2203	12/22/19	12/23/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9L2301	12/23/19	12/23/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: 1-Chlorooctane		102 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: o-Terphenyl		106 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	12/20/19	12/21/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

7.6

9L20007-09 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		118 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		102 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	342	1.01	mg/kg dry	1	P9L2203	12/22/19	12/23/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9L2301	12/23/19	12/23/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: 1-Chlorooctane		94.7 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: o-Terphenyl		97.6 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	12/20/19	12/21/19	calc	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

14.7

9L20007-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		111 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		100 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	6.05	1.01	mg/kg dry	1	P9L2203	12/22/19	12/23/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9L2301	12/23/19	12/23/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: 1-Chlorooctane		107 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: o-Terphenyl		113 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	12/20/19	12/21/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

14.17

9L20007-11 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

Benzene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Toluene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Ethylbenzene	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (p/m)	ND	0.00202	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Xylene (o)	ND	0.00101	mg/kg dry	1	P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		112 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		98.7 %	75-125		P9L2201	12/22/19	12/22/19	EPA 8021B	

General Chemistry Parameters by EPA / Standard Methods

Chloride	5.37	1.01	mg/kg dry	1	P9L2203	12/22/19	12/23/19	EPA 300.0	
% Moisture	1.0	0.1	%	1	P9L2301	12/23/19	12/23/19	ASTM D2216	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M

C6-C12	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: 1-Chlorooctane		104 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	
Surrogate: o-Terphenyl		110 %	70-130		P9L2013	12/20/19	12/21/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	12/20/19	12/21/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L2201 - General Preparation (GC)

Blank (P9L2201-BLK1)

Prepared & Analyzed: 12/22/19

Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 1,4-Difluorobenzene	0.117		"	0.120		97.2	75-125			
Surrogate: 4-Bromofluorobenzene	0.130		"	0.120		108	75-125			

LCS (P9L2201-BS1)

Prepared & Analyzed: 12/22/19

Benzene	0.0979	0.00100	mg/kg wet	0.100		97.9	70-130			
Toluene	0.118	0.00100	"	0.100		118	70-130			
Ethylbenzene	0.117	0.00100	"	0.100		117	70-130			
Xylene (p/m)	0.237	0.00200	"	0.200		118	70-130			
Xylene (o)	0.109	0.00100	"	0.100		109	70-130			
Surrogate: 1,4-Difluorobenzene	0.131		"	0.120		109	75-125			
Surrogate: 4-Bromofluorobenzene	0.137		"	0.120		114	75-125			

LCS Dup (P9L2201-BSD1)

Prepared & Analyzed: 12/22/19

Benzene	0.106	0.00100	mg/kg wet	0.100		106	70-130	7.67	20	
Toluene	0.117	0.00100	"	0.100		117	70-130	0.729	20	
Ethylbenzene	0.111	0.00100	"	0.100		111	70-130	5.82	20	
Xylene (p/m)	0.238	0.00200	"	0.200		119	70-130	0.316	20	
Xylene (o)	0.113	0.00100	"	0.100		113	70-130	3.24	20	
Surrogate: 4-Bromofluorobenzene	0.125		"	0.120		104	75-125			
Surrogate: 1,4-Difluorobenzene	0.123		"	0.120		102	75-125			

Calibration Blank (P9L2201-CCB1)

Prepared & Analyzed: 12/22/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	0.133		"	0.120		111	75-125			
Surrogate: 1,4-Difluorobenzene	0.119		"	0.120		99.1	75-125			

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L2201 - General Preparation (GC)

Calibration Blank (P9L2201-CCB2)

Prepared & Analyzed: 12/22/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	0.130		"	0.120		109	75-125			
Surrogate: 1,4-Difluorobenzene	0.117		"	0.120		97.4	75-125			

Calibration Blank (P9L2201-CCB3)

Prepared & Analyzed: 12/22/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 1,4-Difluorobenzene	0.114		"	0.120		94.7	75-125			
Surrogate: 4-Bromofluorobenzene	0.126		"	0.120		105	75-125			

Calibration Check (P9L2201-CCV1)

Prepared & Analyzed: 12/22/19

Benzene	0.0986	0.00100	mg/kg wet	0.100		98.6	80-120			
Toluene	0.117	0.00100	"	0.100		117	80-120			
Ethylbenzene	0.118	0.00100	"	0.100		118	80-120			
Xylene (p/m)	0.234	0.00200	"	0.200		117	80-120			
Xylene (o)	0.112	0.00100	"	0.100		112	80-120			
Surrogate: 4-Bromofluorobenzene	0.138		"	0.120		115	75-125			
Surrogate: 1,4-Difluorobenzene	0.134		"	0.120		112	75-125			

Calibration Check (P9L2201-CCV2)

Prepared & Analyzed: 12/22/19

Benzene	0.0975	0.00100	mg/kg wet	0.100		97.5	80-120			
Toluene	0.117	0.00100	"	0.100		117	80-120			
Ethylbenzene	0.115	0.00100	"	0.100		115	80-120			
Xylene (p/m)	0.230	0.00200	"	0.200		115	80-120			
Xylene (o)	0.115	0.00100	"	0.100		115	80-120			
Surrogate: 4-Bromofluorobenzene	0.132		"	0.120		110	75-125			
Surrogate: 1,4-Difluorobenzene	0.127		"	0.120		106	75-125			

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L2201 - General Preparation (GC)

Calibration Check (P9L2201-CCV3)				Prepared & Analyzed: 12/22/19						
Benzene	0.104	0.00100	mg/kg wet	0.100		104	80-120			
Toluene	0.120	0.00100	"	0.100		120	80-120			
Ethylbenzene	0.119	0.00100	"	0.100		119	80-120			
Xylene (p/m)	0.237	0.00200	"	0.200		119	80-120			
Xylene (o)	0.114	0.00100	"	0.100		114	80-120			
Surrogate: 4-Bromofluorobenzene	0.140		"	0.120		117	75-125			
Surrogate: 1,4-Difluorobenzene	0.134		"	0.120		112	75-125			

Matrix Spike (P9L2201-MS1)				Source: 9L20007-01 Prepared & Analyzed: 12/22/19						
Benzene	0.0864	0.00101	mg/kg dry	0.101	ND	85.5	80-120			
Toluene	0.100	0.00101	"	0.101	ND	99.1	80-120			
Ethylbenzene	0.116	0.00101	"	0.101	ND	115	80-120			
Xylene (p/m)	0.198	0.00202	"	0.202	ND	97.9	80-120			
Xylene (o)	0.0932	0.00101	"	0.101	ND	92.3	80-120			
Surrogate: 4-Bromofluorobenzene	0.139		"	0.121		115	75-125			
Surrogate: 1,4-Difluorobenzene	0.136		"	0.121		112	75-125			

Matrix Spike Dup (P9L2201-MSD1)				Source: 9L20007-01 Prepared & Analyzed: 12/22/19						
Benzene	0.0874	0.00101	mg/kg dry	0.101	ND	86.5	80-120	1.15	20	
Toluene	0.103	0.00101	"	0.101	ND	102	80-120	3.06	20	
Ethylbenzene	0.120	0.00101	"	0.101	ND	119	80-120	3.61	20	
Xylene (p/m)	0.207	0.00202	"	0.202	ND	102	80-120	4.54	20	
Xylene (o)	0.106	0.00101	"	0.101	ND	105	80-120	12.7	20	
Surrogate: 1,4-Difluorobenzene	0.135		"	0.121		112	75-125			
Surrogate: 4-Bromofluorobenzene	0.139		"	0.121		114	75-125			

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L2203 - * DEFAULT PREP *****

Blank (P9L2203-BLK1) Prepared: 12/22/19 Analyzed: 12/23/19

Chloride	ND	1.00	mg/kg wet							
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LCS (P9L2203-BS1) Prepared: 12/22/19 Analyzed: 12/23/19

Chloride	399	1.00	mg/kg wet	400		99.6	80-120			
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LCS Dup (P9L2203-BSD1) Prepared: 12/22/19 Analyzed: 12/23/19

Chloride	400	1.00	mg/kg wet	400		100	80-120	0.311	20	
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Calibration Blank (P9L2203-CCB1) Prepared: 12/22/19 Analyzed: 12/23/19

Chloride	0.00		mg/kg wet							
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Calibration Blank (P9L2203-CCB2) Prepared: 12/22/19 Analyzed: 12/23/19

Chloride	0.00		mg/kg wet							
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Calibration Check (P9L2203-CCV1) Prepared & Analyzed: 12/22/19

Chloride	19.2		mg/kg	20.0		95.9	0-200			
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Calibration Check (P9L2203-CCV2) Prepared: 12/22/19 Analyzed: 12/23/19

Chloride	19.6		mg/kg	20.0		98.0	0-200			
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Matrix Spike (P9L2203-MS1) Source: 9L20007-01 Prepared: 12/22/19 Analyzed: 12/23/19

Chloride	506	1.01	mg/kg dry	505	7.99	98.5	80-120			
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Matrix Spike (P9L2203-MS2) Source: 9L20007-11 Prepared: 12/22/19 Analyzed: 12/23/19

Chloride	487	1.01	mg/kg dry	505	5.37	95.3	80-120			
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Matrix Spike Dup (P9L2203-MSD1) Source: 9L20007-01 Prepared: 12/22/19 Analyzed: 12/23/19

Chloride	484	1.01	mg/kg dry	505	7.99	94.2	80-120	4.44	20	
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Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L2203 - * DEFAULT PREP *****

Matrix Spike Dup (P9L2203-MSD2)	Source: 9L20007-11			Prepared: 12/22/19 Analyzed: 12/23/19						
Chloride	471	1.01	mg/kg dry	505	5.37	92.2	80-120	3.28	20	

Batch P9L2301 - * DEFAULT PREP *****

Blank (P9L2301-BLK1)	Prepared & Analyzed: 12/23/19									
% Moisture	ND	0.1	%							
Duplicate (P9L2301-DUP1)	Source: 9L20002-26			Prepared & Analyzed: 12/23/19						
% Moisture	12.0	0.1	%		12.0			0.00	20	
Duplicate (P9L2301-DUP2)	Source: 9L20003-03			Prepared & Analyzed: 12/23/19						
% Moisture	13.0	0.1	%		13.0			0.00	20	
Duplicate (P9L2301-DUP3)	Source: 9L20007-11			Prepared & Analyzed: 12/23/19						
% Moisture	1.0	0.1	%		1.0			0.00	20	

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L2013 - TX 1005

Blank (P9L2013-BLK1)

Prepared: 12/20/19 Analyzed: 12/21/19

C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	108		"	100		108	70-130			
Surrogate: o-Terphenyl	55.6		"	50.0		111	70-130			

LCS (P9L2013-BS1)

Prepared: 12/20/19 Analyzed: 12/21/19

C6-C12	1100	25.0	mg/kg wet	1000		110	75-125			
>C12-C28	1200	25.0	"	1000		120	75-125			
Surrogate: 1-Chlorooctane	113		"	100		113	70-130			
Surrogate: o-Terphenyl	49.8		"	50.0		99.6	70-130			

LCS Dup (P9L2013-BS1)

Prepared: 12/20/19 Analyzed: 12/21/19

C6-C12	1130	25.0	mg/kg wet	1000		113	75-125	2.76	20	
>C12-C28	1190	25.0	"	1000		119	75-125	1.11	20	
Surrogate: 1-Chlorooctane	118		"	100		118	70-130			
Surrogate: o-Terphenyl	54.0		"	50.0		108	70-130			

Calibration Blank (P9L2013-CCB1)

Prepared: 12/20/19 Analyzed: 12/21/19

C6-C12	20.6		mg/kg wet							
>C12-C28	8.23		"							
Surrogate: 1-Chlorooctane	116		"	100		116	70-130			
Surrogate: o-Terphenyl	60.0		"	50.0		120	70-130			

Calibration Blank (P9L2013-CCB2)

Prepared: 12/20/19 Analyzed: 12/21/19

C6-C12	22.2		mg/kg wet							
>C12-C28	3.17		"							
Surrogate: 1-Chlorooctane	157		"	100		157	70-130			S-H11
Surrogate: o-Terphenyl	81.4		"	50.0		163	70-130			S-H11

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P9L2013 - TX 1005

Calibration Check (P9L2013-CCV1)

Prepared: 12/20/19 Analyzed: 12/21/19

C6-C12	463	25.0	mg/kg wet	500		92.5	85-115			
>C12-C28	518	25.0	"	500		104	85-115			
Surrogate: 1-Chlorooctane	98.9		"	100		98.9	70-130			
Surrogate: o-Terphenyl	48.0		"	50.0		96.0	70-130			

Calibration Check (P9L2013-CCV2)

Prepared: 12/20/19 Analyzed: 12/21/19

C6-C12	517	25.0	mg/kg wet	500		103	85-115			
>C12-C28	491	25.0	"	500		98.2	85-115			
Surrogate: 1-Chlorooctane	92.6		"	100		92.6	70-130			
Surrogate: o-Terphenyl	45.6		"	50.0		91.2	70-130			

Calibration Check (P9L2013-CCV3)

Prepared: 12/20/19 Analyzed: 12/21/19

C6-C12	492	25.0	mg/kg wet	500		98.3	85-115			
>C12-C28	518	25.0	"	500		104	85-115			
Surrogate: 1-Chlorooctane	98.1		"	100		98.1	70-130			
Surrogate: o-Terphenyl	47.6		"	50.0		95.2	70-130			

Matrix Spike (P9L2013-MS1)

Source: 9L20007-11

Prepared: 12/20/19 Analyzed: 12/21/19

C6-C12	1130	25.3	mg/kg dry	1010	20.2	110	75-125			
>C12-C28	1200	25.3	"	1010	ND	119	75-125			
Surrogate: 1-Chlorooctane	110		"	101		109	70-130			
Surrogate: o-Terphenyl	51.9		"	50.5		103	70-130			

Matrix Spike Dup (P9L2013-MSD1)

Source: 9L20007-11

Prepared: 12/20/19 Analyzed: 12/21/19

C6-C12	1210	25.3	mg/kg dry	1010	20.2	118	75-125	6.97	20	
>C12-C28	1180	25.3	"	1010	ND	117	75-125	1.31	20	
Surrogate: 1-Chlorooctane	122		"	101		121	70-130			
Surrogate: o-Terphenyl	56.3		"	50.5		111	70-130			

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Cooper Jal 238-Legacy
Project Number: 18-0138-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Notes and Definitions

S-HII Both Surrogate recoveries were above the acceptance limits, however, the sample the sample was non-detect for the compounds of interest.

S-GC Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.

ROI Received on Ice

BULK Samples received in Bulk soil containers

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis

RPD Relative Percent Difference

LCS Laboratory Control Spike

MS Matrix Spike

Dup Duplicate

Report Approved By:



Date:

12/23/2019

Brent Barron, Laboratory Director/Technical Director

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If you have received this material in error, please notify us immediately at 432-686-7235.

Permian Basin Environmental Lab, L.P.

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Midland TX, 79710

Project Manager: Mark Larson

Permian Basin Environmental Lab, L.P.

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1400 Rankin HWY Midland, TX 79701 432-686-7235

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

Data Reported to:

DATE: 12-20-2019 PAGE 1 OF 1
PO#: LAB WORK ORDER#: 9120007
PROJECT LOCATION OR NAME: Cooper Jai 238
LAI PROJECT #: 18-0138-a COLLECTOR: DS/EE

CHAIN-OF-CUSTODY

0930
N

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Appendix E

Photographs

Cooper Jal 238
LEA COUNTY, NEW MEXICO



Spill Area Viewing Northwest, May 4, 2018



Spill Area Viewing Southeast, May 4, 2018

Cooper Jal 238
LEA COUNTY, NEW MEXICO



Spill Area Viewing South, May 4, 2018



Spill Area Viewing East, May 4, 2018

Cooper Jal 238
LEA COUNTY, NEW MEXICO



Northern Excavation Area Viewing Northwest, December 20, 2019



Northern Excavation Area Viewing Southeast, December 20, 2019

Cooper Jal 238
LEA COUNTY, NEW MEXICO



Southern Excavation Area Viewing Southwest, November 12, 2019

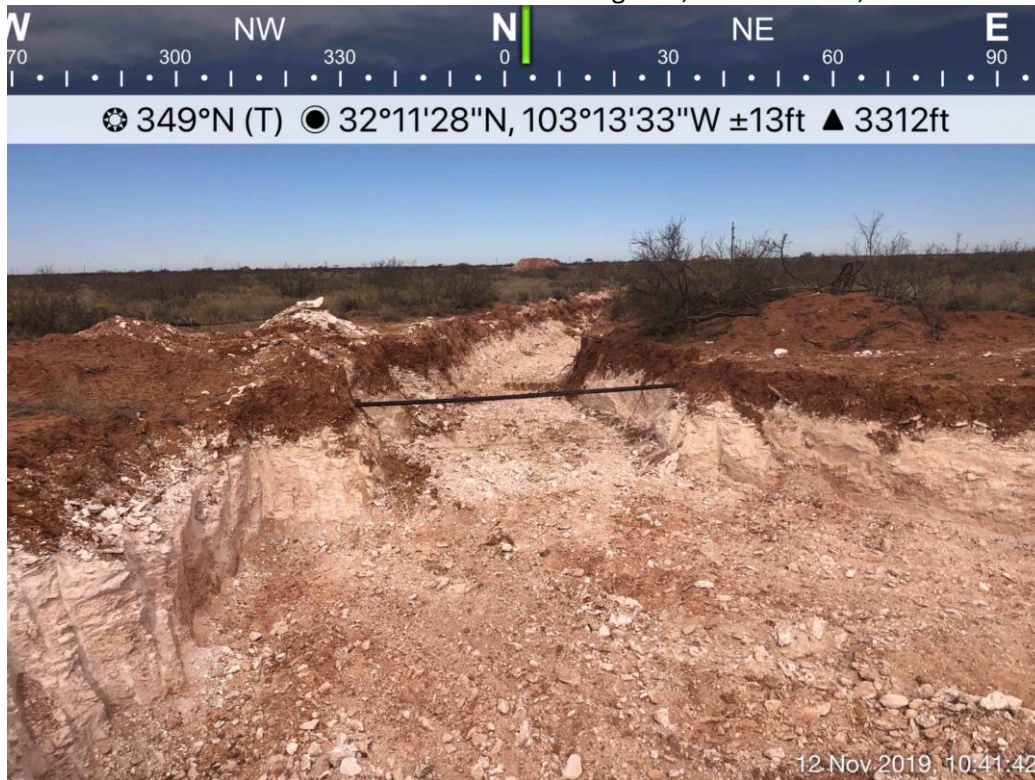


Southern Excavation Area Viewing Northeast, November 12, 2019

Cooper Jal 238
LEA COUNTY, NEW MEXICO



Southern Excavation Area Viewing East, November 12, 2019



Southern Excavation Area Viewing North, November 12, 2019

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 160788

CONDITIONS

Operator: LEGACY RESERVES OPERATING, LP 15 Smith Road Midland, TX 79705	OGRID: 240974
	Action Number: 160788
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
bhall	None	3/22/2023