



July 26, 2021

Mr. Jason Davidson  
Great Western Operating Company, LLC  
1001 17th Street, Suite 2000  
Denver, Colorado 80202

**RE: Site Characterization Results and Subsurface Investigation Workplan  
Kielian 2-2 Battery  
COGCC Remediation Project #17902  
Weld County, Colorado**

Mr. Davidson,

Entrada Consulting Group, Inc. (Entrada) has prepared this report for Great Western Operating Company, LLC (GWOC) to present the results of recent test pit soil sampling activities and propose a drilling site assessment to further investigate the remaining extent of impact to soil and groundwater at the Kielian 2-2 tank battery (Facility ID# 463941) (Site) located in Weld County, Colorado. The Site is located approximately 0.1 miles west of Weld County Road 23 and 0.3 miles north of the town of Milliken, Colorado. The center location coordinates of the Kielian 2-2 battery are 40.335401° latitude and -104.850186° longitude. A general location map is provided as Figure 1.

## **SITE HISTORY**

On May 5, 2021, during facility closure sampling activities, soil and groundwater impacts were observed in test pits advanced to groundwater below the partially buried produced water tank and below the horizontal separator. The historic release was reported under Form 19 document number 402681921 submitted on May 6, 2021 and approved on May 10, 2021. Details of the sampling were discussed in the Entrada report titled *Additional Site Characterization Workplan*, dated June 7, 2021, and submitted to the Colorado Oil and Gas Conservation Commission (COGCC) in supplemental Form 27 document number 402708417.

## TEST PIT SAMPLING ACTIVITIES

Based on the results of the initial sampling, on June 7 and 8, 2021, eight additional test pits (TP3 through TP10) were excavated to investigate the extent of hydrocarbon impact. In each test pit, soil was field screened at 2-foot vertical intervals from ground surface to a total depth of approximately 10 feet below ground surface (ft-bgs) for evidence of hydrocarbon impact such as staining, odor, and elevated volatile organic compound (VOC) concentrations measured by a photo-ionization detector (PID). General lithology observed in the test pits was similar across the Site and consisted of organic rich silty clay from ground surface to approximately 6 ft-bgs underlain by well graded gravelly sand to total depth. Groundwater was observed at approximately 5 feet to 7 ft-bgs across the Site. Staining, odor, and elevated VOC concentrations were noted in the saturated gravelly sand in all test pits except TP5. At test pits TP3 through TP6, TP9, and TP10, one soil sample was collected from the interval located directly above groundwater saturation. The soil samples were placed into laboratory provided containers, placed on ice, and delivered under standard chain of custody protocol to Origins Laboratory in Denver, Colorado for the following analysis:

- Benzene, toluene, ethylbenzene, total xylenes (BTEX), 1,2,4-trimethylbenzene (TMB), 1,3,5-TMB and total petroleum hydrocarbons (TPH)-gasoline range organics (GRO) by Environmental Protection Agency (EPA) Method 8260D
- TPH-diesel range organics (DRO) and TPH oil range organics (ORO) by EPA Method 8015D; and
- Acenaphthene, anthracene, chrysene, naphthalene, and pyrene by EPA Method 8270D.

The test pit locations, soil sample locations, and analytical results exceeding their respective Protection to Groundwater Soil Screening Levels (GWSSLs) are provided on Figure 2. All analytical results collected from the Site to date are summarized in Table 1 through Table 3. A photographic log is provided as Attachment A, and laboratory analytical reports are provided as Attachment B.

### Soil Analytical Results

Analytical results with concentrations above their respective COGCC Table 915-1 GWSSLs are summarized below.

- Benzene concentrations in samples SS6-6, SS8-6, and SS12-4 were reported above the Table 915-1 GWSSL of 0.0026 milligrams per kilogram (mg/kg) with concentrations of 0.744 mg/kg, 0.00406 mg/kg, and 0.0490 mg/kg, respectively.
- Ethylbenzene in sample SS6-6 was reported above the Table 915-1 GWSSL of 0.78 mg/kg with a concentration of 2.62 mg/kg.

- Naphthalene in samples SS7-6, SS11-6, and SS12-4 was reported above the Table 915-1 GWSSL of 0.0038 mg/kg with concentrations of 0.00886 mg/kg, 0.566 mg/kg, and 0.0181 mg/kg, respectively.
- 1,2,4-TMB in samples SS6-6 and SS12-4 was reported above the Table 915-1 GWSSL of 0.0081 mg/kg with concentrations of 27.5 mg/kg and 0.377 mg/kg, respectively.
- TPH in sample SS6-6 was reported above the Table 915-1 GWSSL of 500 mg/kg with a concentration of 2,285 mg/kg.

All other soil analytical results submitted for analysis were reported at concentrations compliant with applicable COGCC Table 915-1 GWSSLs.

### **TEMPORARY PIEZOMETER INSTALLATION AND HYDROGEOLOGY**

Prior to backfilling test pits TP3 through TP7, temporary 2-inch PVC piezometers were installed to allow collection of depth to water (DTW) measurements to calculate the groundwater flow direction and hydraulic gradient. On June 8, 2021, Entrada surveyed the relative top of casing (TOC) elevations and on June 9, 2021, collected depth to water measurements in each piezometer. The surveyed TOC relative elevations were compared to an arbitrary benchmark of 100 feet. The measured DTW from TOC measurements and relative groundwater elevations are summarized below.

<b>Piezometer ID</b>	<b>DTW (feet below TOC)</b>	<b>Relative Groundwater Elevation (feet)</b>
TP3	6.82	89.11
TP4	6.01	89.06
TP5	9.12	89.57
TP6	6.11	89.27
TP7	10.80	89.14

Groundwater was determined to flow north-northeast with an average gradient of 0.003 feet per foot. The piezometer locations, relative groundwater elevations, potentiometric surface contours, and groundwater analytical data collected from initial investigation activities are displayed on Figure 3.

### **ADDITIONAL SITE CHARACTERIZATION (II)**

Based on the data collected to date, Entrada proposes to conduct additional delineation of the remaining soil impact by advancing a minimum of 14 soil borings at the Site with a direct push drilling rig. At least 3 days prior to drilling, the drilling subcontractor will call in a utility locate request in accordance with Colorado State laws. Each soil boring will

be advanced to a total depth of 12 ft-bgs. An Entrada geologist will field screen the soil recovered from each soil boring and record general lithology, VOC concentrations measured with a PID, and observations of visual and olfactory evidence of impact such as staining and odor. One soil sample will be collected from the vadose zone in each soil boring from the interval exhibiting the greatest field evidence of impact. In the absence of field observed impact, the soil sample will be collected immediately above groundwater saturation. The soil samples will be submitted to Origins for laboratory analysis of BTEX, 1,2,4 and 1,3,5 TMB, TPH-GRO/DRO/ORO, naphthalene, acenaphthene, anthracene, chrysene, fluorene, 1-methylnaphthalene, 2-methylnaphthalene, and pyrene by equivalent analytical methods to the previously analyzed samples. The proposed soil boring locations are shown on Figure 4. The proposed soil boring locations are subject to change based on field conditions encountered during drilling.

To investigate the remaining extent of groundwater impact, eight of the soil borings will be completed as 1-inch PVC monitoring wells to facilitate subsequent groundwater monitoring and sample collection. Each monitoring well will be installed to a total depth of approximately 12 ft-bgs with 10 feet of 0.010-inch slotted screen extending from total depth and blank casing extending from the top of screen to ground surface. The monitoring wells will be completed as flush-mounts or with steel riser protective covers. At least 3 days prior to the commencement of work, Entrada will file a Notice of Intent to construct monitoring wells with the Colorado Division of Water Resources (DWR) and all monitoring wells will be constructed and permitted in accordance with DWR well construction rules per COGCC Rule 915.e.(3).B.iii. The proposed monitoring well locations are also shown on Figure 4.

At least 24-hours after installation and completion, the monitoring wells will be developed by purging 10 casing volumes from each well and groundwater samples will be collected for laboratory analysis. The groundwater samples will be analyzed for BTEX, 1,2,4-TMB, 1,3,5-TMB, and naphthalene by EPA Method 8260D. During sampling activities, the relative elevations of each monitoring well's top of casing will be surveyed to calculate the groundwater potentiometric surface. Additionally, the temporary piezometers previously installed will be removed.

We appreciate the opportunity to assist Great Western Operating Company, LLC.  
Please contact me at (804) 513-0707 if you have any questions.

Sincerely,

**ENTRADA CONSULTING GROUP**

A handwritten signature in black ink, appearing to read "Jeremy Pike". The signature is fluid and cursive, with the first name "Jeremy" written in a larger, more prominent script than the last name "Pike".

Jeremy Pike, P.G.  
*Senior Project Geologist*

**Attachments:**

**Figure 1 – General Location Map**

**Figure 2 – Soil Analytical Results**

**Figure 3 – Relative Groundwater Elevation Map**

**Figure 4 – Proposed Soil Boring and Monitoring Well Locations**

**Table 1 – Soil Analytical Results: BTEXN, TMBs, TPH**

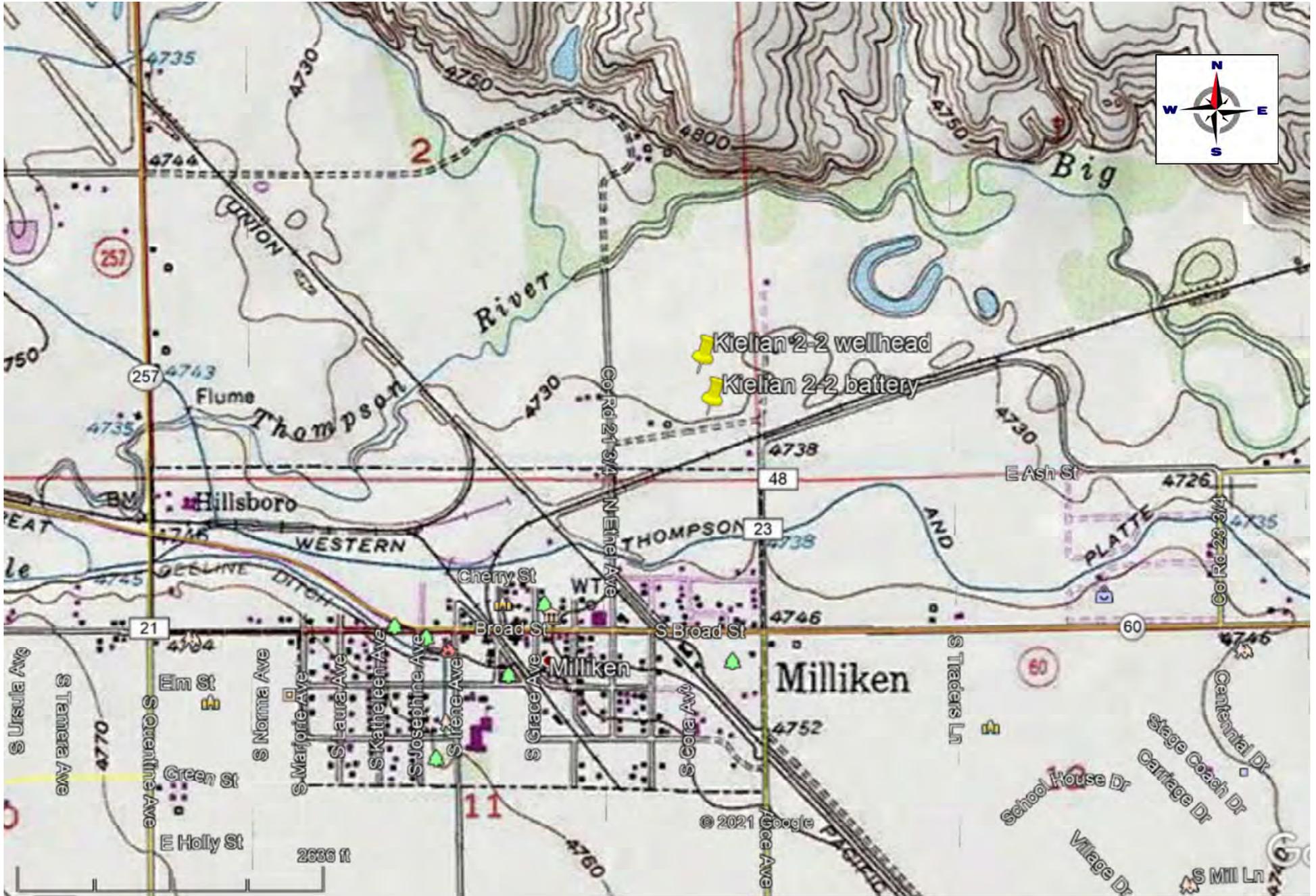
**Table 2 – Soil Analytical Results: Polycyclic Aromatic Hydrocarbons**

**Table 3 – Soil Analytical Results: Metals and Soil Suitability for Reclamation**

**Attachment A: Photographic Log**

**Attachment B: Laboratory Analytical Reports**

## **FIGURES**



PROJECT NO:	
DRAWN BY:	BFB
DATE:	4/14/2021

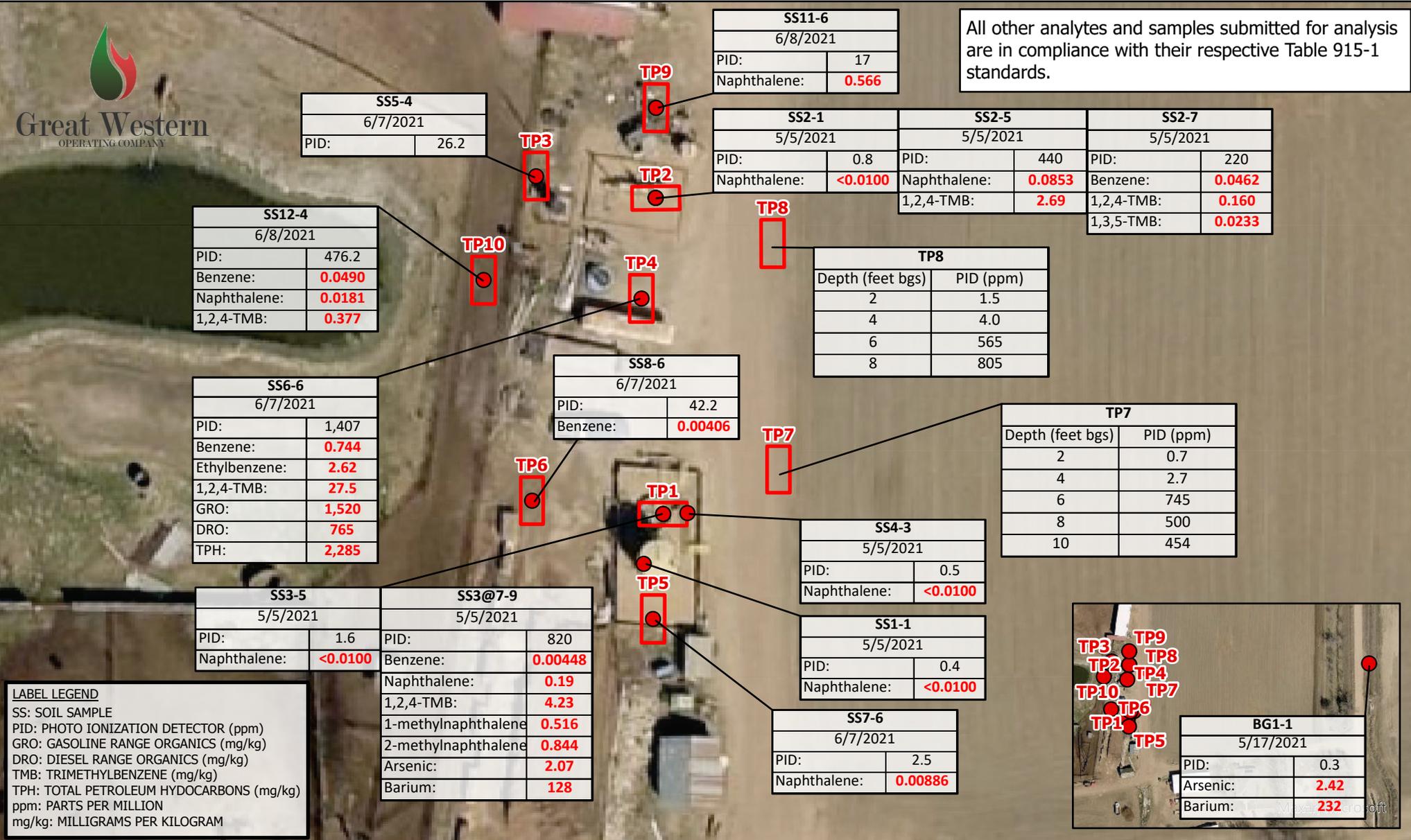
General Location Map  
 Kielian 2-2 Battery and Wellhead  
 S2 T4N R67W  
 Weld County, Colorado



  
 1001 17<sup>th</sup> Street, Suite 2000  
 Denver, CO 80202  
 TEL. 303-398-0302

FIGURE
1

All other analytes and samples submitted for analysis are in compliance with their respective Table 915-1 standards.



**LABEL LEGEND**

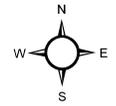
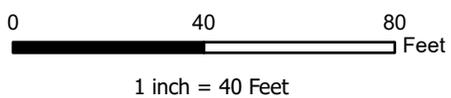
SS: SOIL SAMPLE  
 PID: PHOTO IONIZATION DETECTOR (ppm)  
 GRO: GASOLINE RANGE ORGANICS (mg/kg)  
 DRO: DIESEL RANGE ORGANICS (mg/kg)  
 TMB: TRIMETHYLBENZENE (mg/kg)  
 TPH: TOTAL PETROLEUM HYDROCARBONS (mg/kg)  
 ppm: PARTS PER MILLION  
 mg/kg: MILLIGRAMS PER KILOGRAM

**LEGEND**

● Soil Sample  
 □ Approximate Test Pit Extent

**NOTES:**

- SSX-X = Soil Sample ID - depth in feet below ground surface, Sample Date
- All analytical results displayed in milligrams per kilogram (mg/kg).
- All PID readings displayed in parts per million.



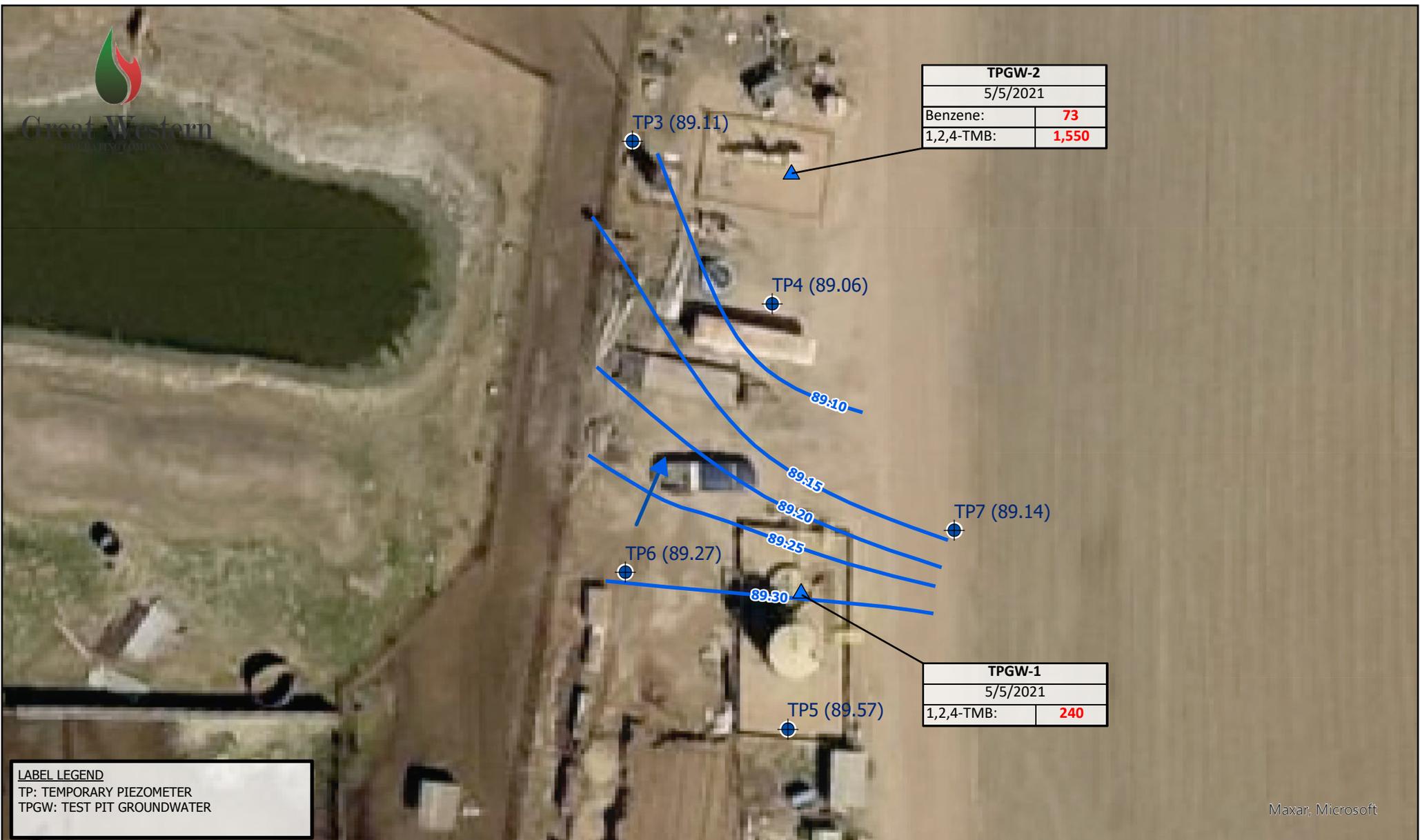
Project No:	021-060
Map By:	JW
Date:	06/28/2021

SOIL ANALYTICAL RESULTS  
 KIELIAN BATTERY 2-2  
 GREAT WESTERN OPERATING COMPANY  
 SE 1/4 SE 1/4 SECTION 2  
 T4N R67W, 6TH PM  
 WELD COUNTY, COLORADO



1843 Sunlight Dr.  
 Longmont, CO 80504  
 303.378.4036

Figure	2
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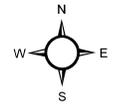
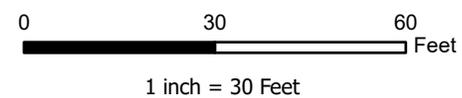


**LABEL LEGEND**  
 TP: TEMPORARY PIEZOMETER  
 TPGW: TEST PIT GROUNDWATER

Maxar, Microsoft

**LEGEND**

-  Test Pit Groundwater Grab Sample
-  Relative Groundwater Elevation Contour  
Contour Interval = 0.05 feet
-  Temporary Piezometer (Relative Elevation in feet)



Project No:	021-060
Map By:	JW
Date:	06/28/2021

GROUNDWATER RELATIVE ELEVATION MAP - JUNE 9TH, 2021  
 KIELIAN BATTERY 2-2  
 GREAT WESTERN OPERATING COMPANY  
 SE 1/4 SE 1/4 SECTION 2  
 T4N R67W, 6TH PM  
 WELD COUNTY, COLORADO



1843 Sunlight Dr.  
 Longmont, CO 80504  
 303.378.4036

Figure	3
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Proposed boring and monitoring well locations are subject to change based on field conditions encountered during drilling.

Down gradient point of compliance well

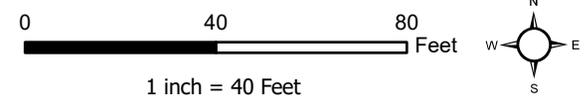


Maxar, Microsoft

**LABEL LEGEND**  
 SS: SOIL SAMPLE  
 TP: TEST PIT  
 TPGW: TEST PIT GROUNDWATER

**LEGEND**

- Proposed Soil Boring Location
- ⊕ Proposed Monitoring Well Location
- ▲ Test Pit Groundwater Grab Sample
- Calculated Groundwater Flow
- Soil Sample



Project No:	021-060
Map By:	JW
Date:	07/26/2021

**PROPOSED SOIL BORING AND MONITORING WELL LOCATIONS**  
 KIELIAN BATTERY 2-2  
 GREAT WESTERN OPERATING COMPANY  
 SE 1/4 SE 1/4 SECTION 2  
 T4N R67W, 6TH PM  
 WELD COUNTY, COLORADO



1843 Sunlight Dr.  
 Longmont, CO 80504  
 303.378.4036

Figure
4

## **TABLES**



**TABLE 1**  
**Analytical Results Summary: BTEXN, TMBs, TPH**  
**Kielian 2-2 Tank Battery. Weld County, CO**

Sample Information				BTEXN + TMBs							TPH			
Sample ID	Depth	Sample Date	PID Field Screening	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naphthalene	1,2,4-TMB	1,3,5-TMB	GRO	DRO	ORO	TPH
Units -->	ft-bgs	mm/dd/yyyy	ppm	mg/kg							mg/kg			
COGCC Table 915-1 GWSSL -->				0.0026	0.69	0.78	9.9	0.0038	0.0081	0.0087	500	500	500	500
SS1-1	1	5/5/2021	0.4	<0.00200	<0.00200	<0.00200	<0.00200	<0.0100	<0.00200	<0.00200	<0.200	<50.0	<200	<200
SS2-1	1	5/5/2021	0.8	<0.00200	<0.00200	<0.00200	<0.00200	<0.0100	<0.00200	<0.00200	0.313	<50.0	<200	<200
SS2-5	5	5/5/2021	440	<0.00200	0.00260	0.00638	0.0102	<b>0.0853</b>	<b>2.69</b>	<0.00200	231	135	<200	366
SS2-7	7	5/5/2021	220	<b>0.0462</b>	<0.00200	0.0525	0.0934	<0.00380	<b>0.160</b>	<b>0.0233</b>	7.46	<50.0	<200	7.46
SS3-5	5	5/5/2021	1.6	<0.00200	<0.00200	<0.00200	<0.00200	<0.0100	<0.00200	<0.00200	<0.200	<50.0	<200	<200
SS3@7-9	7-9	5/5/2021	820	<b>0.00448</b>	0.00272	0.247	0.00734	<b>0.19</b>	<b>4.23</b>	0.00646	127	290	<200	417
SS4-3	3	5/5/2021	0.5	<0.00200	<0.00200	<0.00200	<0.00200	<0.0100	<0.00200	<0.00200	<0.200	<50.0	<200	<200
SS5-4	4	6/7/2021	26.2	<0.00200	<0.00200	<0.00200	<0.00200	<0.00067	<0.00200	<0.00200	<0.200	<50.0	<200	<200
SS6-6	6	6/7/2021	1,407	<b>0.744</b>	0.0590	<b>2.62</b>	<0.0500	<0.00067	<b>27.5</b>	<0.0500	<b>1,520</b>	<b>765</b>	<200	<b>2,285</b>
SS7-6	6	6/7/2021	2.5	<0.00200	<0.00200	<0.00200	<0.00200	<b>0.00886</b>	<0.00200	<0.00200	<0.200	<50.0	<200	<200
SS8-6	6	6/7/2021	42.2	<b>0.00406</b>	<0.00200	0.0429	0.281	0.000583	0.0405	0.0169	2.07	<50.0	<200	2.07
SS11-6	6	6/8/2021	17	<0.00200	<0.00200	<0.00200	<0.00200	<b>0.566</b>	<0.00200	<0.00200	<0.200	<50.0	<200	<200
SS12-4	4	6/8/2021	476.2	<b>0.0490</b>	<0.00200	0.0801	<0.00200	<b>0.0181</b>	<b>0.377</b>	<0.00200	15.5	<50.0	<200	15.5

Notes:

GRO - Gasoline Range Organics  
DRO - Diesel Range Organics  
ORO - Oil Range Organics  
TPH - Total Petroleum Hydrocarbons  
PID - Photo Ionization Detector  
TMB - Trimethylbenzene  
ft-bgs - feet below ground surface

mg/kg - milligrams per kilogram  
ppm - parts per million  
COGCC - Colorado Oil and Gas Conservation Commission  
BTEXN - Benzene, Toluene, Ethylbenzene, Xylenes, Naphthalene  
GWSSL - Groundwater Soil Screening Level  
< - indicates result is below the laboratory reporting limit  
**Bold - Above COGCC Table 915-1 GWSSL**





**TABLE 2**  
**Analytical Results Summary: Polycyclic Aromatic Hydrocarbons**  
**Kielian 2-2 Tank Battery. Mead, CO**

Analyte	COGCC Table 915-1 GWSSL	SS3@7-9	SS5-4	SS6-6	SS7-6	SS8-6	SS11-6	SS12-4	BG1-1	Units
<b>Sample Information</b>										
Sample Date	NA	5/5/2021	6/7/2021	6/7/2021	6/7/2021	6/7/2021	6/8/2021	6/8/2021	5/17/2021	mm/dd/yyyy
Sample Depth	NA	7-9	4	6	6	6	6	4	1	ft-bgs
Field Screening	NA	820	26.2	1,407	2.5	42.2	17	476.2	0.3	ppm
<b>Polycyclic Aromatic Hydrocarbons</b>										
acenaphthene	0.55	0.0383	<0.00067	<0.00067	0.000782	<0.00067	0.149	0.0039	-	mg/kg
anthracene	5.8	0.00285	<0.00067	<0.00067	<0.00067	<0.00067	0.00639	<0.00067	-	mg/kg
benz(a)anthracene	0.011	<0.00335	-	-	-	-	-	-	-	mg/kg
benzo(b)fluoranthene	0.3	<0.00335	-	-	-	-	-	-	-	mg/kg
benzo(k)fluoranthene	2.9	<0.00335	-	-	-	-	-	-	-	mg/kg
benzo(a)pyrene	0.24	<0.00335	-	-	-	-	-	-	-	mg/kg
chrysene	9	0.00226	<0.00067	0.0011	0.000334	0.00126	0.0133	<0.00067	-	mg/kg
dibenzo(a,h)anthracene	0.096	<0.00335	-	-	-	-	-	-	-	mg/kg
fluoranthene	8.9	<0.00335	-	-	-	-	-	-	-	mg/kg
fluorene	0.54	0.115	-	-	-	-	-	-	-	mg/kg
indeno(1,2,3-cd)pyrene	0.98	<0.00335	-	-	-	-	-	-	-	mg/kg
1-methylnaphthalene	0.006	<b>0.516</b>	-	-	-	-	-	-	-	mg/kg
2-methylnaphthalene	0.019	<b>0.844</b>	-	-	-	-	-	-	-	mg/kg
pyrene	1.3	0.0032	<0.00067	0.00259	0.000702	0.0018	0.0121	<0.00067	-	mg/kg

Notes:

COGCC - Colorado Oil and Gas Conservation Commission  
 GWSSL - Groundwater Soil Screening Level  
 SS9-6: Sample name  
 NA - not applicable  
 ft-bgs - feet below ground surface

ppm - parts per million  
 - - not analyzed  
 mg/kg - milligrams per kilogram  
 < - indicates result is below the laboratory reporting limit  
**Bold- Above COGCC Table 915-1 GWSSL**





**TABLE 3**  
**Analytical Results Summary: Metals and Soil Suitability for Reclamation**  
**Kielian 2-2 Tank Battery. Mead, CO**

Analyte	COGCC Table 915-1 GWSSL	SS3@7-9	SS5-4	SS6-6	SS7-6	SS8-6	SS11-6	SS12-4	BG1-1	Units
<b>Sample Information</b>										
Sample Date	NA	5/5/2021	6/7/2021	6/7/2021	6/7/2021	6/7/2021	6/8/2021	6/8/2021	5/17/2021	mm/dd/yyyy
Sample Depth	NA	7-9	4	6	6	6	6	4	1	ft-bgs
Field Screening	NA	820	26.2	1,407	2.5	42.2	17	476.2	0.3	ppm
<b>Metals in Soil</b>										
arsenic	0.29	<b>2.07</b>	-	-	-	-	-	-	<b>2.42</b>	mg/kg
barium	82	<b>128</b>	-	-	-	-	-	-	<b>232</b>	mg/kg
cadmium	0.38	0.23	-	-	-	-	-	-	-	mg/kg
chromium (VI)	0.00067	<1.22	-	-	-	-	-	-	-	mg/kg
copper	46	13.7	-	-	-	-	-	-	-	mg/kg
lead	14	8.17	-	-	-	-	-	-	-	mg/kg
nickel	26	13.6	-	-	-	-	-	-	-	mg/kg
selenium	0.26	0.216	-	-	-	-	-	-	-	mg/kg
silver	0.8	0.0715	-	-	-	-	-	-	-	mg/kg
zinc	370	51.3	-	-	-	-	-	-	-	mg/kg
<b>Soil Suitability for Reclamation</b>										
pH	6 - 8.3	7.96	-	-	-	-	-	-	-	su
EC	4	1.48	-	-	-	-	-	-	-	mmhos/cm
boron	2	1.6	-	-	-	-	-	-	-	mg/kg
SAR	6	1.20	-	-	-	-	-	-	-	unitless

Notes:

SS9-6: Sample name

mg/kg - milligrams per kilogram

COGCC - Colorado Oil and Gas Conservation Commission

ft-bgs - feet below ground surface

ppm - parts per million

su - standard units

mmhos/cm - millimhos per centimeter

EC - Electrical Conductivity

SAR - Soil Adsorption Ratio

GWSSL - Groundwater Soil Screening Level

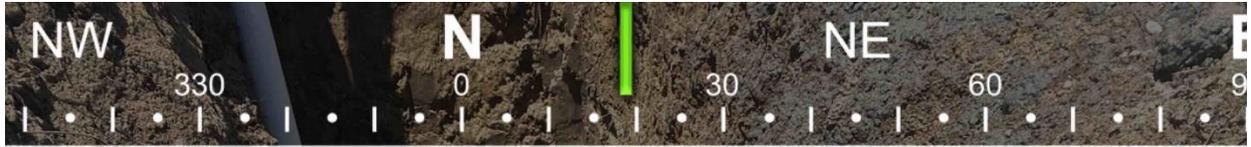
< - indicates result is below the laboratory reporting limit

**Bold- Above COGCC Table 915-1 GWSSL**



**ATTACHMENT A  
PHOTOGRAPHIC LOG**

Kielian 2-2 Photographic Log



☀ 19°N (T) ☉ 40°20'7"N, 104°51'1"W ±16ft ▲ 4745ft



TPGW3

Kielian 2-2  
07 Jun 2021, 13:55:31

Kielian 2-2 Photographic Log



Entrada Consulting Group  
June 2021

Kielian 2-2 Photographic Log

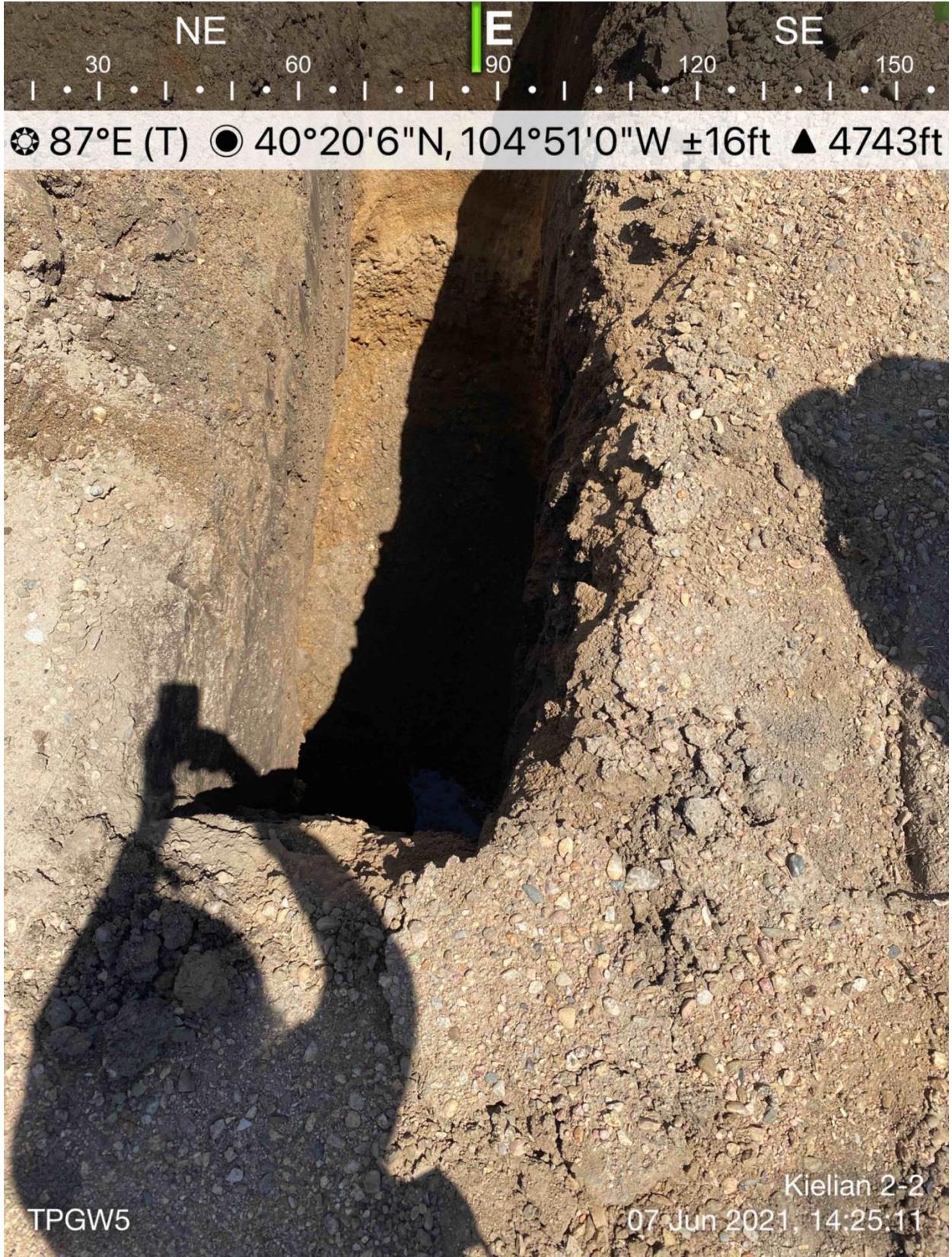


Entrada Consulting Group  
June 2021

Kielian 2-2 Photographic Log



Kielian 2-2 Photographic Log

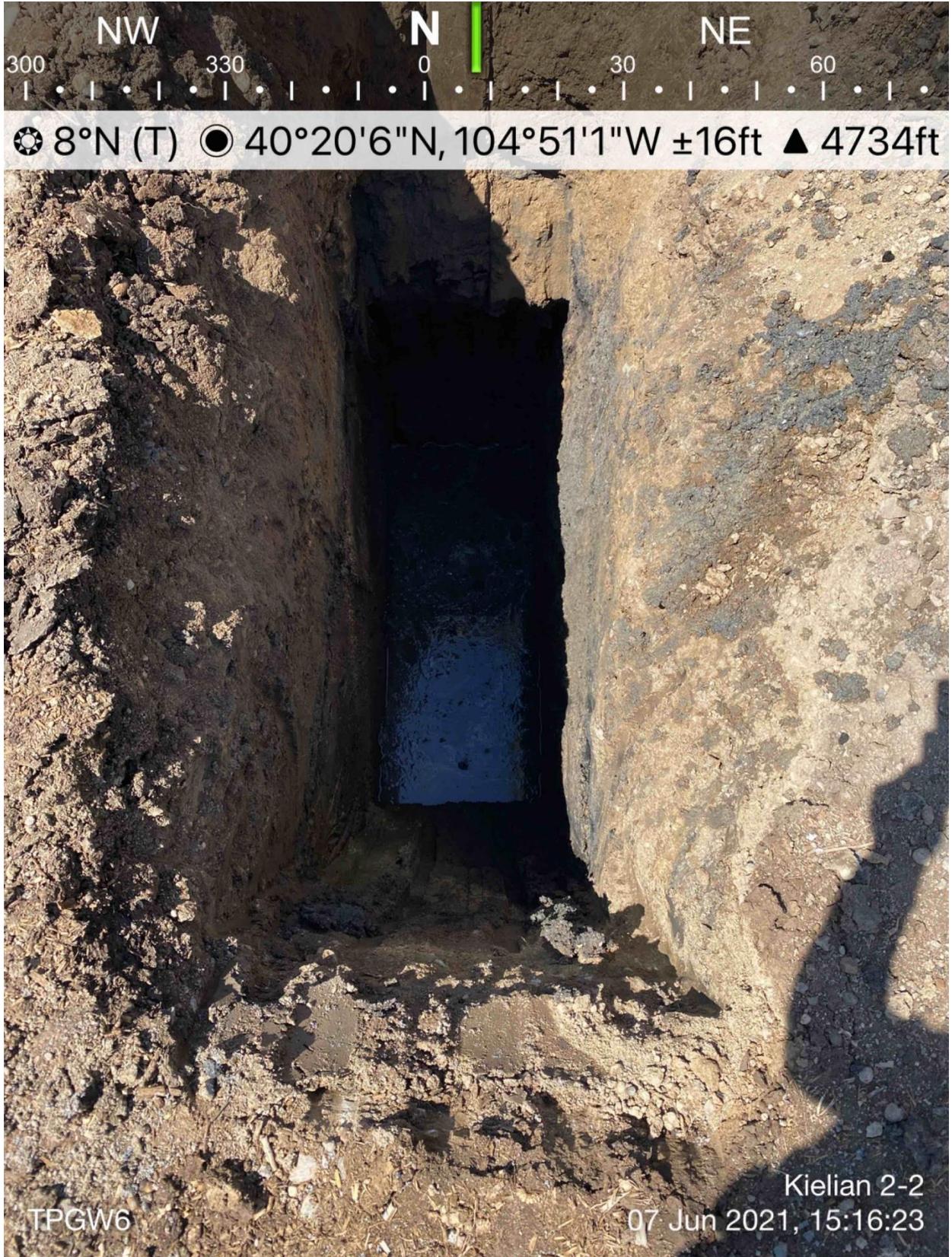


Kielian 2-2 Photographic Log



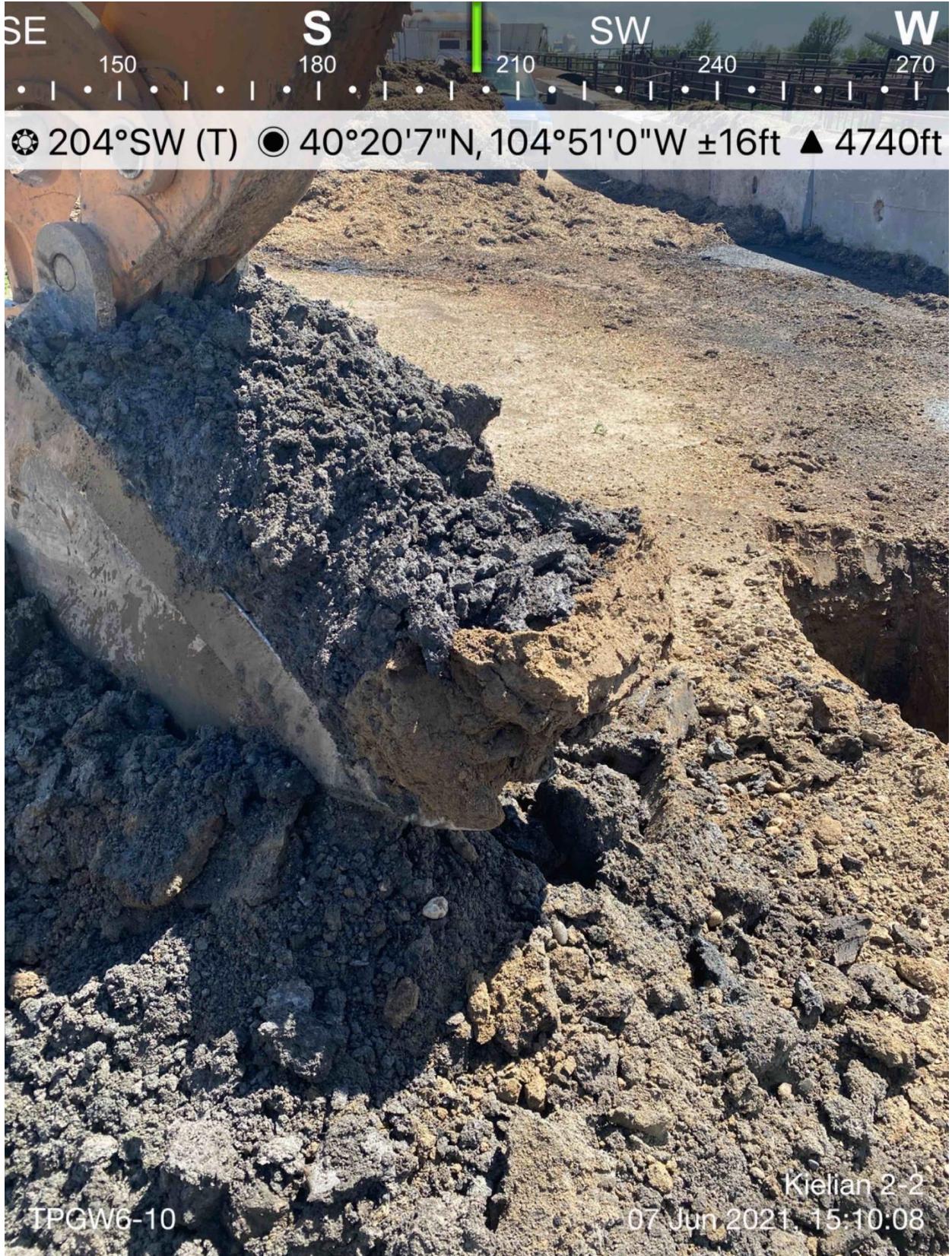
Entrada Consulting Group  
June 2021

Kielian 2-2 Photographic Log



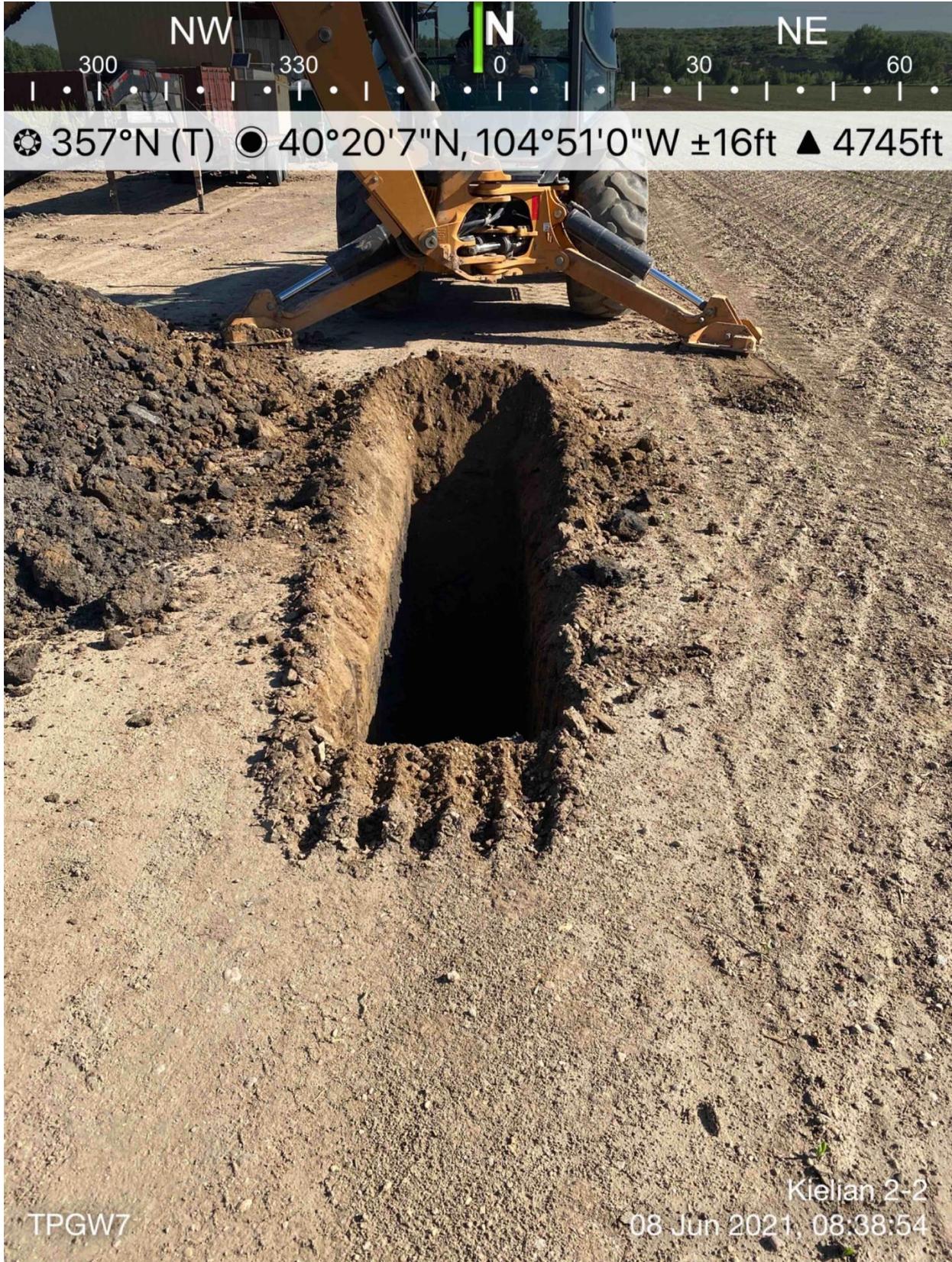
Entrada Consulting Group  
June 2021

Kielian 2-2 Photographic Log



Entrada Consulting Group  
June 2021

Kielian 2-2 Photographic Log



Entrada Consulting Group  
June 2021

Kielian 2-2 Photographic Log



Entrada Consulting Group  
June 2021

Kielian 2-2 Photographic Log



Entrada Consulting Group  
June 2021

Kielian 2-2 Photographic Log



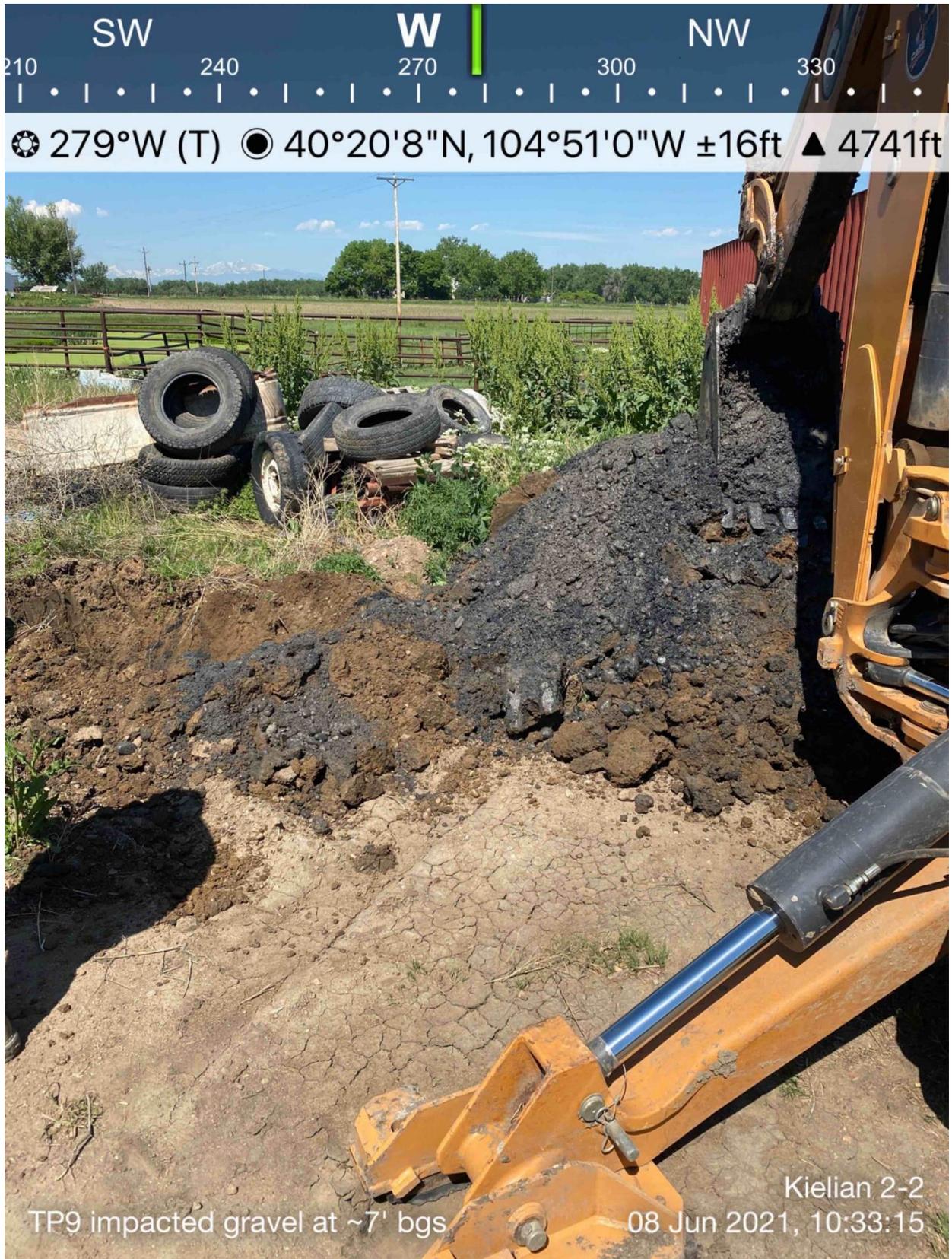
Entrada Consulting Group  
June 2021

Kielian 2-2 Photographic Log



Entrada Consulting Group  
June 2021

Kielian 2-2 Photographic Log



Entrada Consulting Group  
June 2021

Kielian 2-2 Photographic Log



Entrada Consulting Group  
June 2021

Kielian 2-2 Photographic Log



**ATTACHMENT B  
ANALYTICAL REPORTS**

June 15, 2021

**Entrada Consulting Group**

**Ben Baugh**

**330 Grand Ave. Unit C**

**Grand Junction CO 81501**

**Project Name - Kielian 2-2 TB**

**Project Number - 021-060**

Attached are your analytical results for Kielian 2-2 TB received by Origins Laboratory, Inc. June 08, 2021. This project is associated with Origins project number Y106183-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com



Entrada Consulting Group  
330 Grand Ave. Unit C  
Grand Junction CO 81501

Ben Baugh  
Project Number: 021-060  
Project: Kielian 2-2 TB

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS5-4	Y106183-01	Soil	June 7, 2021 13:23	06/08/2021 15:50
SS6-6	Y106183-02	Soil	June 7, 2021 14:07	06/08/2021 15:50
SS7-6	Y106183-03	Soil	June 7, 2021 14:28	06/08/2021 15:50
SS8-6	Y106183-04	Soil	June 7, 2021 15:11	06/08/2021 15:50
SS11-6	Y106183-07	Soil	June 8, 2021 10:32	06/08/2021 15:50
SS12-4	Y106183-08	Soil	June 8, 2021 12:02	06/08/2021 15:50

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



Entrada Consulting Group  
 330 Grand Ave. Unit C  
 Grand Junction CO 81501

Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

Origins Laboratory

F-012207-01-R1  
 Effective Date: 01/09/12

**Sample Receipt Checklist**

Origins Work Order: Y106183

Client: Entrada  
 Client Project ID: Kielian 2-2

Checklist Completed by: Jm

Shipped Via: HD  
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 6-9-21

Airbill #: N/A

Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_

Cooler Number/Temperature: 1 13.6 °C / \_\_\_\_\_ °C / \_\_\_\_\_ °C (Describe) \_\_\_\_\_ °C

Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?		X		
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact <sup>(1)</sup> ?	X			
Was adequate sample volume provided <sup>(1)</sup> ?	X			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		X		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	X			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	X			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	X			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	X			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			X	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH < 2 for samples preserved with HNO <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> ) / (pH > 10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)			X	
Additional Comments (if any):	559-4 & 5510-4 on hold per Jeremys email on 6/9			

<sup>(1)</sup>If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) \_\_\_\_\_

Date/Time Reviewed \_\_\_\_\_

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Entrada Consulting Group  
 330 Grand Ave. Unit C  
 Grand Junction CO 81501

Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

**SS5-4**

**6/7/2021 1:23:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y106183-01 (Soil)**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND		50.0	mg/kg	1	B1F0911	06/09/2021	06/10/2021	U
Residual Range Organics (C28-C40)	ND		200	"	"	"	"	"	U

Surrogate: <i>o</i> -Terphenyl	88.3 %		50-150			"	"	"	
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**GBTEX+TMBs**

1,2,4-Trimethylbenzene	ND		0.00200	mg/kg	1	B1F0917	06/09/2021	06/10/2021	U
1,3,5-Trimethylbenzene	ND		0.00200	"	"	"	"	"	U
Benzene	ND		0.00200	"	"	"	"	"	U
Ethylbenzene	ND		0.00200	"	"	"	"	"	U
Toluene	ND		0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	ND		0.200	"	"	"	"	"	U
Xylenes, total	ND		0.00200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	97.8 %		70-130			"	"	"	
Surrogate: Toluene-d8	110 %		70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.6 %		70-130			"	"	"	

**PAH by 8270D SIM**

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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Entrada Consulting Group  
 330 Grand Ave. Unit C  
 Grand Junction CO 81501

Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

**SS5-4**

**6/7/2021 1:23:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Waypoint Analytical, Inc.**  
**Y106183-01 (Soil)**

**PAH by 8270D SIM**

Acenaphthene	ND	0.000431	0.00067	mg/Kg	1	L557994	06/11/2021	06/11/2021	
Anthracene	ND	0.000426	0.00067	"	"	"	"	"	
Chrysene	ND	0.000256	0.00067	"	"	"	"	"	
Naphthalene	ND	0.000467	0.00067	"	"	"	"	"	
Pyrene	ND	0.000387	0.00067	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	64.9 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	64.6 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	49.2 %		29-110			"	"	"	

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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Entrada Consulting Group  
 330 Grand Ave. Unit C  
 Grand Junction CO 81501

Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

**SS6-6**

**6/7/2021 2:07:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y106183-02 (Soil)**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	765		50.0	mg/kg	1	B1F0911	06/09/2021	06/10/2021	
Residual Range Organics (C28-C40)	ND		200	"	"	"	"	"	U

Surrogate: *o*-Terphenyl 76.1 % 50-150 " " "

**GBTEX+TMBs**

1,2,4-Trimethylbenzene	27.5		0.500	mg/kg	250	B1F0917	06/09/2021	06/10/2021	
1,3,5-Trimethylbenzene	ND		0.0500	"	25	"	"	06/10/2021	R-01, U
Benzene	0.744		0.0500	"	"	"	"	"	
Ethylbenzene	2.62		0.0500	"	"	"	"	"	
Toluene	0.0590		0.0500	"	"	"	"	"	
Gasoline Range Hydrocarbons	1520		50.0	"	250	"	"	06/10/2021	
Xylenes, total	ND		0.0500	"	25	"	"	06/10/2021	R-01, U

Surrogate: 1,2-Dichloroethane-d4 99.3 % 70-130 " " "  
 Surrogate: Toluene-d8 106 % 70-130 " " "  
 Surrogate: 4-Bromofluorobenzene 126 % 70-130 " " "

**PAH by 8270D SIM**

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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Entrada Consulting Group

330 Grand Ave. Unit C

Grand Junction CO 81501

Ben Baugh

Project Number: 021-060

Project: Kielian 2-2 TB

**SS6-6**

**6/7/2021 2:07:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Waypoint Analytical, Inc.**

**Y106183-02 (Soil)**

**PAH by 8270D SIM**

Acenaphthene	ND	0.000431	0.00067	mg/Kg	1	L557994	06/11/2021	06/11/2021	
Anthracene	ND	0.000426	0.00067	"	"	"	"	"	
Chrysene	<b>0.0011</b>	<b>0.000256</b>	0.00067	"	"	"	"	"	
Naphthalene	ND	0.000467	0.00067	"	"	"	"	"	
Pyrene	<b>0.00259</b>	<b>0.000387</b>	0.00067	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	64.5 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	63.6 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	51.8 %		29-110			"	"	"	

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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Entrada Consulting Group  
 330 Grand Ave. Unit C  
 Grand Junction CO 81501

Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

**SS7-6**

**6/7/2021 2:28:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y106183-03 (Soil)**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND		50.0	mg/kg	1	B1F0914	06/09/2021	06/09/2021	U
Residual Range Organics (C28-C40)	ND		200	"	"	"	"	"	U

Surrogate: <i>o</i> -Terphenyl	83.9 %		50-150			"	"	"	
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**GBTEX+TMBs**

1,2,4-Trimethylbenzene	ND		0.00200	mg/kg	1	B1F0913	06/09/2021	06/09/2021	U
1,3,5-Trimethylbenzene	ND		0.00200	"	"	"	"	"	U
Benzene	ND		0.00200	"	"	"	"	"	U
Ethylbenzene	ND		0.00200	"	"	"	"	"	U
Toluene	ND		0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	ND		0.200	"	"	"	"	"	U
Xylenes, total	ND		0.00200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	96.2 %		70-130			"	"	"	
Surrogate: Toluene-d8	111 %		70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.5 %		70-130			"	"	"	

**PAH by 8270D SIM**

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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Entrada Consulting Group

330 Grand Ave. Unit C

Grand Junction CO 81501

Ben Baugh

Project Number: 021-060

Project: Kielian 2-2 TB

**SS7-6**

**6/7/2021 2:28:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Waypoint Analytical, Inc.**

**Y106183-03 (Soil)**

**PAH by 8270D SIM**

Acenaphthene	0.000782	0.000431	0.00067	mg/Kg	1	L557994	06/11/2021	06/11/2021	
Anthracene	ND	0.000426	0.00067	"	"	"	"	"	
Chrysene	0.000334	0.000256	0.00067	"	"	"	"	"	J
Naphthalene	0.00886	0.000467	0.00067	"	"	"	"	"	
Pyrene	0.000702	0.000387	0.00067	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	71 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	71 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	54 %		29-110			"	"	"	

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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Entrada Consulting Group  
 330 Grand Ave. Unit C  
 Grand Junction CO 81501

Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

**SS8-6**

**6/7/2021 3:11:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y106183-04 (Soil)**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND		50.0	mg/kg	1	B1F1005	06/10/2021	06/10/2021	U
Residual Range Organics (C28-C40)	ND		200	"	"	"	"	"	U

Surrogate: <i>o</i> -Terphenyl	68.0 %		50-150			"	"	"	
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**GBTEX+TMBs**

1,2,4-Trimethylbenzene	<b>0.0405</b>		0.00200	mg/kg	1	B1F0917	06/09/2021	06/10/2021	
1,3,5-Trimethylbenzene	<b>0.0169</b>		0.00200	"	"	"	"	"	
Benzene	<b>0.00406</b>		0.00200	"	"	"	"	"	
Ethylbenzene	<b>0.0429</b>		0.00200	"	"	"	"	"	
Toluene	ND		0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	<b>2.07</b>		0.200	"	"	"	"	"	
Xylenes, total	<b>0.281</b>		0.00200	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	97.5 %		70-130			"	"	"	
Surrogate: Toluene-d8	108 %		70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.3 %		70-130			"	"	"	

**PAH by 8270D SIM**

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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Entrada Consulting Group  
 330 Grand Ave. Unit C  
 Grand Junction CO 81501

Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

**SS8-6**

**6/7/2021 3:11:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Waypoint Analytical, Inc.**  
**Y106183-04 (Soil)**

**PAH by 8270D SIM**

Acenaphthene	ND	0.000431	0.00067	mg/Kg	1	L557994	06/11/2021	06/11/2021	
Anthracene	ND	0.000426	0.00067	"	"	"	"	"	
Chrysene	<b>0.00126</b>	<b>0.000256</b>	0.00067	"	"	"	"	"	
Naphthalene	<b>0.000583</b>	<b>0.000467</b>	0.00067	"	"	"	"	"	J
Pyrene	<b>0.0018</b>	<b>0.000387</b>	0.00067	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	66.7 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	71.5 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	52 %		29-110			"	"	"	

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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Entrada Consulting Group  
 330 Grand Ave. Unit C  
 Grand Junction CO 81501

Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

**SS11-6**  
**6/8/2021 10:32:00AM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y106183-07 (Soil)**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND		50.0	mg/kg	1	B1F1005	06/10/2021	06/10/2021	U
Residual Range Organics (C28-C40)	ND		200	"	"	"	"	"	U

Surrogate: <i>o</i> -Terphenyl	84.8 %		50-150			"	"	"	
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**GBTEX+TMBs**

1,2,4-Trimethylbenzene	ND		0.00200	mg/kg	1	B1F0917	06/09/2021	06/10/2021	U
1,3,5-Trimethylbenzene	ND		0.00200	"	"	"	"	"	U
Benzene	ND		0.00200	"	"	"	"	"	U
Ethylbenzene	ND		0.00200	"	"	"	"	"	U
Toluene	ND		0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	ND		0.200	"	"	"	"	"	U
Xylenes, total	ND		0.00200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	99.3 %		70-130			"	"	"	
Surrogate: Toluene-d8	109 %		70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.5 %		70-130			"	"	"	

**PAH by 8270D SIM**

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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Entrada Consulting Group

330 Grand Ave. Unit C

Grand Junction CO 81501

Ben Baugh

Project Number: 021-060

Project: Kielian 2-2 TB

SS11-6

6/8/2021 10:32:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Waypoint Analytical, Inc.

Y106183-07 (Soil)

**PAH by 8270D SIM**

Acenaphthene	0.149	0.00216	0.00335	mg/Kg	5	L557994	06/11/2021	06/11/2021	
Anthracene	0.00639	0.00213	0.00335	"	"	"	"	"	
Chrysene	0.0133	0.00128	0.00335	"	"	"	"	"	
Naphthalene	0.566	0.00234	0.00335	"	"	"	"	"	
Pyrene	0.0121	0.00194	0.00335	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	67 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	73.3 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	72.1 %		29-110			"	"	"	

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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Entrada Consulting Group  
 330 Grand Ave. Unit C  
 Grand Junction CO 81501

Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

**SS12-4**  
**6/8/2021 12:02:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y106183-08 (Soil)**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND		50.0	mg/kg	1	B1F1005	06/10/2021	06/10/2021	U
Residual Range Organics (C28-C40)	ND		200	"	"	"	"	"	U

Surrogate: o-Terphenyl 71.2 % 50-150 " " "

**GBTEX+TMBs**

1,2,4-Trimethylbenzene	0.377		0.0500	mg/kg	25	B1F0917	06/09/2021	06/11/2021	
1,3,5-Trimethylbenzene	ND		0.00200	"	1	"	"	06/10/2021	U
Benzene	0.0490		0.00200	"	"	"	"	"	
Ethylbenzene	0.0801		0.00200	"	"	"	"	"	
Toluene	ND		0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	15.5		0.200	"	"	"	"	"	
Xylenes, total	ND		0.00200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4 102 % 70-130 " " "  
 Surrogate: Toluene-d8 104 % 70-130 " " "  
 Surrogate: 4-Bromofluorobenzene 111 % 70-130 " " "

**PAH by 8270D SIM**

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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Entrada Consulting Group  
 330 Grand Ave. Unit C  
 Grand Junction CO 81501

Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

**SS12-4**  
**6/8/2021 12:02:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Waypoint Analytical, Inc.**  
**Y106183-08 (Soil)**

**PAH by 8270D SIM**

Acenaphthene	0.0039	0.000431	0.00067	mg/Kg	1	L557994	06/11/2021	06/11/2021	
Anthracene	ND	0.000426	0.00067	"	"	"	"	"	
Chrysene	ND	0.000256	0.00067	"	"	"	"	"	
Naphthalene	0.0181	0.000467	0.00067	"	"	"	"	"	
Pyrene	ND	0.000387	0.00067	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	69.1 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	76.6 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	54.1 %		29-110			"	"	"	

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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Entrada Consulting Group  
 330 Grand Ave. Unit C  
 Grand Junction CO 81501

Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B1F0911 - EPA 3550B</b>										
<b>Blank (B1F0911-BLK1)</b>										
					Prepared: 06/09/2021 Analyzed: 06/09/2021					
Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	43		"	50.0		86.9	50-150			

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Ben Baugh  
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 Project: Kielian 2-2 TB

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B1F0911 - EPA 3550B**

**LCS (B1F0911-BS1)**

Prepared: 06/09/2021 Analyzed: 06/09/2021

Diesel (C10-C28)	809	50.0	mg/kg	1000		80.9	70-130			
Residual Range Organics (C28-C40)	941	200	"	1000		94.1	70-130			
Surrogate: o-Terphenyl	46		"	50.0		92.5	50-150			

Origins Laboratory, Inc.



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 Grand Junction CO 81501

Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B1F0911 - EPA 3550B**

<b>Matrix Spike (B1F0911-MS1)</b>	<b>Source: Y106177-01</b>			Prepared: 06/09/2021 Analyzed: 06/09/2021						
Diesel (C10-C28)	787	50.0	mg/kg	1000	ND	78.7	70-130			
Residual Range Organics (C28-C40)	887	200	"	1000	50.4	83.6	70-130			
Surrogate: o-Terphenyl	44		"	50.0		87.9	50-150			

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 Grand Junction CO 81501

Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B1F0911 - EPA 3550B</b>										
<b>Matrix Spike Dup (B1F0911-MSD1)</b>					<b>Source: Y106177-01</b>					Prepared: 06/09/2021 Analyzed: 06/09/2021
Diesel (C10-C28)	902	50.0	mg/kg	1000	ND	90.2	70-130	13.6	35	
Residual Range Organics (C28-C40)	1070	200	"	1000	50.4	102	70-130	18.4	35	
Surrogate: o-Terphenyl	52		"	50.0		103	50-150			

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 Grand Junction CO 81501

Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B1F0913 - EPA 5030 (soil)**

**Blank (B1F0913-BLK1)**

Prepared: 06/09/2021 Analyzed: 06/09/2021

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							U
Naphthalene	ND	0.0100	"							U
1,3,5-Trimethylbenzene	ND	0.00200	"							U
Benzene	ND	0.00200	"							U
Ethylbenzene	ND	0.00200	"							U
Toluene	ND	0.00200	"							U
Xylenes, total	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		97.2	70-130			
Surrogate: Toluene-d8	0.14		"	0.125		110	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		97.2	70-130			

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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 Grand Junction CO 81501

Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B1F0913 - EPA 5030 (soil)**

**LCS (B1F0913-BS1)**

Prepared: 06/09/2021 Analyzed: 06/09/2021

1,2,4-Trimethylbenzene	0.0583	0.00200	mg/kg	0.0500		117	70-130			
Naphthalene	0.0544	0.0100	"	0.0500		109	70-130			
1,3,5-Trimethylbenzene	0.0583	0.00200	"	0.0500		117	70-130			
Benzene	0.0470	0.00200	"	0.0500		93.9	70-130			
Ethylbenzene	0.0577	0.00200	"	0.0500		115	70-130			
m,p-Xylene	0.115	0.00400	"	0.100		115	70-130			
o-Xylene	0.0537	0.00200	"	0.0500		107	70-130			
Toluene	0.0563	0.00200	"	0.0500		113	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		97.5	70-130			
Surrogate: Toluene-d8	0.14		"	0.125		110	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		97.0	70-130			

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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 Grand Junction CO 81501

Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B1F0913 - EPA 5030 (soil)

Matrix Spike (B1F0913-MS1)	Source: Y106183-03			Prepared: 06/09/2021 Analyzed: 06/09/2021						
1,2,4-Trimethylbenzene	0.0576	0.00200	mg/kg	0.0500	ND	115	70-130			
Naphthalene	0.0505	0.0100	"	0.0500	0.00248	96.1	70-130			
1,3,5-Trimethylbenzene	0.0572	0.00200	"	0.0500	ND	114	70-130			
Benzene	0.0468	0.00200	"	0.0500	ND	93.6	70-130			
Ethylbenzene	0.0573	0.00200	"	0.0500	ND	115	70-130			
m,p-Xylene	0.113	0.00400	"	0.100	ND	113	70-130			
o-Xylene	0.0537	0.00200	"	0.0500	0.000740	106	70-130			
Toluene	0.0551	0.00200	"	0.0500	ND	110	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		95.0	70-130			
Surrogate: Toluene-d8	0.14		"	0.125		110	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.9	70-130			

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Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B1F0913 - EPA 5030 (soil)

Matrix Spike Dup (B1F0913-MSD1)	Source: Y106183-03			Prepared: 06/09/2021 Analyzed: 06/09/2021						
1,2,4-Trimethylbenzene	0.0491	0.00200	mg/kg	0.0500	ND	98.2	70-130	15.9	20	
Naphthalene	0.0493	0.0100	"	0.0500	0.00248	93.6	70-130	2.48	20	
1,3,5-Trimethylbenzene	0.0480	0.00200	"	0.0500	ND	95.9	70-130	17.6	20	
Benzene	0.0387	0.00200	"	0.0500	ND	77.4	70-130	18.9	20	
Ethylbenzene	0.0471	0.00200	"	0.0500	ND	94.2	70-130	19.5	20	
m,p-Xylene	0.0936	0.00400	"	0.100	ND	93.6	70-130	18.6	20	
o-Xylene	0.0450	0.00200	"	0.0500	0.000740	88.5	70-130	17.6	20	
Toluene	0.0454	0.00200	"	0.0500	ND	90.8	70-130	19.3	20	
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		95.7	70-130			
Surrogate: Toluene-d8	0.14		"	0.125		109	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		99.0	70-130			

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 330 Grand Ave. Unit C  
 Grand Junction CO 81501

Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B1F0914 - EPA 3550B</b>										
<b>Blank (B1F0914-BLK1)</b>										
					Prepared: 06/09/2021 Analyzed: 06/09/2021					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	19		"	25.0		77.2	50-150			

Origins Laboratory, Inc.



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 330 Grand Ave. Unit C  
 Grand Junction CO 81501

Ben Baugh  
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 Project: Kielian 2-2 TB

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B1F0914 - EPA 3550B**

**LCS (B1F0914-BS1)**

Prepared: 06/09/2021 Analyzed: 06/09/2021

Diesel (C10-C28)	944	50.0	mg/kg	1000		94.4	70-130			
Residual Range Organics (C28-C40)	977	200	"	1000		97.7	70-130			
Surrogate: o-Terphenyl	49		"	50.0		98.2	50-150			

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Ben Baugh  
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 Project: Kielian 2-2 TB

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B1F0914 - EPA 3550B**

<b>Matrix Spike (B1F0914-MS1)</b>	<b>Source: Y106183-03</b>			Prepared: 06/09/2021 Analyzed: 06/09/2021						
Diesel (C10-C28)	705	50.0	mg/kg	1000	ND	70.5	70-130			
Residual Range Organics (C28-C40)	761	200	"	1000	45.5	71.6	70-130			
Surrogate: o-Terphenyl	46		"	50.0		91.3	50-150			

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**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B1F0914 - EPA 3550B**

<b>Matrix Spike Dup (B1F0914-MSD1)</b>	<b>Source: Y106183-03</b>			<b>Prepared: 06/09/2021 Analyzed: 06/09/2021</b>						
Diesel (C10-C28)	835	50.0	mg/kg	1000	ND	83.5	70-130	16.9	35	
Residual Range Organics (C28-C40)	895	200	"	1000	45.5	85.0	70-130	16.1	35	
<i>Surrogate: o-Terphenyl</i>	45		"	50.0		89.2	50-150			

Origins Laboratory, Inc.



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Ben Baugh  
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**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B1F0917 - EPA 5030 (soil)**

**Blank (B1F0917-BLK1)**

Prepared: 06/09/2021 Analyzed: 06/10/2021

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							U
Naphthalene	ND	0.0100	"							U
1,3,5-Trimethylbenzene	ND	0.00200	"							U
Benzene	ND	0.00200	"							U
Ethylbenzene	ND	0.00200	"							U
Toluene	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Xylenes, total	ND	0.00200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125	105		70-130			
Surrogate: Toluene-d8	0.14		"	0.125	112		70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125	101		70-130			

Origins Laboratory, Inc.



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 330 Grand Ave. Unit C  
 Grand Junction CO 81501

Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B1F0917 - EPA 5030 (soil)**

**LCS (B1F0917-BS1)**

Prepared: 06/09/2021 Analyzed: 06/10/2021

1,2,4-Trimethylbenzene	0.0592	0.00200	mg/kg	0.0500		118	70-130			
Naphthalene	0.0540	0.0100	"	0.0500		108	70-130			
1,3,5-Trimethylbenzene	0.0594	0.00200	"	0.0500		119	70-130			
Benzene	0.0466	0.00200	"	0.0500		93.2	70-130			
Ethylbenzene	0.0591	0.00200	"	0.0500		118	70-130			
m,p-Xylene	0.118	0.00400	"	0.100		118	70-130			
o-Xylene	0.0554	0.00200	"	0.0500		111	70-130			
Toluene	0.0549	0.00200	"	0.0500		110	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125		112	70-130			
Surrogate: Toluene-d8	0.14		"	0.125		111	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		102	70-130			

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**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B1F0917 - EPA 5030 (soil)

Matrix Spike (B1F0917-MS1)	Source: Y106178-01			Prepared: 06/09/2021 Analyzed: 06/10/2021						
1,2,4-Trimethylbenzene	0.0622	0.00200	mg/kg	0.0500	ND	124	70-130			
Naphthalene	0.0503	0.0100	"	0.0500	0.00162	97.3	70-130			
1,3,5-Trimethylbenzene	0.0626	0.00200	"	0.0500	ND	125	70-130			
Benzene	0.0500	0.00200	"	0.0500	ND	100	70-130			
Ethylbenzene	0.0618	0.00200	"	0.0500	ND	124	70-130			
m,p-Xylene	0.124	0.00400	"	0.100	ND	124	70-130			
o-Xylene	0.0580	0.00200	"	0.0500	ND	116	70-130			
Toluene	0.0584	0.00200	"	0.0500	ND	117	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		107	70-130			
Surrogate: Toluene-d8	0.14		"	0.125		111	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		102	70-130			

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Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B1F0917 - EPA 5030 (soil)

Matrix Spike Dup (B1F0917-MSD1)	Source: Y106178-01			Prepared: 06/09/2021 Analyzed: 06/10/2021						
1,2,4-Trimethylbenzene	0.0541	0.00200	mg/kg	0.0500	ND	108	70-130	13.8	20	
Naphthalene	0.0437	0.0100	"	0.0500	0.00162	84.2	70-130	14.0	20	
1,3,5-Trimethylbenzene	0.0547	0.00200	"	0.0500	ND	109	70-130	13.5	20	
Benzene	0.0447	0.00200	"	0.0500	ND	89.4	70-130	11.1	20	
Ethylbenzene	0.0550	0.00200	"	0.0500	ND	110	70-130	11.5	20	
m,p-Xylene	0.110	0.00400	"	0.100	ND	110	70-130	11.9	20	
o-Xylene	0.0515	0.00200	"	0.0500	ND	103	70-130	11.9	20	
Toluene	0.0517	0.00200	"	0.0500	ND	103	70-130	12.2	20	
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		106	70-130			
Surrogate: Toluene-d8	0.14		"	0.125		111	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		103	70-130			

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 Grand Junction CO 81501

Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B1F1005 - EPA 3550B</b>										
<b>Blank (B1F1005-BLK1)</b>										
					Prepared: 06/10/2021 Analyzed: 06/11/2021					
Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	41		"	50.0		81.7	50-150			

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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Entrada Consulting Group  
 330 Grand Ave. Unit C  
 Grand Junction CO 81501

Ben Baugh  
 Project Number: 021-060  
 Project: Kielian 2-2 TB

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B1F1005 - EPA 3550B**

**LCS (B1F1005-BS1)**

Prepared: 06/10/2021 Analyzed: 06/10/2021

Diesel (C10-C28)	990	50.0	mg/kg	1000		99.0	70-130			
Residual Range Organics (C28-C40)	951	200	"	1000		95.1	70-130			
Surrogate: o-Terphenyl	44		"	50.0		88.2	50-150			

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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Entrada Consulting Group

330 Grand Ave. Unit C

Grand Junction CO 81501

Ben Baugh

Project Number: 021-060

Project: Kielian 2-2 TB

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B1F1005 - EPA 3550B**

<b>Matrix Spike (B1F1005-MS1)</b>	<b>Source: Y106200-01</b>			Prepared: 06/10/2021 Analyzed: 06/10/2021						
Diesel (C10-C28)	1020	50.0	mg/kg	1000	ND	102	70-130			
Residual Range Organics (C28-C40)	1020	200	"	1000	56.5	96.2	70-130			
Surrogate: o-Terphenyl	42		"	50.0		83.1	50-150			

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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Ben Baugh  
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 Project: Kielian 2-2 TB

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B1F1005 - EPA 3550B**

<b>Matrix Spike Dup (B1F1005-MSD1)</b>	<b>Source: Y106200-01</b>			<b>Prepared: 06/10/2021 Analyzed: 06/10/2021</b>						
Diesel (C10-C28)	1050	50.0	mg/kg	1000	ND	105	70-130	2.87	35	
Residual Range Organics (C28-C40)	1110	200	"	1000	56.5	105	70-130	8.44	35	
Surrogate: o-Terphenyl	42		"	50.0		84.6	50-150			

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 Project: Kielian 2-2 TB

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L557994 - 3550B**

**MSD (L 93801-MSD-L557994)** **Source: 93801** Prepared: 06/11/2021 Analyzed: 06/11/2021

Pyrene	0.115	0.000387	mg/Kg	0.166	0.000413	69.2	30-130	25	30	
Naphthalene	0.0895	0.000467	"	0.166	<0.000467	53.9	30-130	28.2	30	
Chrysene	0.106	0.000256	"	0.166	<0.000256	63.8	30-130	21.8	30	
Acenaphthene	0.1	0.000431	"	0.166	<0.000431	60.2	30-130	26	30	
Anthracene	0.11	0.000426	"	0.166	<0.000426	66.2	30-130	28.1	30	
Surrogate: 4-Terphenyl-d14	78		"	0.332	231	78	33-122			
Surrogate: Nitrobenzene-d5	61.7		"	0.332	165	61.7	29-110			
Surrogate: 2-Fluorobiphenyl	76.2		"	0.332	220	76.2	33-115			

**MS (L 93801-MS-L557994)** **Source: 93801** Prepared: 06/11/2021 Analyzed: 06/11/2021

Chrysene	0.132	0.000256	mg/Kg	0.166	<0.000256	79.5	30-130			
Anthracene	0.146	0.000426	"	0.166	<0.000426	87.9	30-130			
Pyrene	0.148	0.000387	"	0.166	0.000413	89.1	30-130			
Acenaphthene	0.13	0.000431	"	0.166	<0.000431	78.3	30-130			
Naphthalene	0.119	0.000467	"	0.166	<0.000467	71.6	30-130			
Surrogate: Nitrobenzene-d5	63.4		"	0.331	165	63.4	29-110			
Surrogate: 4-Terphenyl-d14	74.6		"	0.331	231	74.6	33-122			
Surrogate: 2-Fluorobiphenyl	76.4		"	0.331	220	76.4	33-115			

**LCS (LCS-L557994)** Prepared: 06/11/2021 Analyzed: 06/11/2021

Naphthalene	0.118	0.000467	mg/Kg	0.167		70.6	30-130			
Chrysene	0.137	0.000256	"	0.167		82	30-130			

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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Ben Baugh  
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 Project: Kielian 2-2 TB

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L557994 - 3550B**

**LCS (LCS-L557994)**

Prepared: 06/11/2021 Analyzed: 06/11/2021

Anthracene	0.146	0.000426	mg/Kg	0.167		87.4	30-130			
Acenaphthene	0.131	0.000431	"	0.167		78.4	30-130			
Pyrene	0.148	0.000387	"	0.167		88.6	30-130			
Surrogate: Nitrobenzene-d5	61.2		"	0.333		61.2	29-110			
Surrogate: 4-Terphenyl-d14	76.2		"	0.333		76.2	33-122			
Surrogate: 2-Fluorobiphenyl	75.6		"	0.333		75.6	33-115			

**LRB (LRB-L557994)**

Prepared: 06/11/2021 Analyzed: 06/11/2021

Pyrene	ND	0.00067	mg/Kg				-			
Acenaphthene	ND	0.00067	"				-			
Anthracene	ND	0.00067	"				-			
Chrysene	ND	0.00067	"				-			
Naphthalene	ND	0.00067	"				-			
Surrogate: 2-Fluorobiphenyl	69		"	0.333		69	33-115			
Surrogate: 4-Terphenyl-d14	71.1		"	0.333		71.1	33-122			
Surrogate: Nitrobenzene-d5	51.9		"	0.333		51.9	29-110			

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Grand Junction CO 81501

Ben Baugh  
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Project: Kielian 2-2 TB

**Notes and Definitions**

- U Sample is Non-Detect.
  - R-01 The Reporting Limit for this analyte has been raised to account for matrix interference.
  - J Estimated Value. Analyte below reported quantitation limit.
  - ND Analyte NOT DETECTED at or above the reporting limit
  - RPD Relative Percent Difference
- All soil results are reported on a wet weight basis.

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Jen Pellegrini, Project Manager

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