



November 15, 2021

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

**RE: Soil Boring Investigation, Groundwater Monitoring Well Installation, and
Groundwater Monitoring Results
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 subsurface investigation activities and to propose a remediation plan to mitigate the remaining impacted soil and groundwater at the Kielian 2-2 tank battery (Facility ID# 463941) (Site). The Site is located in Weld County, Colorado, approximately 0.1 miles west of Weld County Road 23 and 0.3 miles north of the town of Milliken. The center location coordinates of the Site 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 potential groundwater impacts were observed in test pits advanced 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 by the Colorado Oil and Gas Conservation Commission (COGCC) on May 10, 2021. Details of the sampling were discussed in the Entrada report titled *Additional Site Characterization Workplan*, dated June 7, 2021, submitted to and approved by COGCC on the same date in supplemental Form 27 document number 402708417.

On June 7 and 8, 2021, eight additional test pits (TP3 through TP10) were advanced at the Site, and field screening and soil samples were collected from 6 of the test pits to further delineate the extent of hydrocarbon impact to soil at the Site. Laboratory analytical results reported organic compound concentrations above applicable COGCC Table 915-1 Protection of Groundwater Soil Screening Levels (GWSSLs) from four to six feet below ground surface (ft-bgs) in soil samples SS6-6, SS7-6, SS8-6, SS11-6, and SS12-4. To better understand hydrogeology at the Site, temporary 2-inch PVC piezometers were installed in test pits TP3 through TP7. On June 9, 2021, the relative elevations of the piezometer casing tops were surveyed and depths to water were measured to calculate the general groundwater flow direction and groundwater gradient. The results of the test pit soil sampling, preliminary hydrogeology assessment, and a proposed subsurface investigation plan, were presented in the Entrada report titled, *Site Characterization Results and Subsurface Investigation Plan*, dated July 26, 2021. This additional site characterization work plan was submitted to the COGCC in supplemental Form 27 Document Number 402756750 on the same date and was approved by the COGCC on August 9, 2021.

SUBSURFACE INVESTIGATION ACTIVITIES: SOIL BORINGS AND MONITORING WELL INSTALLATION

On August 17, 2021, Entrada conducted additional delineation of the remaining soil impact by advancing 12 soil borings, six of which were completed as groundwater monitoring wells (SB01 through SB06 and MW01 through MW06) at the Site with a direct push drilling rig. Additionally, the temporary 2-inch PVC piezometers were abandoned by pulling the PVC from the subsurface and backfilling the remaining hole with sand and bentonite. An Entrada Geologist screened the recovered soil from each soil boring for field evidence of petroleum hydrocarbon impact such as staining, odor, and elevated volatile organic compound concentrations measured using a photo-ionization detector (PID). In addition to field screening, the soil lithology was described using the Unified Soil Classification System and depth to groundwater saturation was recorded in each soil boring.

In general, lithology across the Site consists of silty clay with low to medium plasticity from ground surface to between 8 ft-bgs and 10 ft-bgs overlying well sorted fine to medium grained sands with trace gravels. Additionally, soil moisture was dry or moist at ground surface increasing to wet in the silty clays at depths ranging between 3 ft-bgs to 7 ft-bgs. Subsequent groundwater monitoring discussed in further detail below indicated static groundwater levels across the Site between approximately 2 ft-bgs and 6 ft-bgs, which were measured at least 24-hours after well installation to allow groundwater levels to equilibrate. The measured static groundwater levels (potentiometric surface) were shallower at most locations than the depth to water saturated soil observed during drilling which suggests that the low permeability clays create partially confined groundwater conditions at the Site.

Soil samples submitted for laboratory analysis were collected from the interval within the vadose zone exhibiting the greatest field evidence of hydrocarbon impact, except at soil boring MW06, which was located where soil samples were collected during a previous investigation. In soil borings with no field evidence of hydrocarbon impact, the soil samples were collected directly above groundwater saturation.

Six of the soil borings (MW01 through MW06) were completed as 1-inch PVC monitoring wells to facilitate subsequent groundwater monitoring and sample collection. All monitoring wells were installed to a total depth of 12 ft-bgs with 10 feet of 1-inch PVC 0.010-inch slotted screen extending from total depth and completed with flush-mount protective covers. The Colorado Division of Water Resources (DWR) GWS-51 Notice of Intent and GWS-31 Monitoring Well Construction Forms are provided in Attachment A. DWR rules specify that monitoring well permit applications or abandonment forms must be filed to DWR within 18-months of well construction (February 15, 2023). The soil boring and monitoring well locations are shown on Figure 2. The soil boring logs and well completion diagrams are provided in Attachment B.

SOIL ANALYSIS

The soil samples collected for laboratory analysis were placed into laboratory provided containers, placed on ice, and delivered under standard chain of custody protocol to Origins Laboratory (Origins) 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 by EPA Method 8015D; and
- 1-methylnaphthalene, 2-methylnaphthalene, acenaphthene, anthracene, chrysene, fluorene, naphthalene, and pyrene by EPA Method 8270D.

Soil Analytical Results

All laboratory analytical results were compliant with applicable COGCC Table 915-1 Residential Soil Screening Levels (RSSLs). The laboratory analytical results with reported concentrations above their respective COGCC Table 915-1 GWSSLs are summarized below.

- Benzene was reported above the Table 915-1 GWSSL of 0.0026 milligram per kilogram (mg/kg) in soil samples SB02-6.5 (0.105 mg/kg), SB03-5 (0.0765 mg/kg), SB04-5 (0.00754 mg/kg), and SB07-5 (0.00436 mg/kg).

- 1,2,4-TMB was reported above the Table 915-1 GWSSL of 0.0081 mg/kg in samples MW05-6 (0.390 mg/kg), SB02-6.5 (0.209 mg/kg), SB03-5 (0.563 mg/kg), SB04-5 (0.0848 mg/kg), and SB07-5 (0.177 mg/kg).
- 1,3,5-TMB was reported above the Table 915-1 GWSSL of 0.0087 mg/kg in sample SB04-5 (0.0104 mg/kg).
- 1-methylnaphthalene was reported above the COGCC Table 915-1 GWSSL of 0.006 mg/kg in samples MW05-6 (0.0794 mg/kg), SB02-6.5 (0.0156 mg/kg), SB03-5 (0.587 mg/kg), and SB07-5 (0.0122 mg/kg).
- 2-methylnaphthalene was reported above the COGCC Table 915-1 GWSSL of 0.019 mg/kg in samples MW05-6 (0.159 mg/kg), SB02-6.5 (0.0363 mg/kg), SB03-5 (1.41 mg/kg), and SB07-5 (0.0251 mg/kg).
- Naphthalene was reported above the COGCC Table 915-1 GWSSL of 0.0038 mg/kg in samples MW05-6 (0.0361 mg/kg), SB02-6.5 (0.0276 mg/kg), SB03-5 (0.322 mg/kg), and SB07-5 (0.0183 mg/kg).

All other soil analytical results were either not reported above laboratory detection limits or were reported at concentrations compliant with applicable COGCC Table 915-1 GWSSLs.

The soil boring analytical results are summarized in Table 1 and prior test pit soil sample analytical results for BTEX, naphthalene, TMBs, and TPH are summarized in Table 2. The soil sample locations and analytical results exceeding their respective Table 915-1 GWSSLs are shown on Figure 2. A photographic log is provided as Attachment C and the laboratory analytical report is provided as Attachment D.

GROUNDWATER MONITORING

On August 19, 2021, groundwater monitoring was conducted in monitoring wells MW01 through MW06. The monitoring well top of casing relative elevations were surveyed and depth to water measurements were collected with an oil-water interface probe to determine relative groundwater elevations and calculate well-specific target purge volumes for well development. No free product was detected in any of the monitoring wells. After developing the monitoring wells by purging at least 10 times the calculated casing volume, groundwater samples were collected into laboratory provided containers, placed on ice, and delivered with a completed chain-of-custody form to Origins for laboratory analysis of BTEX, 1,2,3-TMB, 1,3,5-TMB, and naphthalene by EPA Method 8260D.

Hydrogeology

During the August 2021 groundwater monitoring event, depth to groundwater ranged from 1.94 ft-bgs in monitoring well MW04 to 5.78 ft-bgs in monitoring well MW01. Groundwater was calculated to flow north with an average gradient of 0.0054 feet of rise

per foot of run based on measurements collected from monitoring wells MW01 and MW02. The monitoring well locations, relative groundwater elevations, and potentiometric surface contours are displayed on Figure 3.

Groundwater Analytical Results

Laboratory analytical results for the groundwater sample collected from monitoring well MW06 reported benzene and 1,2,4-TMB concentrations of 14.7 micrograms per liter (µg/L) and 240 µg/L, respectively, which are above the applicable COGCC Table 915-1 Cleanup Concentrations for groundwater of 5 µg/L for benzene and 67 µg/L for 1,2,4-TMB. All other laboratory analytical results for groundwater were either not reported above laboratory detection limits or were compliant with applicable COGCC Table 915-1 Cleanup Concentrations. The groundwater analytical results are summarized in Table 3 and presented on Figure 4. The laboratory analytical report is included as Attachment D.

DISCUSSION AND PROPOSED REMEDIATION PLAN

To date, soil sampling at the Site has identified 13 samples with organic compound concentrations above Table 915-1 GWSSLs and one sample (SS6-6) with a TPH concentration above the applicable Table 915-1 RSSL. The soil borings advanced in August 2021 delineated the lateral extent of soil impact above Table 915-1 GWSSLs in all cardinal directions except to the northeast of MW06. The August 2021 groundwater sampling event identified one monitoring well (MW06) with benzene and 1,2,4-TMB concentrations above applicable COGCC Table 915-1 groundwater standards. This data indicates that the source of petroleum hydrocarbon impact to soil and groundwater is likely limited to the vicinity of soil sample SS6-6 and monitoring well MW06.

Based on this soil and groundwater sample data, Entrada recommends remediating the identified impact by conducting source removal excavation in the vicinity of soil sample SS6-6 and monitoring well MW06 and applying a groundwater remediation amendment to the exposed groundwater table prior to backfilling. Confirmation soil samples will be collected from the sidewalls of the final extent of excavation to demonstrate compliance with Table 915-1 RSSLs for BTEX, 1,2,4-TMB, 1,3,5-TMB, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, TPH-GRO, and TPH-DRO.

Either Chemically Oxygenated Granular Activated Carbon (COGAC™) or a mixture of sodium persulfate, calcium peroxide, and chelated iron will be applied to the groundwater exposed in the open excavation prior to backfilling the excavation with clean fill material to promote oxidation and degradation of any residual hydrocarbon impact remaining in groundwater. The safety data sheets for COGAC™, sodium persulfate, calcium peroxide, and chelated iron are included in Attachment E. Following backfilling the excavation, monitoring well MW06 will be reinstalled, and one additional

monitoring well will be installed to the northeast of MW06 to laterally delineate potential soil impact above the Table 915-1 GWSSLs and to provide an eastern cross-gradient groundwater monitoring point of compliance.

Figure 5 shows a summary of soil and groundwater impact remaining at the Site using color coded symbol highlights and displays the values of soil sample concentrations above Table 915-1 RSSLs and groundwater concentrations above Table 915-1 Cleanup Concentrations. Soil samples with results above the RSSLs are shown as red circles, soil samples above the GWSSLs are shown as orange circles, and soil samples fully compliant with the GWSSLs are shown as green circles. The proposed source removal excavation extent is shown as a black dashed line and measures approximately 50 feet by 65 feet. The proposed eastern point of compliance monitoring well is also displayed.

Following the remedial actions discussed above, groundwater monitoring will be conducted on a quarterly schedule with the goal of achieving four consecutive groundwater monitoring events in compliance with applicable COGCC Table 915-1 groundwater standards in accordance with COGCC Rule 913.h.(3). During each monitoring event, groundwater samples will be collected for analysis of the organic compounds in groundwater listed in Table 915-1. After four consecutive compliant groundwater events are achieved, the soil at the Site will be considered compliant at concentrations below the Table 915-1 RSSLs per foot note 7 of Table 915-1, which states that the GWSSLs are secondary to actual measured concentrations in groundwater. Once soil and groundwater at the Site meet the compliance criteria cited above, a No Further Action Request for COGCC Remediation Project Number 17902 will be submitted to the COGCC in a supplemental Form 27.

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 blue ink, appearing to read "Jeremy Pike".

Jeremy Pike, P.G.
Senior Project Geologist

A handwritten signature in blue ink, appearing to read "Ben Baugh".

Ben Baugh, P.G.
Senior Project Geologist

Attachments:

Figure 1 – General Location Map

Figure 2 – Soil Analytical Results

Figure 3 – Relative Groundwater Elevations

Figure 4 – Groundwater Analytical Results

Figure 5 – Soil Compliance and Proposed Excavation

Table 1 – Soil Boring Analytical Results

Table 2 – Facility Closure and Test Pit Soil Analytical Results: BTEXN, TMBs, TPH

Table 3 – Groundwater Analytical Results

Attachment A: Division of Water Resources GWS-51 and GWS-31 Forms

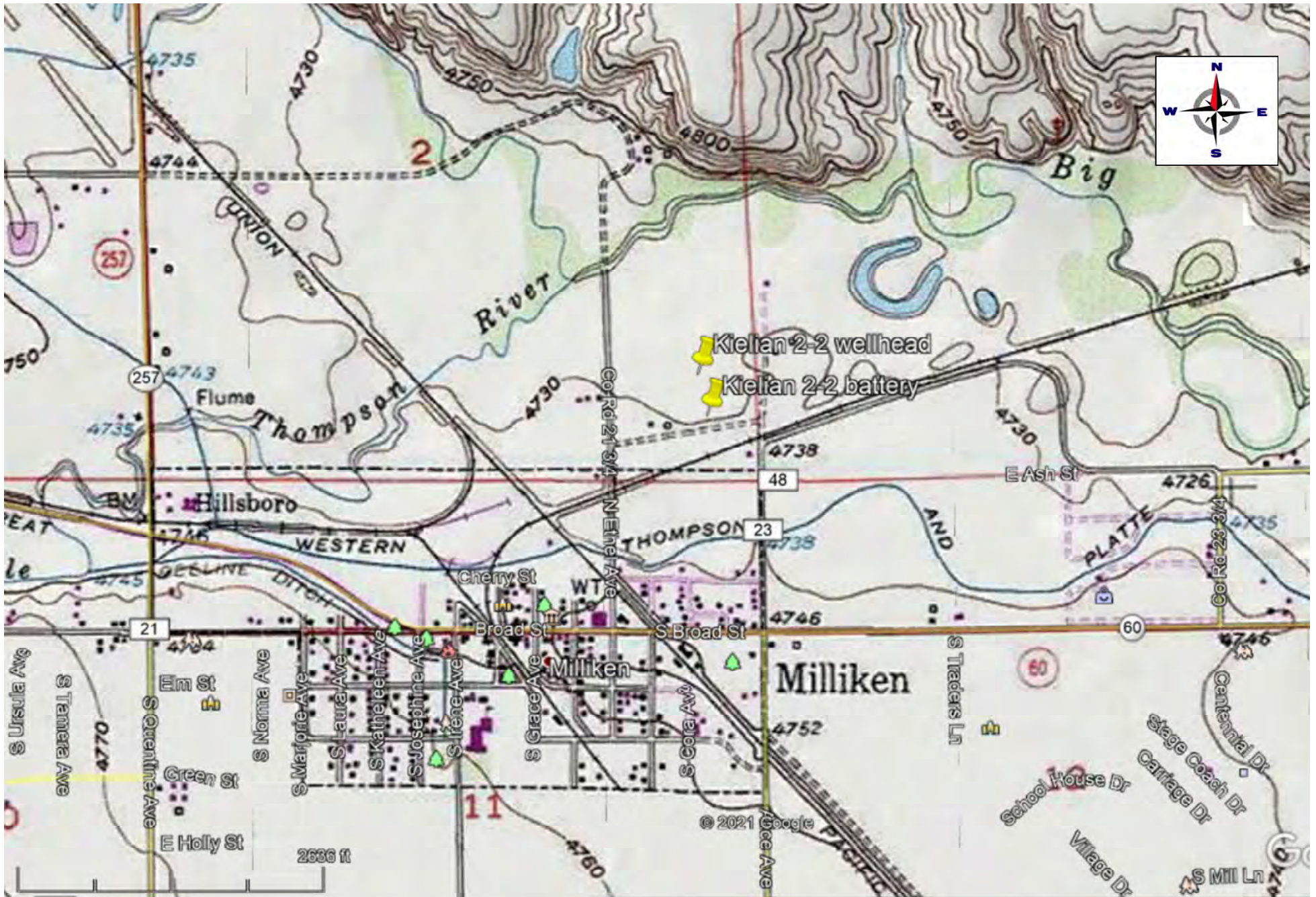
Attachment B: Soil Boring and Well Completion Logs

Attachment C: Photographic Log

Attachment D: Laboratory Analytical Reports

Attachment E: Safety Data Sheets

FIGURES



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

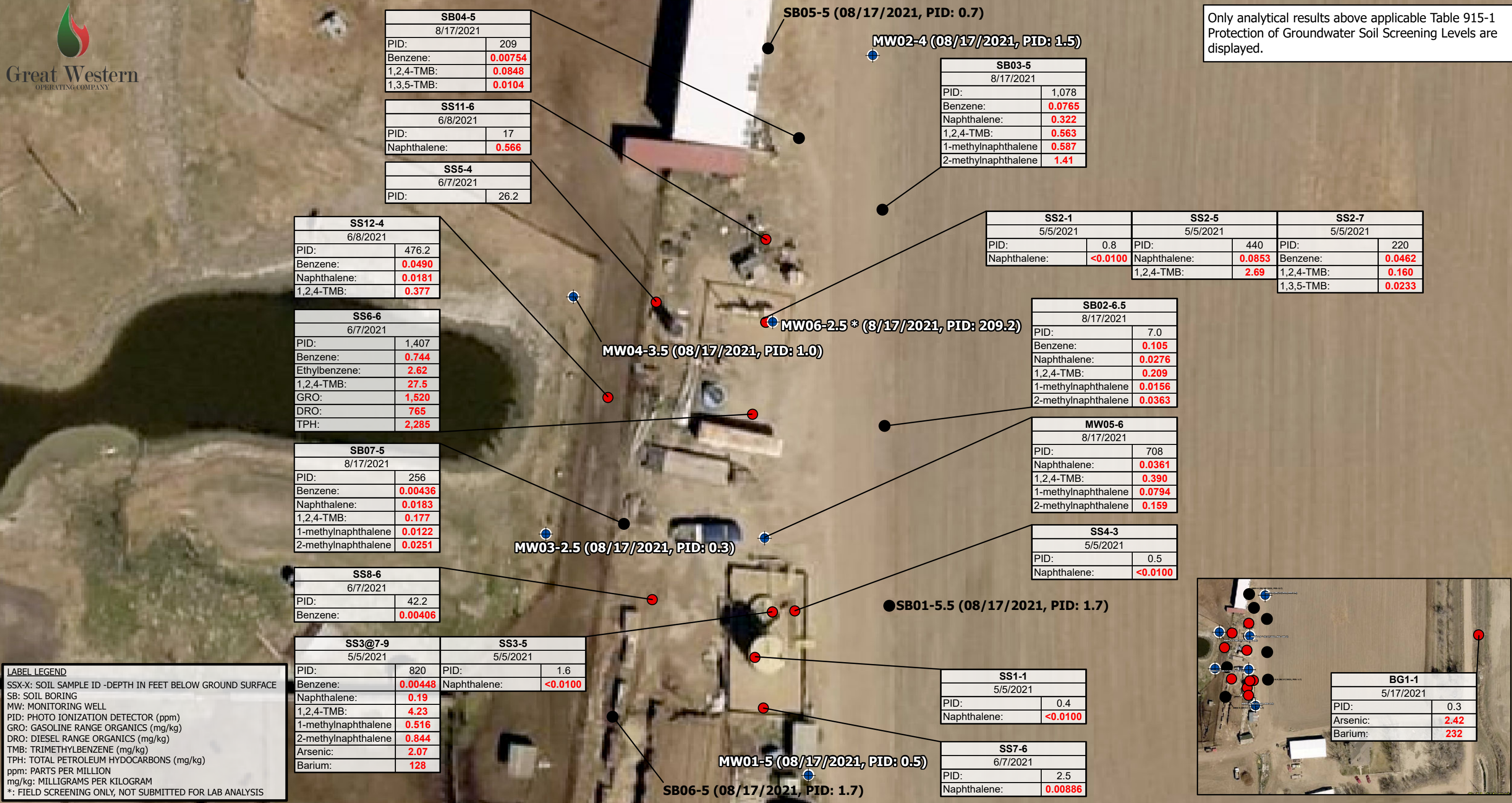
General Location Map
 Kielian 2-2 Battery and Wellhead
 SE 1/4 SE 1/4, S2 T4N R67W, 6th PM
 Weld County, Colorado



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

FIGURE

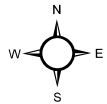
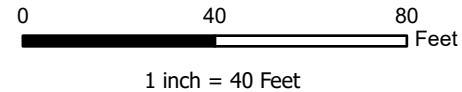
1





LEGEND

-  Monitoring Well
-  Groundwater Flow Direction
-  Relative Groundwater Elevation Contour
- Contour Interval = 0.25 feet
- Gradient = 0.54 ft rise per 100 ft run



Project No: 021-060

Map By: JW

Date: 09/02/2021

RELATIVE GROUNDWATER ELEVATIONS - AUGUST 19, 2021
KILIAN 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

MW04	
8/19/2021	
B:	<1.00
T:	<1.00
E:	<1.00
X:	<1.00
N:	<4.00
1,2,4-TMB:	<1.00
1,3,5-TMB:	<1.00

MW03	
8/19/2021	
B:	<1.00
T:	<1.00
E:	<1.00
X:	<1.00
N:	<4.00
1,2,4-TMB:	<1.00
1,3,5-TMB:	<1.00

MW02	
8/19/2021	
B:	<1.00
T:	<1.00
E:	<1.00
X:	<1.00
N:	<4.00
1,2,4-TMB:	<1.00
1,3,5-TMB:	<1.00

MW06	
8/19/2021	
B:	14.7
T:	<4.00
E:	11.0
X:	<4.00
N:	<16.0
1,2,4-TMB:	240
1,3,5-TMB:	<4.00

MW05	
8/19/2021	
B:	<1.00
T:	<1.00
E:	1.07
X:	<1.00
N:	<4.00
1,2,4-TMB:	4.41
1,3,5-TMB:	<1.00

MW01	
8/19/2021	
B:	<1.00
T:	<1.00
E:	<1.00
X:	<1.00
N:	<4.00
1,2,4-TMB:	<1.00
1,3,5-TMB:	<1.00

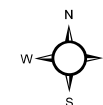
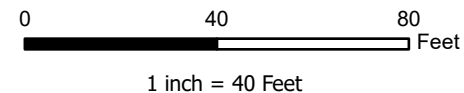
LABEL LEGEND

SAMPLE ID
SAMPLE DATE
B: BENZENE IN MICROGRAMS PER LITER
T: TOLUENE (µg/L)
E: ETHYLBENZENE (µg/L)
X: TOTAL XYLENES (µg/L)
N: NAPHTHALENE (µg/L)
1,2,4-TMB: 1,2,4-TRIMETHYLBENZENE (µg/L)
1,3,5-TMB: 1,3,5-TRIMETHYLBENZENE (µg/L)
RED: RESULT IS ABOVE THE RESPECTIVE TABLE 915-1 CONCENTRATION LEVEL
<: INDICATES RESULT IS BELOW THE LABORATORY REPORTING LIMIT

LEGEND



Monitoring Well



Project No: 021-060

Map By: JW

Date: 09/02/2021

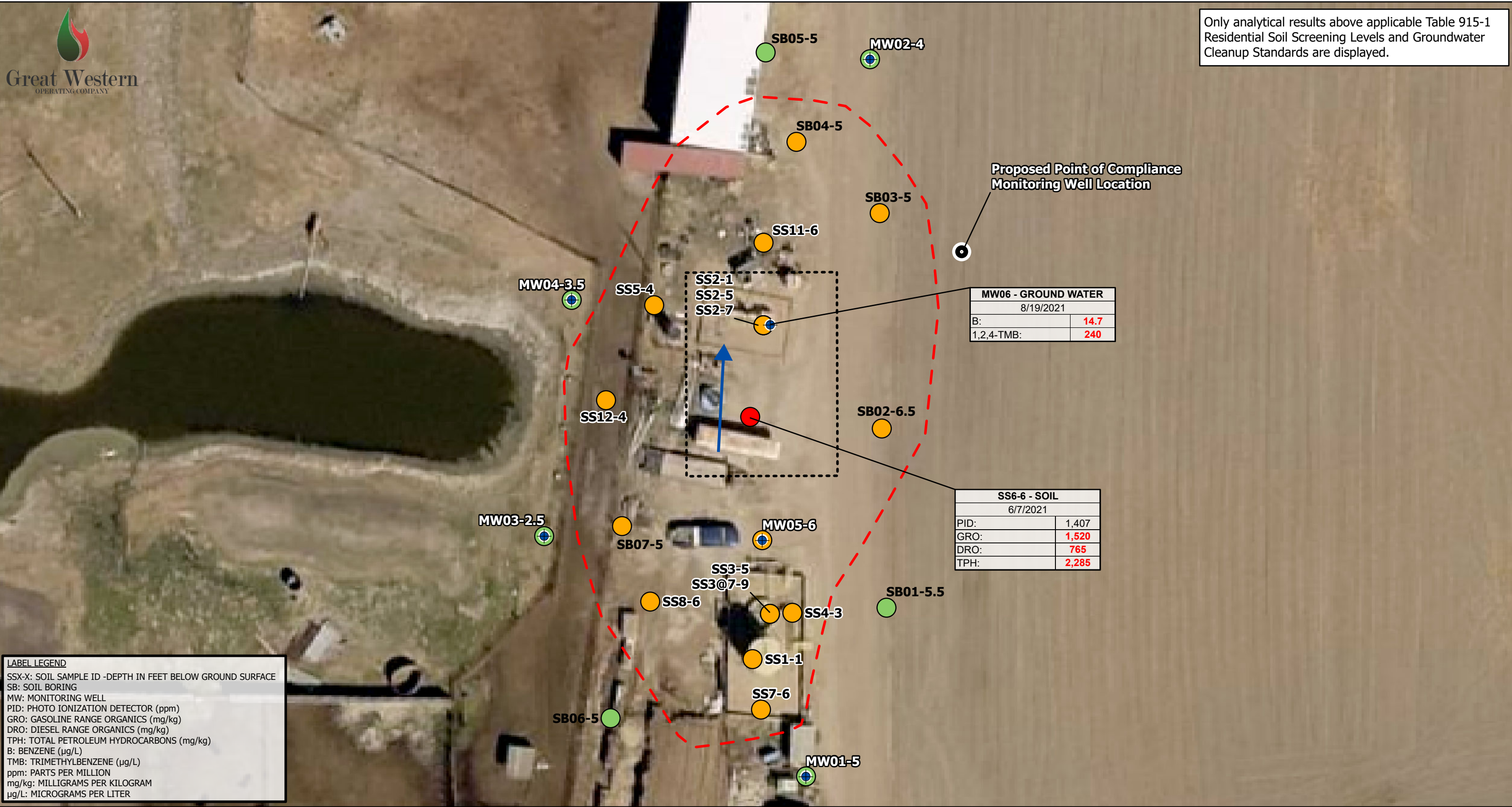
GROUNDWATER ANALYTICAL RESULTS
KIELIAN BATTERY 2-2 GREAT WESTERN OPERATING
COMPANY
SE 1/4 SE 1/4 SECTION 2
T4N R67W, 6TH PM
WELD COUNTY, COLORADO



1843 Sunlight Dr.
Longmont, CO 80504
303.378.4036

Figure

4



LABEL LEGEND

SSX-X: SOIL SAMPLE ID -DEPTH IN FEET BELOW GROUND SURFACE
SB: SOIL BORING
MW: MONITORING WELL
PID: PHOTO IONIZATION DETECTOR (ppm)
GRO: GASOLINE RANGE ORGANICS (mg/kg)
DRO: DIESEL RANGE ORGANICS (mg/kg)
TPH: TOTAL PETROLEUM HYDROCARBONS (mg/kg)
B: BENZENE (µg/L)
TMB: TRIMETHYLBENZENE (µg/L)
ppm: PARTS PER MILLION
mg/kg: MILLIGRAMS PER KILOGRAM
µg/L: MICROGRAMS PER LITER

Legend

Monitoring Well

Proposed Point of Compliance Monitoring Well

RSSL Non-Compliant Soil Sample

GWSSL Non-Compliant Soil Sample

GWSSL Compliant Soil Sample

Estimated Extent of GWSSL Soil Non-Compliance

Proposed Excavation Extent

Groundwater Flow Direction

0 30 60 Feet

TABLES



TABLE 1
Soil Boring Analytical Results Summary
Kielian 2-2 Tank Battery, Weld County, CO

Analyte	COGCC Table 915-1 GWSSL	COGCC Table 915-1 RSSL	MW01-5	MW02-4	MW03-2.5	MW04-3.5	MW05-6	SB01-5.5	SB02-6.5	SB03-5	SB04-5	SB05-5	SB06-5	SB07-5	Units
Sample Information															
Sample Date	-	-	8/17/2021	8/17/2021	8/17/2021	8/17/2021	8/17/2021	8/17/2021	8/17/2021	8/17/2021	8/17/2021	8/17/2021	8/17/2021	8/17/2021	mm/dd/yyyy
Sample Depth	-	-	5	4	2.5	3.5	6	5.5	6.5	5	5	5	5	5	ft-bgs
Field Screening	-	-	0.5	1.5	0.3	1.0	708	1.7	7.0	1,078	209	0.7	1.7	256	ppm
Total Petroleum Hydrocarbons in Soils															
gasoline range organics	500	500	<0.200	<0.200	<0.200	<0.200	6.24	<0.200	6.21	0.660	1.29	<0.200	<0.200	<0.200	mg/kg
diesel range organics	500	500	<25.0	<25.0	<25.0	<25.0	57.2	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	mg/kg
residual range organics	500	500	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	mg/kg
total petroleum hydrocarbons	500	500	<125	<125	<125	<125	63.4	<125	6.21	0.660	1.29	<125	<125	<125	mg/kg
Organic Compounds in Soils															
benzene	0.0026	1.2	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.105	0.0765	0.00754	<0.00200	<0.00200	0.00436	mg/kg
toluene	0.69	490	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	mg/kg
ethylbenzene	0.78	5.8	<0.00200	<0.00200	<0.00200	<0.00200	0.0246	<0.00200	0.00268	0.0244	0.0251	<0.00200	<0.00200	0.0778	mg/kg
total xylenes	9.9	58	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.0359	mg/kg
1,2,4-trimethylbenzene	0.0081	30	<0.00200	<0.00200	<0.00200	<0.00200	0.390	0.00298	0.209	0.563	0.0848	0.00282	<0.00200	0.177	mg/kg
1,3,5-trimethylbenzene	0.0087	27	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.0104	<0.00200	<0.00200	0.00264	mg/kg
acenaphthene	0.55	360	<0.00067	<0.00067	<0.00067	<0.00067	0.0112	<0.00067	<0.00067	0.0926	<0.00067	<0.00067	<0.00067	<0.00335	mg/kg
anthracene	5.8	1800	<0.00067	<0.00067	<0.00067	<0.00067	<0.00335	<0.00067	<0.00067	<0.0067	<0.00067	<0.00067	<0.00067	<0.00335	mg/kg
chrysene	9	110	<0.00067	<0.00067	0.000693	<0.00067	0.00254	<0.00067	<0.00067	<0.0067	<0.00067	<0.00067	<0.00067	<0.00335	mg/kg
fluorene	0.54	240	<0.00067	<0.00067	<0.00067	<0.00067	0.0194	<0.00067	<0.00067	0.0503	<0.00067	<0.00067	<0.00067	<0.00335	mg/kg
1-methylnaphthalene	0.006	18	<0.00067	<0.00067	<0.00067	<0.00067	0.0794	<0.00067	0.0156	0.587	<0.00067	<0.00067	<0.00067	0.0122	mg/kg
2-methylnaphthalene	0.019	24	<0.00067	<0.00067	<0.00067	<0.00067	0.159	0.00122	0.0363	1.41	0.000722	<0.00067	<0.00067	0.0251	mg/kg
naphthalene	0.0038	2	<0.00067	<0.00067	<0.00067	<0.00067	0.0361	<0.00067	0.0276	0.322	0.00164	<0.00067	<0.00067	0.0183	mg/kg
pyrene	1.3	1.3	0.000744	<0.00067	0.000875	<0.00067	<0.00335	<0.00067	<0.00067	<0.0067	<0.00067	<0.00067	<0.00067	<0.00335	mg/kg

Notes:

COGCC - Colorado Oil and Gas Conservation Commission
 GWSSL - Protection to Groundwater Soil Screening Level
 MW#-#: monitoring well soil sample ID - collection depth in ft-bgs
 SB - soil boring
 ft-bgs - feet below ground surface

ppm - parts per million
 mg/kg - milligrams per kilogram
 < - indicates result is less than laboratory reporting limit
BLUE - indicates result is above the COGCC Table 915-1 GWSSL





TABLE 2
Facility Closure and Test Pit Soil 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 RSSL -->				1.2	490	5.8	58	2	30	27	500	500	500	500
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	0.0853	2.69	<0.00200	231	135	<200	366
SS2-7	7	5/5/2021	220	0.0462	<0.00200	0.0525	0.0934	<0.00380	0.160	0.0233	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	0.00448	0.00272	0.247	0.00734	0.19	4.23	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	0.744	0.0590	2.62	<0.0500	<0.00067	27.5	<0.0500	1,520	765	<200	2,285
SS7-6	6	6/7/2021	2.5	<0.00200	<0.00200	<0.00200	<0.00200	0.00886	<0.00200	<0.00200	<0.200	<50.0	<200	<200
SS8-6	6	6/7/2021	42.2	0.00406	<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	0.566	<0.00200	<0.00200	<0.200	<50.0	<200	<200
SS12-4	4	6/8/2021	476.2	0.0490	<0.00200	0.0801	<0.00200	0.0181	0.377	<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

RSSL - Residential Soil Screening Level

GWSSL - Groundwater Soil Screening Level

< - indicates result is below the laboratory reporting limit

Red- Above COGCC Table 915-1 RSSL

Blue- Above COGCC Table 915-1 GWSSL



TABLE 3
Groundwater Analytical Results
Kielian 2-2 Tank Battery. Weld County, CO

Sample Information				*Relative Groundwater Elevation	Organics						
Sample ID	Sample Date	Depth To Water	Depth to Water		Benzene	Toluene	Ethyl- benzene	Total Xylenes	Naphthalene	1,2,4 TMB	1,3,5 TMB
Units -->	mm/dd/yyyy	ft-bgs	ft-btoc	feet	µg/L						
COGCC Table 915-1 Standard -->					5	560	700	1,400	140	67	67
MW01	8/19/2021	5.78	5.28	91.92	<1.00	<1.00	<1.00	<1.00	<4.00	<1.00	<1.00
MW02	8/19/2021	2.87	2.37	90.58	<1.00	<1.00	<1.00	<1.00	<4.00	<1.00	<1.00
MW03	8/19/2021	2.66	2.16	91.49	<1.00	<1.00	<1.00	<1.00	<4.00	<1.00	<1.00
MW04	8/19/2021	1.94	1.44	91.09	<1.00	<1.00	<1.00	<1.00	<4.00	<1.00	<1.00
MW05	8/19/2021	3.79	3.29	91.49	<1.00	<1.00	1.07	<1.00	<4.00	4.41	<1.00
MW06	8/19/2021	3.02	2.52	91.11	14.7	<4.00	11.0	<4.00	<16.0	240	<4.00

Notes:

TMB - trimethylbenzene

ft-btoc - feet below top of casing

ft-bgs - feet below groundwater (approximate)

µg/L - micrograms per liter

COGCC - Colorado Oil and Gas Conservation Commission

< - indicates result is less than laboratory reporting limit

* - relative groundwater elevations are based on an arbitrary 100-foot benchmark

RED - indicates result is above the COGCC Table 915-1 Standard

ATTACHMENT A
DIVISION OF WATER RESOURCES - GWS-51 AND GWS-31 FORMS

NOTICE OF INTENT TO CONSTRUCT MONITORING HOLE(S)

Please type or print legibly in black or blue ink or file online, dwrpermitsonline@state.co.us

State of Colorado, Office of the State Engineer 1313 Sherman St, Room
821, Denver, CO 80203 Phone 303-866-3581 dwr.colorado.gov

RCVD DWR
08/12/2021

Well Owner Name(s): Great Western Operating Company
Address: 1001 17th Street Suite 2000, Denver, CO 80202
Phone: (720) 595-2132
Email: j davidson@gwp.com

Landowner's Name: John and Sharon Kielian

Please check one and complete as indicated including contact info:

- ☐ Water Well Driller Licensed in Colorado - Lic. No. _____
☐ Professional Engineer Registered in Colorado - Reg. No. _____
☒ Professional Geologist per C.R.S. 23-41-208(b)
☐ Other — anyone directly employed by or under the supervision of a licensed driller, registered professional engineer or professional geologist

Contact / Company Ben Baugh, Entrada Consulting Group

Address 1843 Sunlight Dr

City, State & Zip Longmont, CO 80504

Phone (804) 513-0707

Email bbaugh@entradainc.com

Print Name: Ben Baugh

Signature or enter full name here: Benjamin Baugh

Location: Section 2

Township 4 ☐ N ☐ S, Range 67 ☐ E ☐ W, 6 PM

County: Weld

Subdivision: NA

Lot: NA Block: NA Filing: NA

Site/Property Address 23064 County Road 21 3/4
Milliken, CO 80543

GPS Location in UTM format if known:

Set GPS unit to true north, datum NAD83, and use meters for the distance units, ☐ Zone 12 or ☒ Zone 13.

Easting 512727 Northing 4464993

of Monitoring Holes to be constructed in GWMcb: 8

Estimated Depth 12 Ft., Aquifer surficial gravels

Purpose of Monitoring Hole(s) To laterally delineate and monitor potential groundwater impacts

Anticipated Date of Construction: 08/17/2021

Date Notice Submitted: 08/12/2021
(Must be at least 3 days prior to construction)

ACKNOWLEDGEMENT FROM STATE ENGINEER'S OFFICE FOR OFFICE USE ONLY

62377 - MH

DIV. 1 WD 4 BAS _____ MD _____

PROCESSED BY 

DATE ACKNOWLEDGED 08/16/2021

CONDITIONS OF MONITORING HOLE ACKNOWLEDGEMENT

A COPY OF THE WRITTEN NOTICE OR ACKNOWLEDGEMENT SHALL BE AVAILABLE AT THE DRILLING SITE.

- 1) Notice was provided to the State Engineer at least 72 hours prior to construction of monitoring & observation hole(s).
- 2) Construction of the hole(s) must be completed within **90 days** of the date notice was given to the State Engineer. Testing and/or pumping shall not exceed a total of 200 hours unless prior written approval is obtained from the State Engineer. Water diverted during testing must not be used for beneficial purposes. The owner of the hole(s) is responsible for obtaining permit(s) and complying with all rules and regulations pertaining to the discharge of fluids produced during testing.
- 3) All work must comply with the Water Well Construction Rules, 2 CCR 402-2. Standard permit application and work report forms are found on the DWR website at dwr.colorado.gov. Well Construction and Yield Estimate Reports (GWS-31) must be completed for each hole drilled. The licensed contractor or authorized individual must submit the completed forms to this office within 60 days of monitoring hole completion. Aquifer testing information must be submitted on Well Yield Test Report (GWS-39).
- 4) Unless a well permit is obtained or variance approved, the hole(s) must be plugged and sealed within **eighteen (18) months after construction**. An Abandonment Report (GWS-09) must be submitted within 60 days of plugging & sealing. The above MH acknowledgement number, owner's structure name, and owner's name and address must be provided on all well permit application(s), well construction and abandonment reports.
- 5) A MONITORING HOLE CANNOT BE CONVERTED TO A PRODUCTION WATER WELL, except for purposes of remediation (recovery) or as a permanent dewatering system, if constructed in accordance with the Water Well Construction Rules and policies of the State Engineer.
- 6) **IF HOLES WILL NOT BE CONSTRUCTED UNDER THIS NOTICE WITHIN 90 DAYS, PLEASE WRITE "NO HOLES CONSTRUCTED" ON A COPY OF THE ACKNOWLEDGED NOTICE WITH THE FILE NUMBER AND EMAIL TO THE DIVISION OF WATER RESOURCES AT DWRpermitsonline@state.co.us.**

THIS ACKNOWLEDGEMENT OF NOTICE DOES NOT INDICATE THAT WELL PERMIT(S) CAN BE APPROVED.

Incomplete forms or Notice provided less than 72 hours prior to well construction will not be acknowledged

Form No. GWS-31 02/2017		WELL CONSTRUCTION AND YIELD ESTIMATE REPORT State of Colorado, Office of the State Engineer 1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581 dwr.colorado.gov and dwrpermitsonline@state.co.us			For Office Use Only	
1. Well Permit Number: 62377-MH Receipt Number:						
2. Owner's Well Designation: MW02						
3. Well Owner Name: Great Western Operating Company						
4. Well Location Street Address: 23085 COUNTY ROAD 23, Milliken, Colorado						
5. As Built GPS Well Location (required): <input type="checkbox"/> Zone 12 <input checked="" type="checkbox"/> Zone 13 Easting: 512737.0 Northing: 4465036						
6. Legal Well Location: SE 1/4, SE 1/4, Sec., 2 Twp. 4 <input checked="" type="checkbox"/> N or S <input type="checkbox"/> , Range 67 <input type="checkbox"/> E or W <input checked="" type="checkbox"/> , 6 P.M. County: Weld Subdivision: _____, Lot _____, Block _____, Filing (Unit) _____						
7. Ground Surface Elevation: 4733 feet Date Completed: 08/17/2021 Drilling Method: Direct Push						
8. Completed Aquifer Name : alluvium Total Depth: 15 feet Depth Completed: 12 feet						
9. Advance Notification: Was Notification Required Prior to Construction? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No, Date Notification Given: 08/12/2021						
10. Aquifer Type: <input type="checkbox"/> Type I (One Confining Layer) <input type="checkbox"/> Type I (Multiple Confining Layers) <input type="checkbox"/> Laramie-Fox Hills (Check one) <input type="checkbox"/> Type II (Not overlain by Type III) <input type="checkbox"/> Type II (Overlain by Type III) <input checked="" type="checkbox"/> Type III (alluvial/colluvial)						
11. Geologic Log:					12. Hole Diameter (in.) From (ft) To (ft)	
Depth	Type	Grain Size	Color	Water Loc.	3.25 0 15	
0-9.5	Clay	Fine	Dk. Gray	at 5'		
9.5-15	Sand, some gravel	fine to med.	brown	Y		
					13. Plain Casing	
					OD (in)	Kind Wall Size (in) From (ft) To (ft)
					1.315	Sch40PVC 1.029 0 2
					Perforated Casing Screen Slot Size (in): 0.010	
					OD (in)	Kind Wall Size (in) From (ft) To (ft)
					1.029	1.029 1.029 2 12
					14. Filter Pack:	
					Material	Sand
					Size	10-20
					Interval	1.5 - 12
					15. Packer Placement:	
					Type	NA
					Depth	NA
					16. Grouting Record	
					Material	Amount Density Interval Method
					Bentonite chips	0' -1.5' Drop
Remarks: Flush mount completion of wells with concrete pad at surface due to vehicular traffic in area. Hydrated bentonite seal placed from 0' to 1.5' bgs (top of sand pack).						
17. Disinfection: Type None					Amt. Used NA	
18. Well Yield Estimate Data:					<input type="checkbox"/> Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report	
Well Yield Estimate Method: NA						
Static Level: 2.9 feet bgs				Estimated Yield (gpm) NA		
Date/Time measured: 8/19/21 10:25 AM				Estimate Length (hrs) NA		
Remarks:						
19. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed (or name entered if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402.2. The filing of a document that contains false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to \$1,000 and/or revocation of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.						
Company Name: Entrada Consulting Group			Email: jpik@entradainc.com		Phone w/area code: (435) 630-4748	
License Number: PG-4161						
Mailing Address: 1843 Sunlight Dr, Longmont, Colorado, 80504						
Sign (or enter name if filing online) Jeremy Pike			Print Name and Title Jeremy Pike, P.G., Senior Geologist			Date: 09/13/2021

INSTRUCTIONS FOR WELL CONSTRUCTION AND YIELD ESTIMATE REPORT

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The form must be submitted to the State Engineer's Office within 60 days after completing the well or 7 days after the permit expiration date, whichever is earlier. A copy of the form must be provided to the well owner.

Item Instructions: (numbers correspond with those on the front of this form)

1. Complete the well permit and receipt number.
2. Provide the identification (owner's well designation) for the well.
3. Fill in well owner name.
4. Provide the street address where the well is located.
5. Provide the GPS location where the well was drilled (required field).

Colorado contains two (2) UTM zones. Zone 13 covers most of Colorado. The boundary between Zone 12 and Zone 13 is the 108th Meridian (longitude). West of the 108th Meridian is UTM Zone 12 and east of the 108th Meridian is UTM Zone 13. The 108th Meridian is approximately 57 miles east of the Colorado-Utah state line. On most GPS units, the UTM zone is given as part of the Easting measurement, e.g. 12T0123456. Check the appropriate box for the zone.
6. Complete the legal description location of the well and county. For wells located in subdivisions, the name, lot, block, and filing, must be provided.
7. Report the ground surface elevation in feet above sea level if available. This value may be obtained from a topographic map. Provide the date the well was completed and describe the drilling method used to construct the well.
8. Indicate the aquifer in which the well was completed, the total depth drilled, and the actual completed depth of the well.
9. Indicate whether or not the well inspection team was required to be notified prior to construction. If required, provide the date notification was given. See <https://dwr.colorado.gov/services/well-construction-inspection> for more information on Notifications.
10. Check the box indicating the type aquifer in which the well is completed (See Rule 5.2.2 Well Construction Rules).
11. Fully describe the materials encountered in drilling. Do not use formation names unless they are in conjunction with a description of materials. Examples of descriptive terms include:
Type - sandstone, sand, etc.
Grain size - Boulders, gravel, sand, silt, clay, etc.
Color - Denote for all materials, most critical in sedimentary rock
Water Location - Depth where water is encountered (if it can be determined)
12. Provide the diameters of the drilled borehole.
13. The outside diameter, type, wall thickness, and interval of plain and perforated casing lengths must be indicated. For perforated casing, the screen size must be indicated.
14. Indicate the material and size of filter pack (e.g. sand, gravel, etc.) and the interval where placed.
15. Indicate the type and setting depth for any packers installed.
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19. Fill in Company Name, Email, and Address and License Number (or PE/PG) of the Individual who is responsible for the well construction. The licensed contractor or authorized individual responsible for the construction of the well must sign or if filing online, enter his/her name on the report. If filing online the State Engineer considers the entering of the licensed contractors name on the form to be a certification of accuracy and truthfulness in compliance with Rule 17.4 of the Water Well Construction Rules and Regulations, 2 CCR 402-2.
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Submit completed report to: State of Colorado, Office of the State Engineer, 1313 Sherman St, Room 821, Denver, CO 80203. You may also save, print, scan and email the completed form to dwrpermitsonline@state.co.us

IF YOU HAVE ANY QUESTIONS regarding any item on this form, please call the Division of Water Resources Ground Water Information Desk (303-866-3587), or the nearest Division of Water Resources Field Office located in Greeley (970-352-8712), Pueblo (719-542-3368), Alamosa (719-589-6683), Montrose (970-249-6622), Glenwood Springs (970-945-5665), Steamboat Springs (970-879-0272), or Durango (970-247-1845), or refer to our web site at dwr.colorado.gov for general information, forms, online filing instructions and access to state rules and statutes.

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[illegible]

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1. Complete the well permit and receipt number.
2. Provide the identification (owner's well designation) for the well.
3. Fill in well owner name.
4. Provide the street address where the well is located.
5. Provide the GPS location where the well was drilled (required field).
Colorado contains two (2) UTM zones. Zone 13 covers most of Colorado. The boundary between Zone 12 and Zone 13 is the 108th Meridian (longitude). West of the 108th Meridian is UTM Zone 12 and east of the 108th Meridian is UTM Zone 13. The 108th Meridian is approximately 57 miles east of the Colorado-Utah state line. On most GPS units, the UTM zone is given as part of the Easting measurement, e.g. 12T0123456. Check the appropriate box for the zone.
6. Complete the legal description location of the well and county. For wells located in subdivisions, the name, lot, block, and filing, must be provided.
7. Report the ground surface elevation in feet above sea level if available. This value may be obtained from a topographic map. Provide the date the well was completed and describe the drilling method used to construct the well.
8. Indicate the aquifer in which the well was completed, the total depth drilled, and the actual completed depth of the well.
9. Indicate whether or not the well inspection team was required to be notified prior to construction. If required, provide the date notification was given. See <https://dwr.colorado.gov/services/well-construction-inspection> for more information on Notifications.
10. Check the box indicating the type aquifer in which the well is completed (See Rule 5.2.2 Well Construction Rules).
11. Fully describe the materials encountered in drilling. Do not use formation names unless they are in conjunction with a description of materials. Examples of descriptive terms include:
Type - sandstone, sand, etc.
Grain size - Boulders, gravel, sand, silt, clay, etc.
Color - Denote for all materials, most critical in sedimentary rock
Water Location - Depth where water is encountered (if it can be determined)
12. Provide the diameters of the drilled borehole.
13. The outside diameter, type, wall thickness, and interval of plain and perforated casing lengths must be indicated. For perforated casing, the screen size must be indicated.
14. Indicate the material and size of filter pack (e.g. sand, gravel, etc.) and the interval where placed.
15. Indicate the type and setting depth for any packers installed.
16. The material, amount, and interval of the grout slurry must be reported. Density may be indicated as pounds per gallon, gallons of water per sack, total gallons of water used, or number of sacks used, etc. Specify the grout placement method, i.e. tremie pipe or positive placement. The percentage of additives mixed with the grout should be reported under remarks.
17. Record the type and the amount of disinfection used, how placed, and the length of time left in the hole.
18. Report Well Yield Estimate data as required by Rule 17.1.1. Spaces are provided to report all estimates made during the assessment. The report should show that the estimate complied with the provisions of the rules. If available, report clock time when measurements were taken. If an estimate was not performed, explain when it will be done. A full Well Yield Test may be performed instead of an estimate; if so, check the appropriate box and submit the data on form GWS-39.
19. Fill in Company Name, Email, and Address and License Number (or PE/PG) of the Individual who is responsible for the well construction. The licensed contractor or authorized individual responsible for the construction of the well must sign or if filing online, enter his/her name on the report. If filing online the State Engineer considers the entering of the licensed contractors name on the form to be a certification of accuracy and truthfulness in compliance with Rule 17.4 of the Water Well Construction Rules and Regulations, 2 CCR 402-2.
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6. Complete the legal description location of the well and county. For wells located in subdivisions, the name, lot, block, and filing, must be provided.
7. Report the ground surface elevation in feet above sea level if available. This value may be obtained from a topographic map. Provide the date the well was completed and describe the drilling method used to construct the well.
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11. Fully describe the materials encountered in drilling. Do not use formation names unless they are in conjunction with a description of materials. Examples of descriptive terms include:
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15. Indicate the type and setting depth for any packers installed.
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ATTACHMENT B
SOIL BORING AND WELL COMPLETION DIAGRAMS

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Moisture	Structure	PID (ppm)	Staining	Lab Sample ID	Sample Run/Rec. (ft)	Well Construction:
0	ML		0-2.5: Silt, tan, sandy, some gravel, dry, no staining or odor							<p>Hydrated Bentonite 1" Sch-40 Solid PVC Riser, 1" Sch-40 #10 Slotted PVC Screen 10-20 Silica Sand Fill</p>
2.5	SP		2.5-5: Sand, light brown, fine grained, some gravel, poorly graded, dry, no staining or odor	dry	N	0.2	N		2.5/5	
5			5-15: Sand, brown, fine to medium grained, some silt, some gravel, well graded, moist to wet at 5.5 feet bgs, no staining or odor	dry wet	N	0.5	N	MW01-5		
				wet	N	0.3	N		2.5/5	
10	SW			wet	N	0.7	N			
15				wet	N	0.1	N		3/5	
TD at ~15 feet bgs. Well total depth = 12 feet bgs with flush mount surface completion. = Static depth to water ~ 5.8 feet below ground surface (measured 8/19/21).										



Great Western Operating Company, LLC
1001 17th Street, Suite 2000
Denver, Colorado 80202

Kielian 2-2

MW02



Date Started : 08/17/21
Detector : MiniRae 3000 PID
Hole Diameter : 3.25-inch
Drilling Method : Direct Push
Sampling Method : Continuous
Drilling Company : Site Services
Latitude : 40.3357716194346°
Longitude : -104.85005272008°
Project Number : 021-060
Logged By : Jeremy Pike

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Moisture	Structure	PID (ppm)	Staining	Lab Sample ID	Sample Run/Rec. (ft)	Well Construction:
0	CL		0-2.5: Silty Clay, dark gray, sandy, some gravel, dry, no staining, no odor							Hydrated Bentonite
2.5			2.5-9.5: Silty Clay, dark gray, medium plasticity, trace sand at 9 feet bgs, moist to wet at 5 feet bgs, minor stain at 5 feet bgs, no odor	dry	N	1.5	N	MW02-4	2.5/5	1" Sch-40 Solid PVC Riser,
5	CL			moist	N	1.5	N			1" Sch-40 #10 Slotted PVC Screen
				wet	N	1.6	Y			10-20 Silica Sand
10			9.5-15 Sand, brown, fine to medium grained, some gravel, well graded, wet, no staining or odor	wet	N	6.5	N		2.5/5	
						3.5	N			
	SW			wet	N	2.3	N		3/5	
15				wet	N	1.0	N			Fill

TD at ~15 feet bgs. Well total depth = 12 feet bgs with flush mount surface completion.

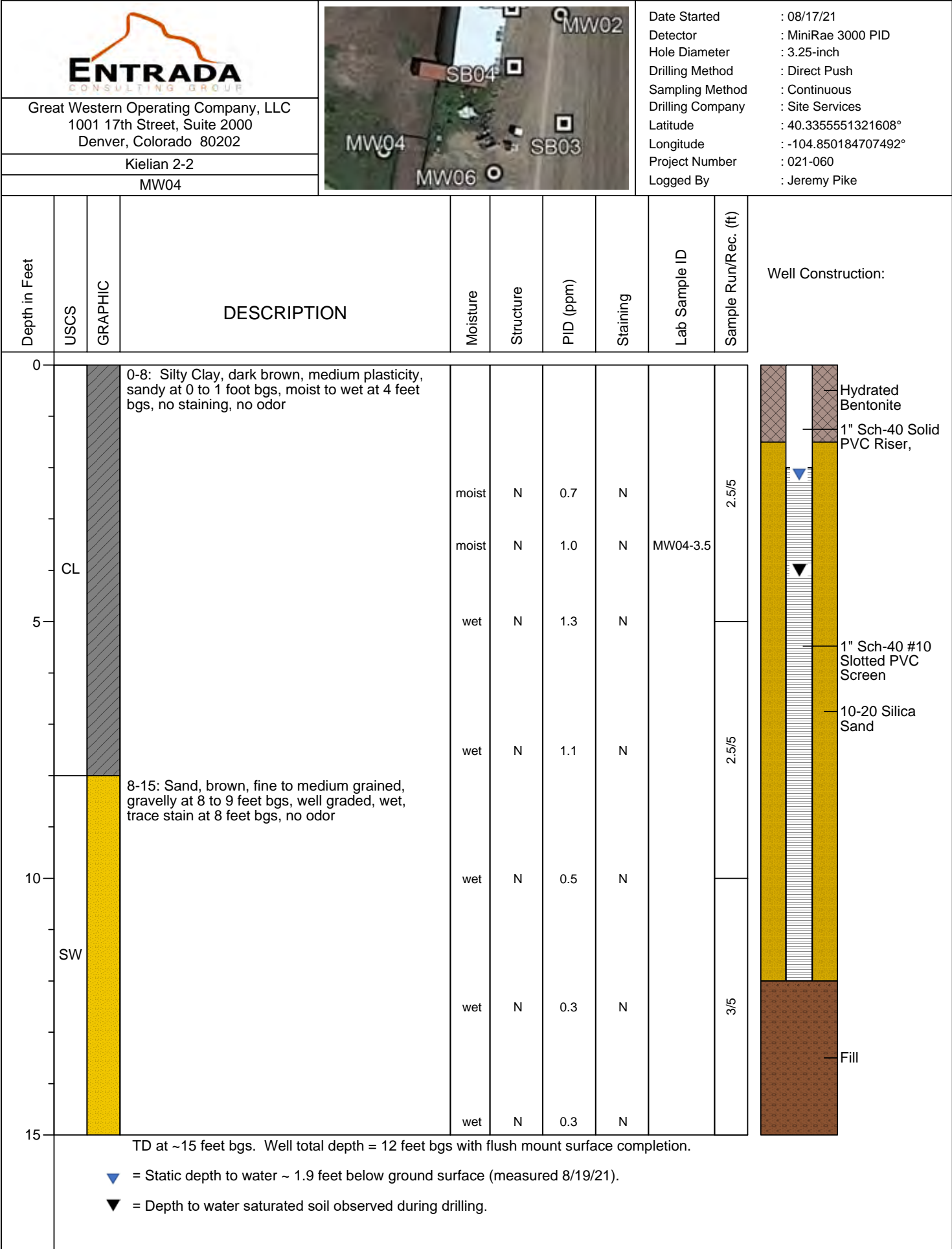
▼ = Static depth to water ~ 2.9 feet below ground surface (measured 8/19/21).

▼ = Depth to water saturated soil observed during drilling

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Moisture	Structure	PID (ppm)	Staining	Lab Sample ID	Sample Run/Rec. (ft)	Well Construction:
0			0-10: Silty Clay, dark brown, sandy, moist to wet at 3 feet bgs, trace stain at 3 feet bgs, no odor							
5	CL			moist wet	N	0.3	N	MW03-2.5	2.5/5	Hydrated Bentonite 1" Sch-40 Solid PVC Riser,
				wet	N	0.3	N		1/5	1" Sch-40 #10 Slotted PVC Screen 10-20 Silica Sand
10			10-15 Sand, brown, fine to medium grained, some gravel, well graded, wet, no staining or odor	wet	N	1.5	N		3/5	
	SW			wet	N	0.3	N			Fill
15				wet	N	0.3	N			

TD at ~15 feet bgs. Well total depth = 12 feet bgs with flush mount surface completion.

▼ = Static depth to water ~ 2.7 feet below ground surface (measured 8/19/21).





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Kielian 2-2

MW05



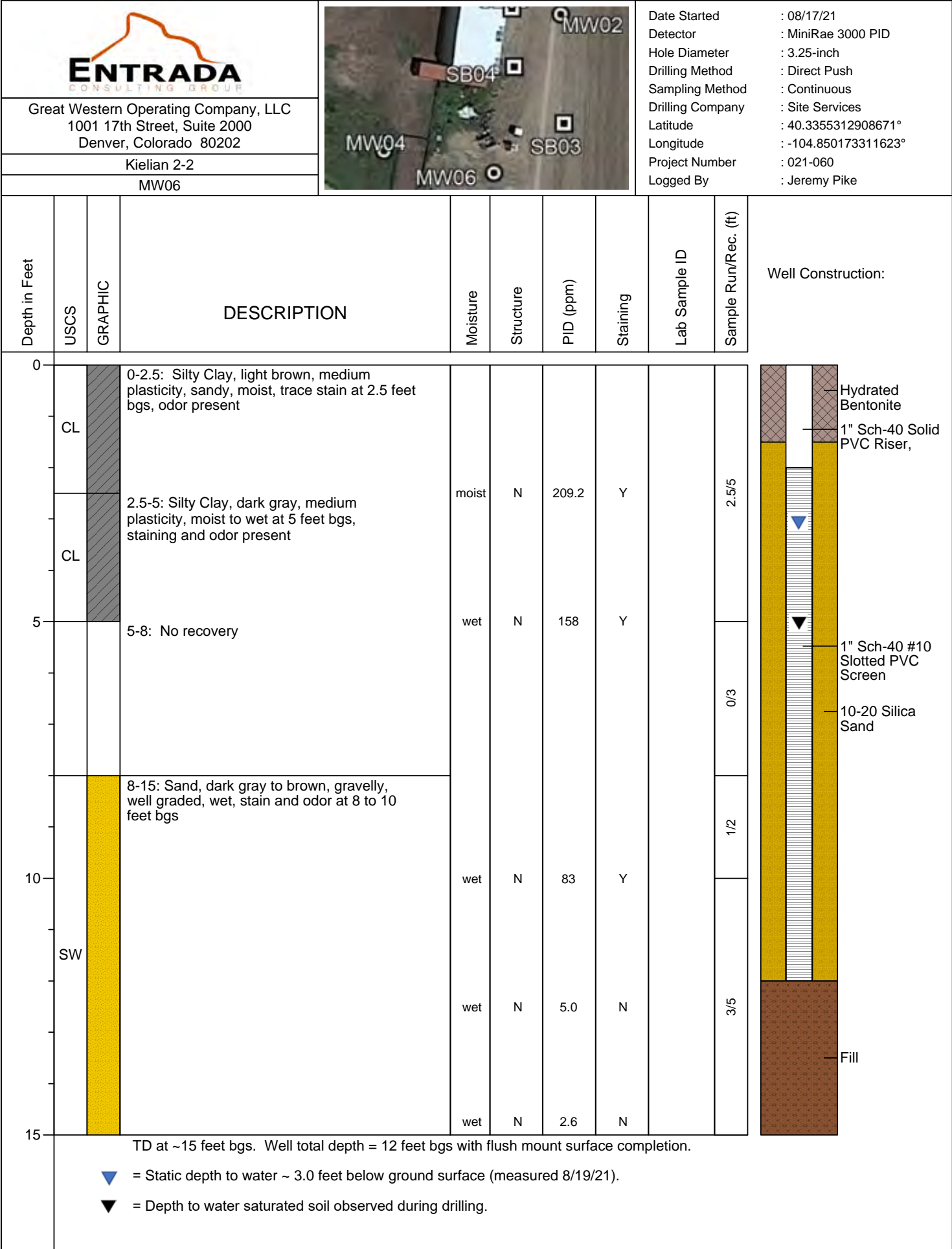
Date Started : 08/17/21
Detector : MiniRae 3000 PID
Hole Diameter : 3.25-inch
Drilling Method : Direct Push
Sampling Method : Continuous
Drilling Company : Site Services
Latitude : 40.335335770415°
Longitude : -104.850184707492°
Project Number : 021-060
Logged By : Jeremy Pike

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Moisture	Structure	PID (ppm)	Staining	Lab Sample ID	Sample Run/Rec. (ft)	Well Construction:
0	CL		0-2.5 Silty Clay, light brown, sandy, some gravel, dry, no staining or odor							
2.5			2.5-8: Silty Clay, dark gray, medium plasticity, moist to wet at 7 feet bgs, staining and odor present	moist	N	3.5	N		2/5	Hydrated Bentonite 1" Sch-40 Solid PVC Riser,
5	CL			moist	N	58	Y			
				moist	N	708	Y	MW05-6		1" Sch-40 #10 Slotted PVC Screen
				wet	N	596.2	Y		2.4/5	10-20 Silica Sand
8			8-12.5: Sand, dark gray to brown, trace gravel, well graded, wet, staining and odor at 8 to 10 feet bgs	wet	N	275.0	Y			
10										
	SW			wet	N	27	N		4/5	
15				wet	N	4.2	N			Fill

TD at ~15 feet bgs. Well total depth = 12 feet bgs with flush mount surface completion.

▼ = Static depth to water ~ 3.8 feet below ground surface (measured 8/19/21).

▼ = Depth to water saturated soil observed during drilling





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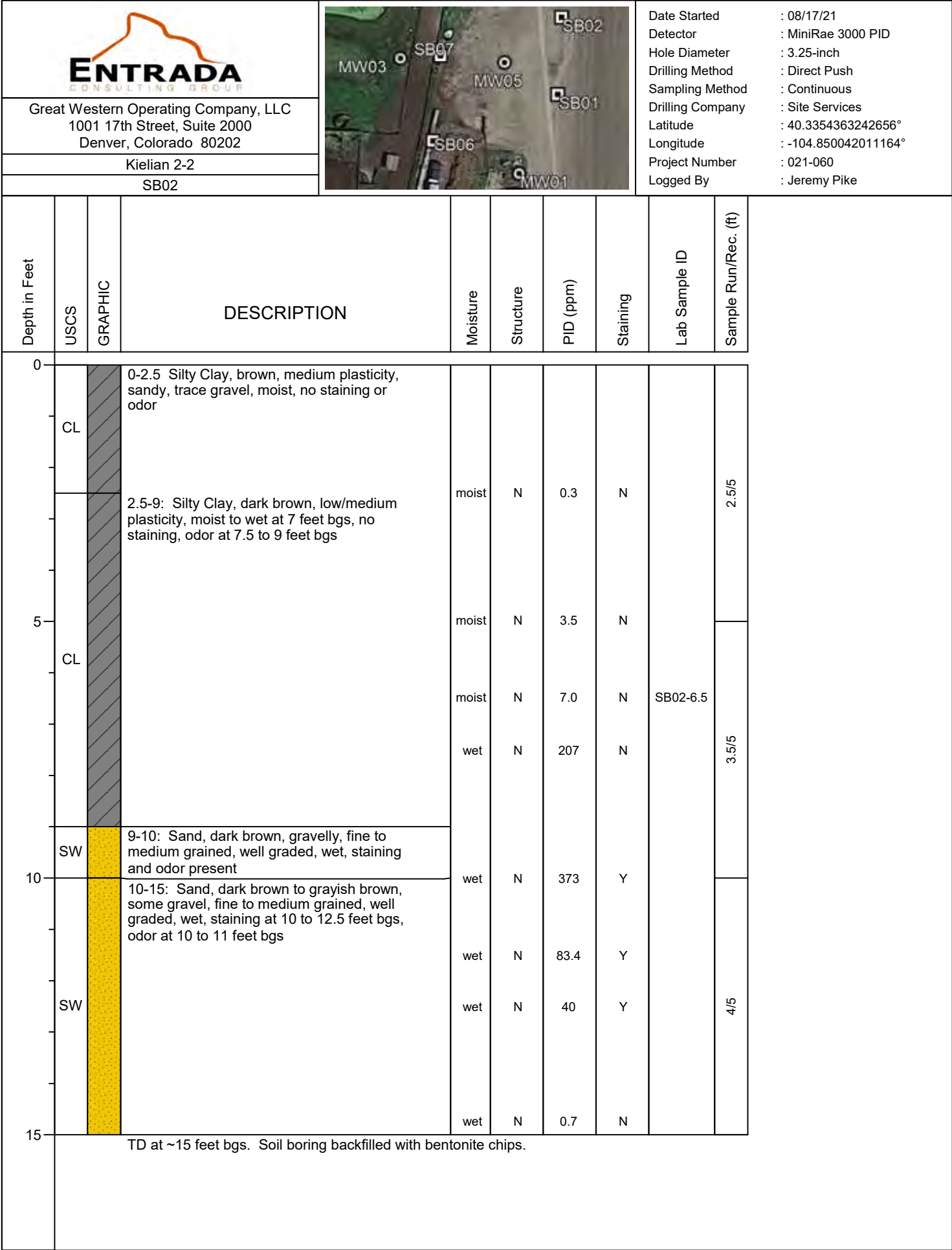
Kielian 2-2

SB01

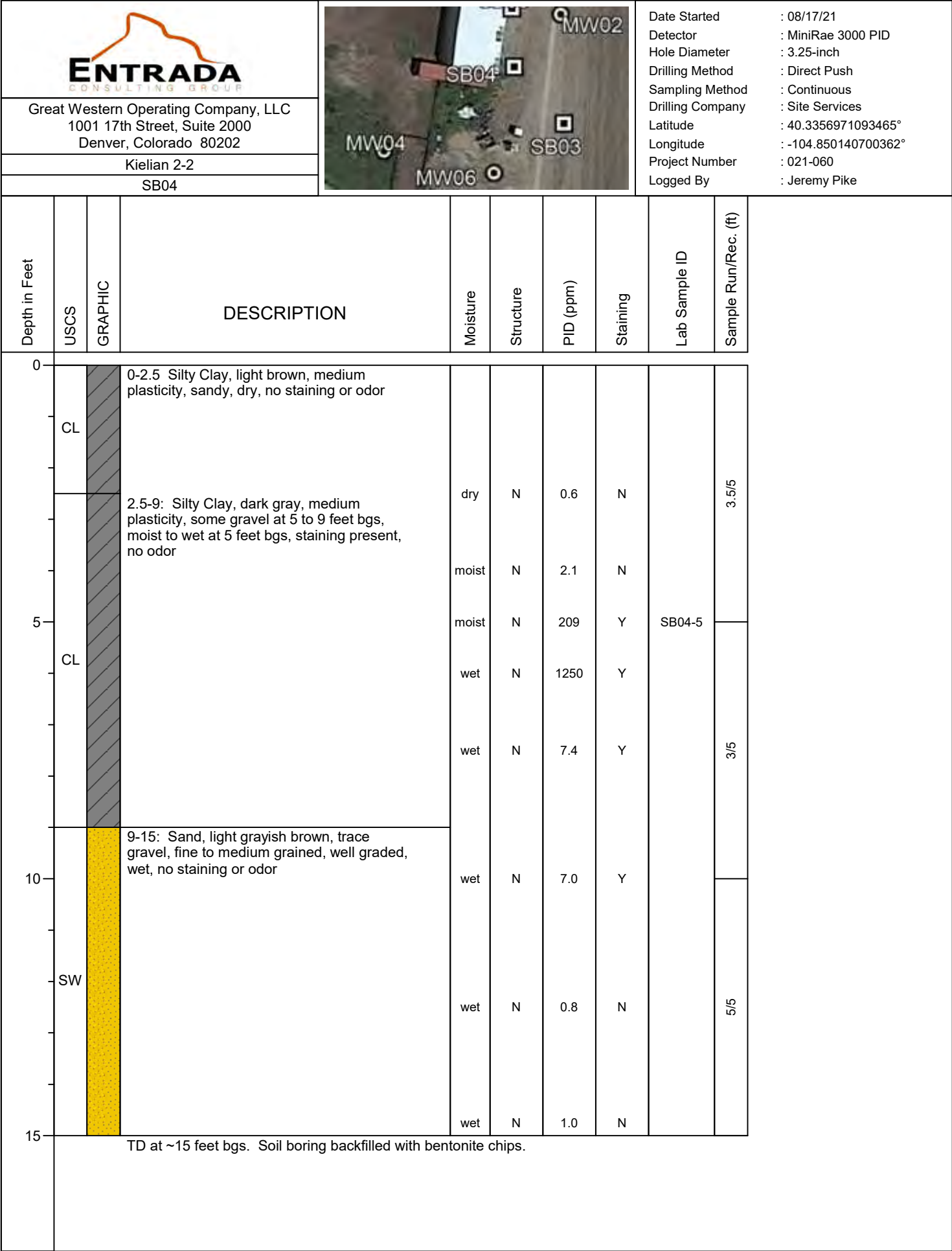


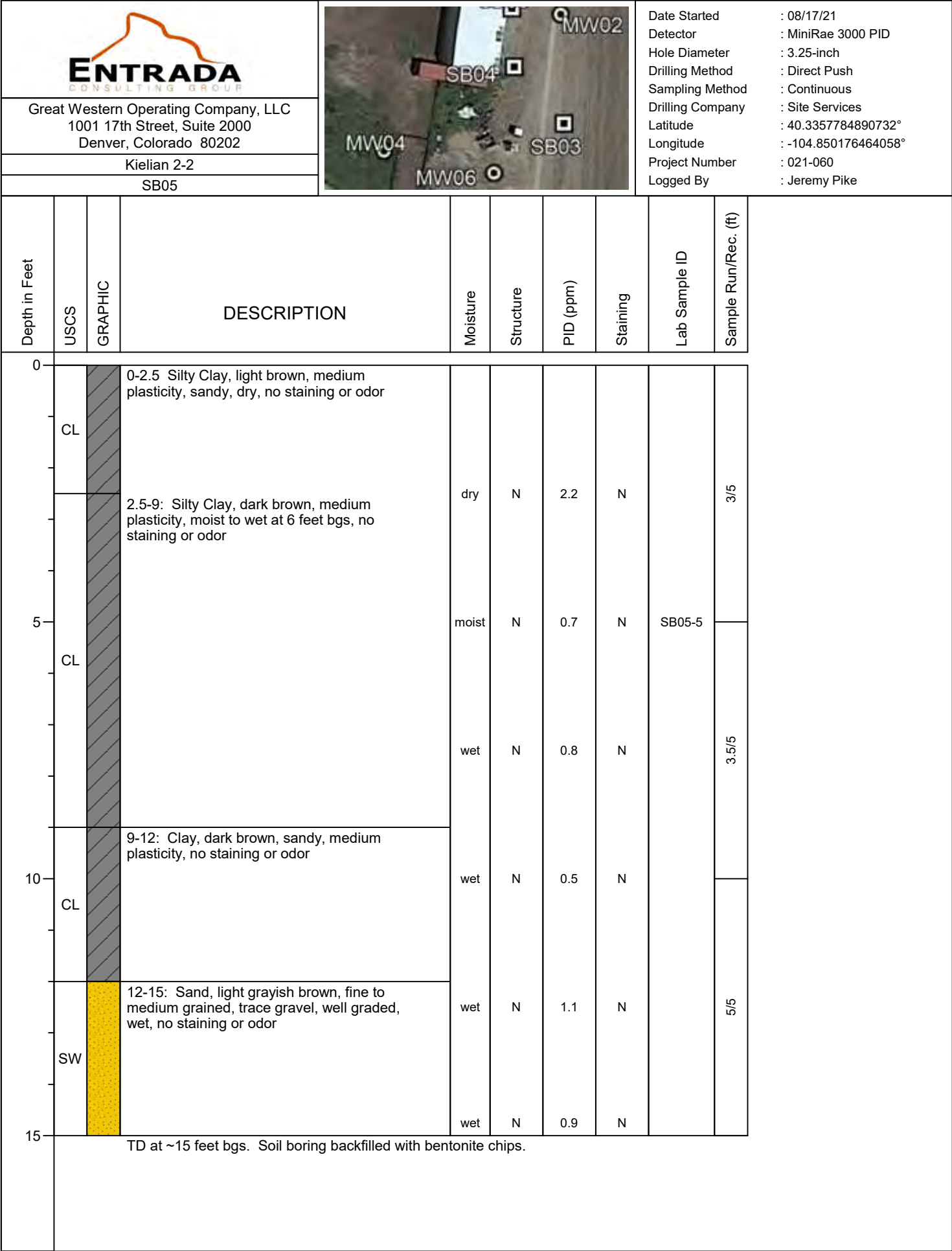
Date Started : 08/17/21
Detector : MiniRae 3000 PID
Hole Diameter : 3.25-inch
Drilling Method : Direct Push
Sampling Method : Continuous
Drilling Company : Site Services
Latitude : 40.3352736326535°
Longitude : -104.850037988604°
Project Number : 021-060
Logged By : Jeremy Pike

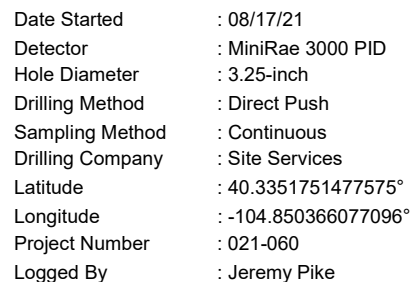
Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Moisture	Structure	PID (ppm)	Staining	Lab Sample ID	Sample Run/Rec. (ft)
0	CL		0-2.5 Clay, brown, medium plasticity, sandy, moist, no staining or odor						
			2.5-9: Clay, dark brown, low plasticity, moist to wet at 6 feet bgs, no staining or odor	moist	N	1.3	N		2.5/5
5	CL			moist	N	1.7	N	SB01-5.5	
				moist	N	1.7	N		
				wet	N	113	N		3.5/5
10			9-15: Sand, dark gray to brown, gravelly at 9 to 10 feet bgs, well graded, wet, staining and odor at 9 to 10 feet bgs	wet	N	179	Y		
	SW			wet	N	0.7	N		4/5
15			TD at ~15 feet bgs. Soil boring backfilled with bentonite chips.	wet	N	0.1	N		




Date Started	: 08/17/21
Detector	: MiniRae 3000 PID
Hole Diameter	: 3.25-inch
Drilling Method	: Direct Push
Sampling Method	: Continuous
Drilling Company	: Site Services
Latitude	: 40.3356318480111°
Longitude	: -104.85004260517°
Project Number	: 021-060
Logged By	: Jeremy Pike







Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Moisture	Structure	PID (ppm)	Staining	Lab Sample ID	Sample Run/Rec. (ft)
0	CL		0-2.5 Silty Clay, light brown, medium plasticity, sandy, some gravel, dry, no staining or odor						
			2.5-9.5: Silty Clay, dark brown, medium plasticity, moist to wet at 6 feet bgs, no staining or odor	dry	N	1.7	N		3/5
5	CL			moist	N	1.7	N	SB06-5	
				wet	N	1.1	N		3.5/5
10			9.5-15: Sand, brown, fine to medium grained, trace gravel, well graded, wet, no staining or odor	wet	N	0.8	N		
	SW			wet	N	0.3	N		5/5
15				wet	N	0.3	N		
TD at ~15 feet bgs. Soil boring backfilled with bentonite chips.									



Great Western Operating Company, LLC
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Kielian 2-2

SB07



Date Started : 08/17/21
Detector : MiniRae 3000 PID
Hole Diameter : 3.25-inch
Drilling Method : Direct Push
Sampling Method : Continuous
Drilling Company : Site Services
Latitude : 40.335349462417°
Longitude : -104.850350899802°
Project Number : 021-060
Logged By : Jeremy Pike

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Moisture	Structure	PID (ppm)	Staining	Lab Sample ID	Sample Run/Rec. (ft)
0	CL		0-2.5 Clay, light brown, medium plasticity, sandy, some gravel, dry, no staining, odor present at 2.5 feet bgs						
			2.5-8: Clay, dark brown, medium plasticity, moist to wet at 6 feet bgs, staining and odor present at 2.5 to 5 feet bgs	dry	N	236	N		3/5
5	CL			moist	N	256	Y	SB07-5	
				wet	N		Y		
				wet	N	25	Y		3.5/5
			8-15: Sand, brown, fine to medium grained, gravelly at 8 to 10 feet bgs, trace gravel at 10 to 15 feet bgs, well graded, wet, no staining or odor	wet	N	169.6	Y		
10				wet	N	43.9	Y		
	SW			wet	N	2.5	N		5/5
15			TD at ~15. Soil boring backfilled with bentonite chips.	wet	N		N		

ATTACHMENT C
PHOTOGRAPHIC LOG

Kielian 2-2 Tank Battery Geoprobe Investigation Photographic Log



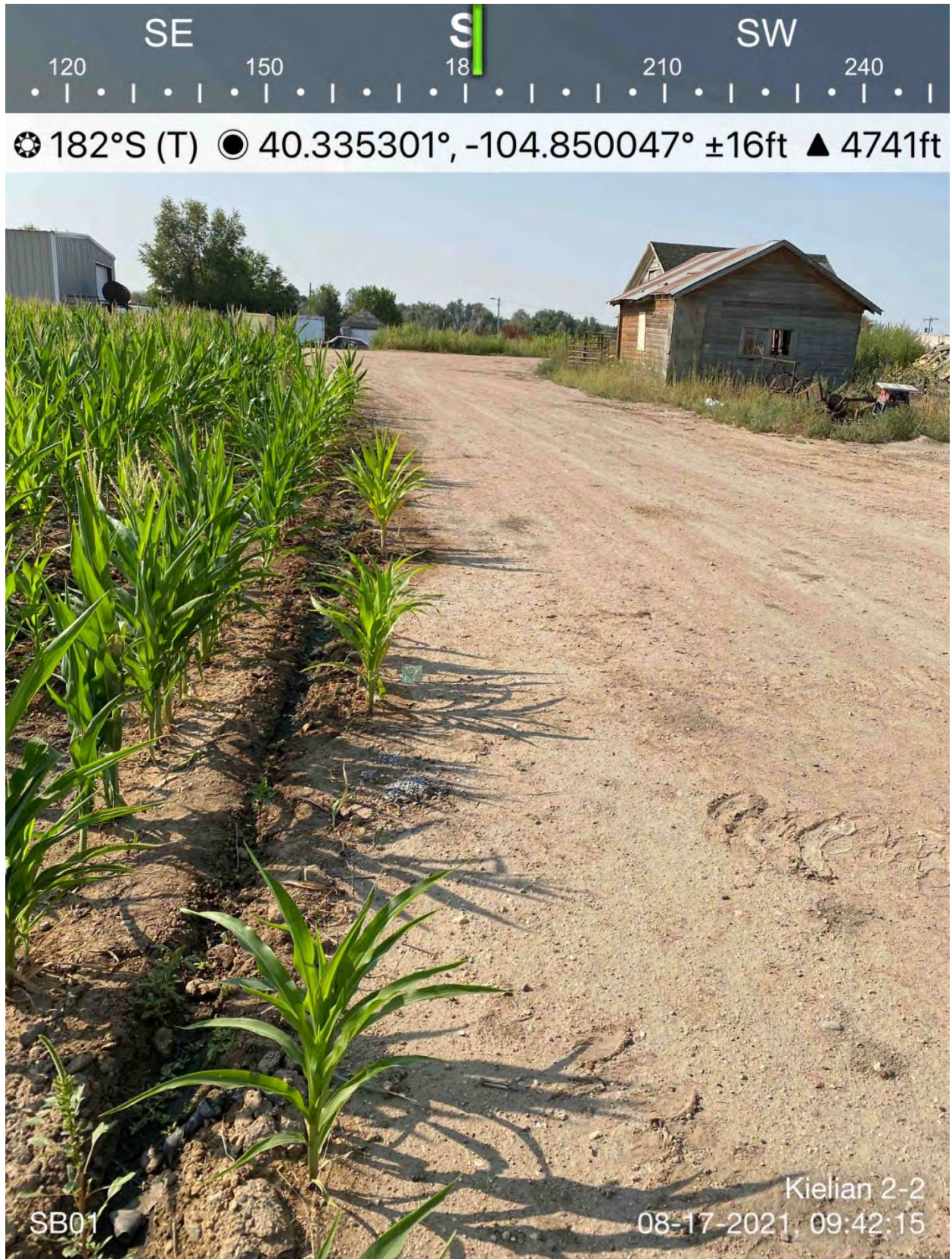
Entrada Consulting Group
August 2021

Kielian 2-2 Tank Battery Geoprobe Investigation Photographic Log



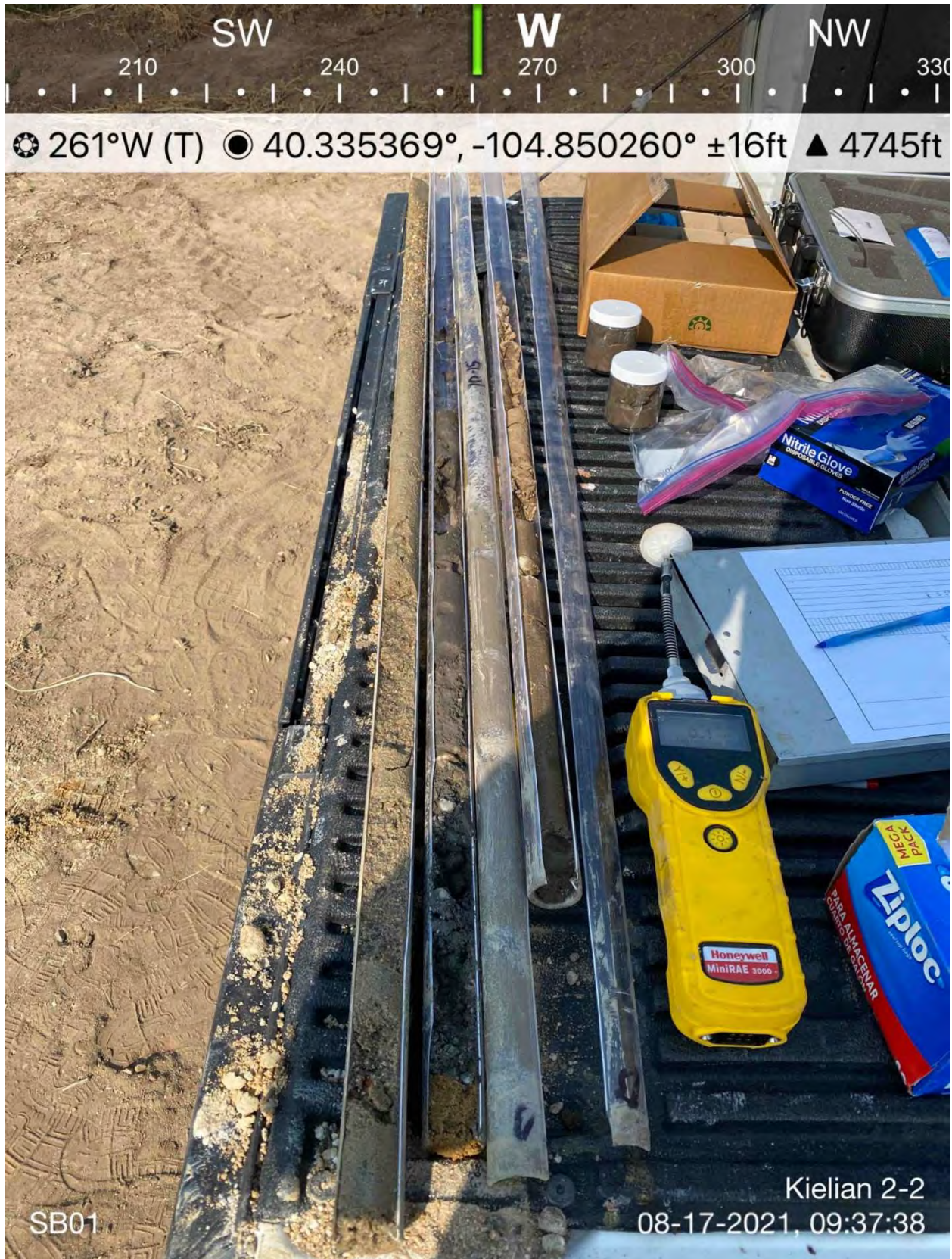
Entrada Consulting Group
August 2021

Kielian 2-2 Tank Battery Geoprobe Investigation Photographic Log



Entrada Consulting Group
August 2021

Kielian 2-2 Tank Battery Geoprobe Investigation Photographic Log



Entrada Consulting Group
August 2021

Kielian 2-2 Tank Battery Geoprobe Investigation Photographic Log



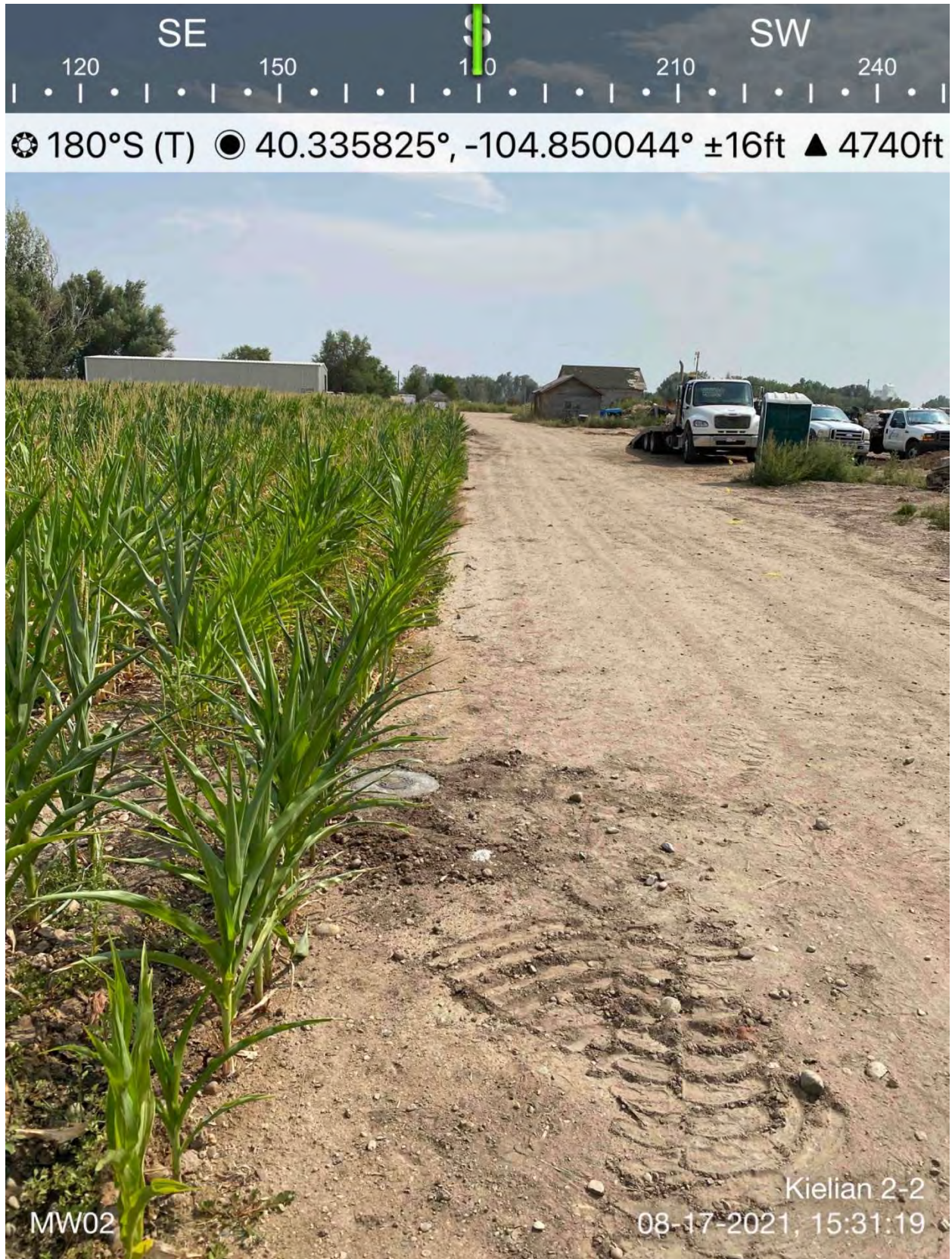
Entrada Consulting Group
August 2021

Kielian 2-2 Tank Battery Geoprobe Investigation Photographic Log



Entrada Consulting Group
August 2021

Kielian 2-2 Tank Battery Geoprobe Investigation Photographic Log



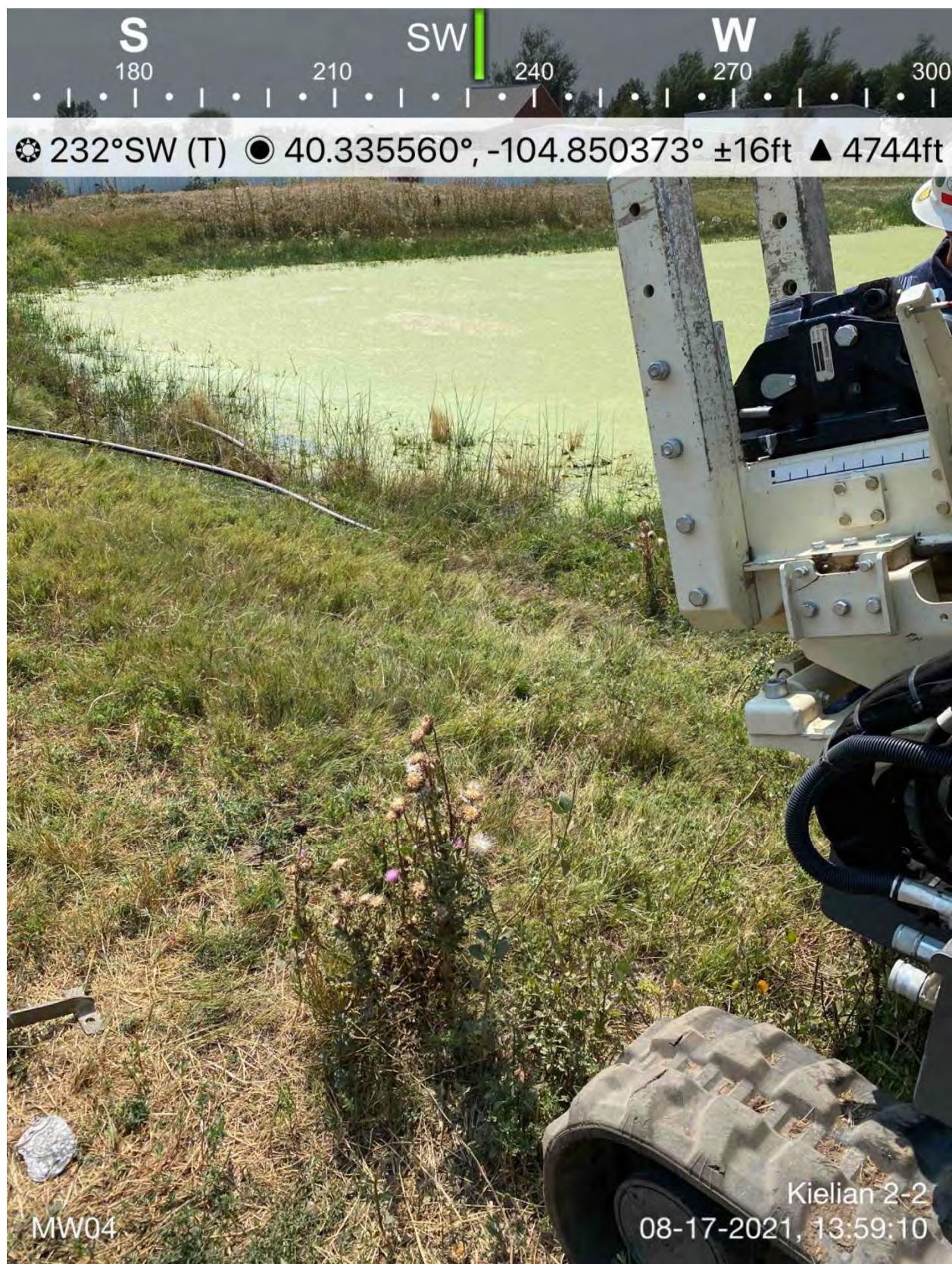
Entrada Consulting Group
August 2021

Kielian 2-2 Tank Battery Geoprobe Investigation Photographic Log



Entrada Consulting Group
August 2021

Kielian 2-2 Tank Battery Geoprobe Investigation Photographic Log



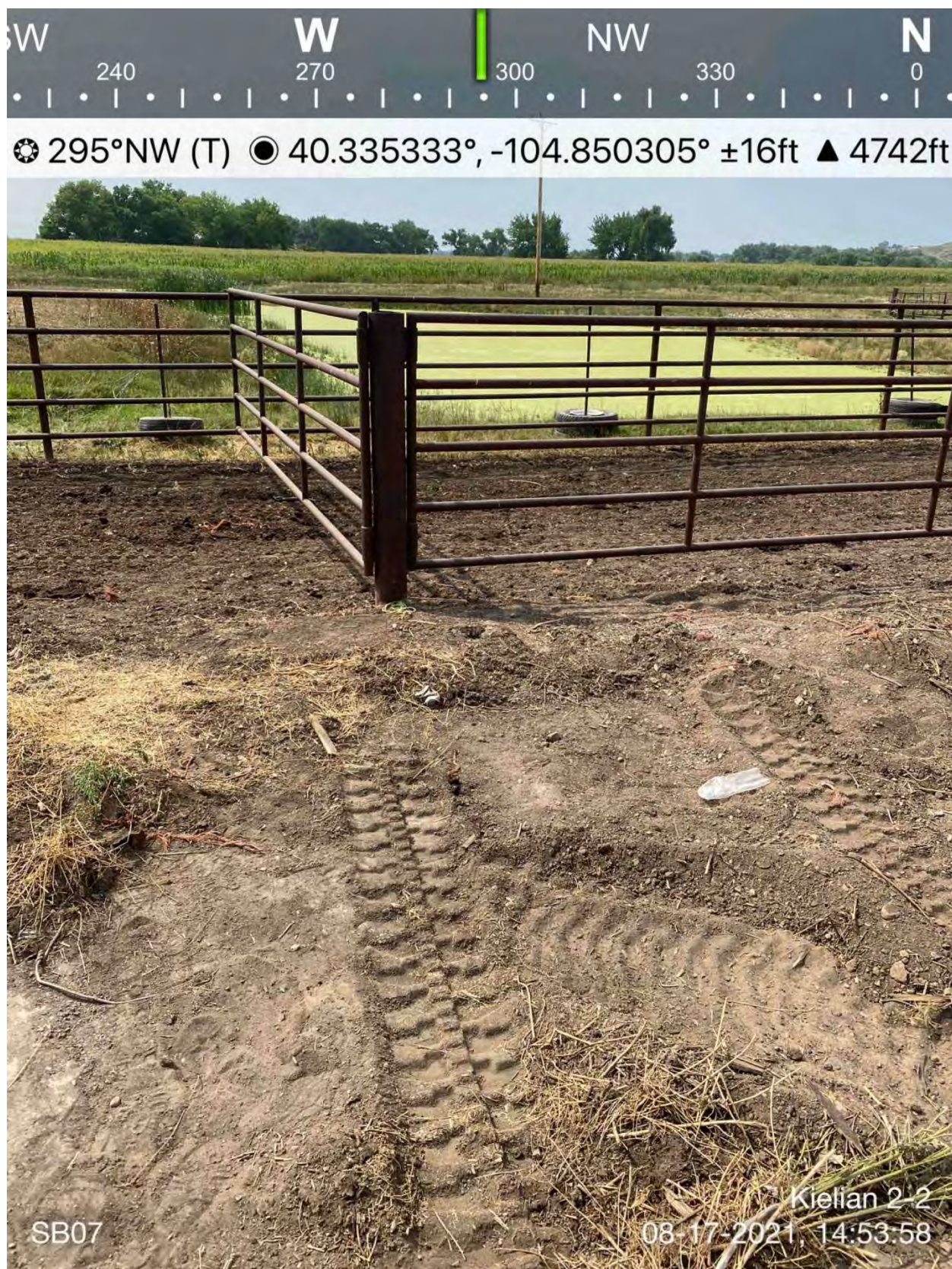
Entrada Consulting Group
August 2021

Kielian 2-2 Tank Battery Geoprobe Investigation Photographic Log



Entrada Consulting Group
August 2021

Kielian 2-2 Tank Battery Geoprobe Investigation Photographic Log

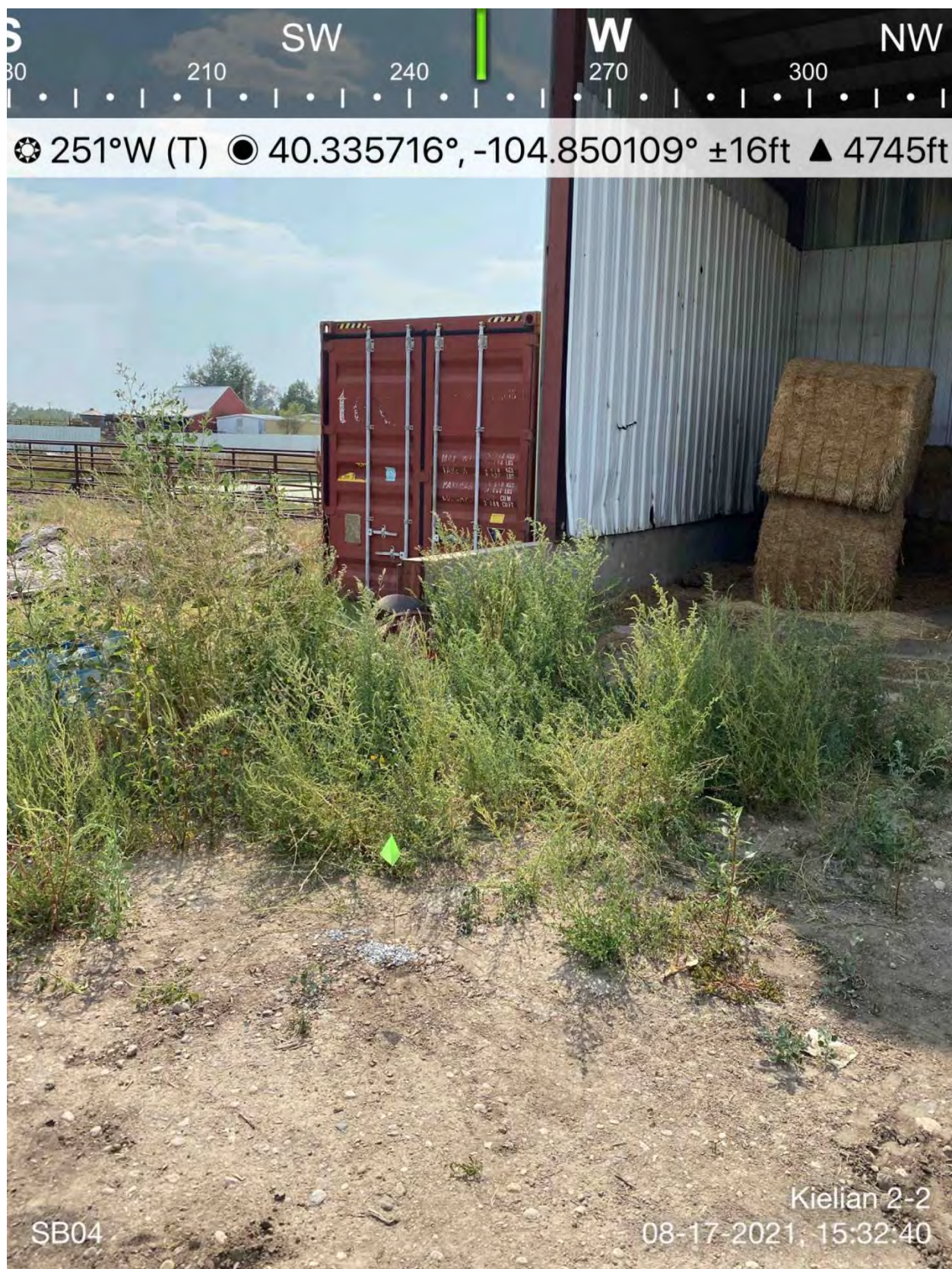


Entrada Consulting Group
August 2021

Kielian 2-2 Tank Battery Geoprobe Investigation Photographic Log



Kielian 2-2 Tank Battery Geoprobe Investigation Photographic Log



Entrada Consulting Group
August 2021

Kielian 2-2 Tank Battery Geoprobe Investigation Photographic Log



Entrada Consulting Group
August 2021

ATTACHMENT D
LABORATORY ANALYTICAL REPORTS

August 30, 2021

Entrada Consulting Group

Ben Baugh

330 Grand Ave. Unit C

Grand Junction CO 81501

Project Name - Kielian 2-2

Project Number - [none]

Attached are your analytical results for Kielian 2-2 received by Origins Laboratory, Inc. August 18, 2021. This project is associated with Origins project number Y108396-01.

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: [none]

Project: Kielian 2-2

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01-5	Y108396-01	Soil	August 17, 2021 9:10	08/18/2021 13:10
MW02-4	Y108396-02	Soil	August 17, 2021 11:05	08/18/2021 13:10
MW03-2.5	Y108396-03	Soil	August 17, 2021 13:20	08/18/2021 13:10
MW04-3.5	Y108396-04	Soil	August 17, 2021 13:50	08/18/2021 13:10
MW05-6	Y108396-05	Soil	August 17, 2021 15:10	08/18/2021 13:10
SB01-5.5	Y108396-06	Soil	August 17, 2021 9:30	08/18/2021 13:10
SB02-6.5	Y108396-07	Soil	August 17, 2021 9:50	08/18/2021 13:10
SB03-5	Y108396-08	Soil	August 17, 2021 10:50	08/18/2021 13:10
SB04-5	Y108396-09	Soil	August 17, 2021 11:35	08/18/2021 13:10
SB05-5	Y108396-10	Soil	August 17, 2021 11:55	08/18/2021 13:10
SB06-5	Y108396-11	Soil	August 17, 2021 12:25	08/18/2021 13:10
SB07-5	Y108396-12	Soil	August 17, 2021 14:40	08/18/2021 13:10

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: [none]
Project: Kielian 2-2

ORIGINS

LABORATORY, INC



Bill to Jason Davidson
at Great Western
Operating Company

page 1 of 2

Client: Entrada Consulting Group
Address: [blank]
Telephone Number: 435-630-4748
Email Address: jpk@entradainc.com, bbaugh@entradainc.com
Project Manager: Ben Baugh
Project Name: Kielian 2-2 Tank Battery
Project Number: [blank]
Samples Collected By: jpk@entradainc.com, bbaugh@entradainc.com

DATE

Davidson@gwp.com

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis	Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	As Summed		
MV01-5	8/17/21	0910	2	X				X			X	1
MV02-4		1105	1									2
MV03-2.5		1320	1									3
MV04-3.5		1320 1350	1									4
MV05-6		1510	1									5
MV06-5.5												6
SV01-5.5		0930	1									7
SV02-6.5		0950	1									8
SV03-5		1050	1									9
												10
Relinquished By: 	Date: 8/19/21	Time: 1310		Received By: 				Date: 8/18/21	Time: 1310	Turnaround Time: Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input checked="" type="checkbox"/>		
Relinquished By:	Date:	Time:		Received By:				Date:	Time:			

Date Results Needed

5.5

Origins Laboratory, Inc.

Jen Pellegrini

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: [none]

Project: Kielian 2-2

ORIGINS
LABORATORY, INC

Bill to Jason Davidson
at Great Western
Operating Company

4108396

page 5 of 2

Client: **Entrada Consulting Group**
Address:

Project Manager: **Ben Baugh**
Project Name: **Kielian 2-2 Tank Battery**

Telephone Number: **435-630-4748**
Email Address: **jbaugh@entradainc.com**
jdavidson@gwp.com

Project Number:
Samples Collected By: **J. Davidson**
baugh@entradainc.com

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix		Analysis	Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil		
5704-5	8/17/21	1135								ETA, L24 and L25 STAR, TPH, GFO (DRO), naphthalene, acrylonitrile, sulfuric acid, dryers, dioxins, 1 and 2, methylphenol, and grease	1
5705-5		1155									2
5706-5		1205									3
5707-5		1448									4
											5
											6
											7
											8
											9
											10

Relinquished By: <i>[Signature]</i>	Date: 8/18/21	Time: 1310	Received By: <i>[Signature]</i>	Date: 8/18/21	Time: 1310
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

Turnaround Time: Same Day ☐ 24 Hr ☐ 48 Hr ☐ 72 Hr ☐ Standard ☒

Date Results Needed

5.5

Origins Laboratory, Inc.

Jen Pellegrini

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: [none]
Project: Kielian 2-2

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

Sample Receipt Checklist

Origins Work Order: 4108396 Client: Entrada consulting group
Client Project ID: Kielian 2-2 Tank Bette

Checklist Completed by: KH Shipped Via: HD
Date/time completed: 8/18/21 (UPS, FedEx, Hand Delivered, Pick-up, etc.)
Airbill #: _____

Matrix(s) Received (Check all that apply): ☒ Soil/Solid ☐ Water ☐ Other: _____
(Describe)

Cooler Number/Temperature: 1 / 5.5 °C 1 °C 1 °C 1 °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 ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (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 ₃ , HCL, H ₂ SO ₄) / (pH > 10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾ 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: Jm (Project Manager) Date/Time Reviewed: 8-19-21

Origins Laboratory, Inc.

Jefe Pellegrini

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: [none]
Project: Kielian 2-2

MW01-5

8/17/2021 9:10:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y108396-01 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B1H1918	08/19/2021	08/20/2021	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl	93.5 %	50-150	"	"	"
------------------------	--------	--------	---	---	---

GBTEX+TMBs

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B1H1917	08/19/2021	08/20/2021	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	104 %	70-130	"	"	"
Surrogate: Toluene-d8	97.8 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	100 %	70-130	"	"	"

PAH by 8270D SIM

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: [none]

Project: Kielian 2-2

MW01-5

8/17/2021 9:10:00AM

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

Y108396-01 (Soil)

PAH by 8270D SIM

1-Methylnaphthalene	ND	0.00048	0.00067	mg/Kg	1	L570192	08/20/2021	08/20/2021
2-Methylnaphthalene	ND	0.000542	0.00067	"	"	"	"	"
Acenaphthene	ND	0.000431	0.00067	"	"	"	"	"
Anthracene	ND	0.000426	0.00067	"	"	"	"	"
Chrysene	ND	0.000256	0.00067	"	"	"	"	"
Fluorene	ND	0.000501	0.00067	"	"	"	"	"
Naphthalene	ND	0.000467	0.00067	"	"	"	"	"
Pyrene	0.000744	0.000387	0.00067	"	"	"	"	"

Surrogate: 2-Fluorobiphenyl	67.9 %	33-115	"	"	"
Surrogate: 4-Terphenyl-d14	69.4 %	33-122	"	"	"
Surrogate: Nitrobenzene-d5	56.3 %	29-110	"	"	"

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: [none]

Project: Kielian 2-2

MW02-4

8/17/2021 11:05:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.

Y108396-02 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B1H1918	08/19/2021	08/20/2021	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl	85.4 %	50-150	"	"	"
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GBTEX+TMBs

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B1H1917	08/19/2021	08/20/2021	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	109 %	70-130	"	"	"
Surrogate: Toluene-d8	96.9 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	70-130	"	"	"

PAH by 8270D SIM

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: [none]

Project: Kielian 2-2

MW02-4

8/17/2021 11:05:00AM

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

Y108396-02 (Soil)

PAH by 8270D SIM

1-Methylnaphthalene	ND	0.00048	0.00067	mg/Kg	1	L570192	08/20/2021	08/20/2021
2-Methylnaphthalene	ND	0.000542	0.00067	"	"	"	"	"
Acenaphthene	ND	0.000431	0.00067	"	"	"	"	"
Anthracene	ND	0.000426	0.00067	"	"	"	"	"
Chrysene	ND	0.000256	0.00067	"	"	"	"	"
Fluorene	ND	0.000501	0.00067	"	"	"	"	"
Naphthalene	ND	0.000467	0.00067	"	"	"	"	"
Pyrene	ND	0.000387	0.00067	"	"	"	"	"

Surrogate: 2-Fluorobiphenyl	63.7 %	33-115	"	"	"
Surrogate: 4-Terphenyl-d14	64 %	33-122	"	"	"
Surrogate: Nitrobenzene-d5	54.4 %	29-110	"	"	"

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: [none]

Project: Kielian 2-2

MW03-2.5

8/17/2021 1:20:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.

Y108396-03 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B1H1918	08/19/2021	08/20/2021	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 91.4 % 50-150 " " "

GBTEX+TMBs

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B1H1917	08/19/2021	08/20/2021	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 107 % 70-130 " " "

Surrogate: Toluene-d8 97.4 % 70-130 " " "

Surrogate: 4-Bromofluorobenzene 101 % 70-130 " " "

PAH by 8270D SIM

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: [none]

Project: Kielian 2-2

MW03-2.5

8/17/2021 1:20:00PM

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

Y108396-03 (Soil)

PAH by 8270D SIM

1-Methylnaphthalene	ND	0.00048	0.00067	mg/Kg	1	L570192	08/20/2021	08/20/2021
2-Methylnaphthalene	ND	0.000542	0.00067	"	"	"	"	"
Acenaphthene	ND	0.000431	0.00067	"	"	"	"	"
Anthracene	ND	0.000426	0.00067	"	"	"	"	"
Chrysene	0.000693	0.000256	0.00067	"	"	"	"	"
Fluorene	ND	0.000501	0.00067	"	"	"	"	"
Naphthalene	ND	0.000467	0.00067	"	"	"	"	"
Pyrene	0.000875	0.000387	0.00067	"	"	"	"	"

Surrogate: 2-Fluorobiphenyl	69.8 %	33-115	"	"	"
Surrogate: 4-Terphenyl-d14	69.5 %	33-122	"	"	"
Surrogate: Nitrobenzene-d5	57.9 %	29-110	"	"	"

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: [none]
Project: Kielian 2-2

MW04-3.5

8/17/2021 1:50:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y108396-04 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B1H1918	08/19/2021	08/20/2021	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl	98.4 %	50-150	"	"	"
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GBTEX+TMBs

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B1H1917	08/19/2021	08/20/2021	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	108 %	70-130	"	"	"
Surrogate: Toluene-d8	97.3 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	102 %	70-130	"	"	"

PAH by 8270D SIM

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: [none]

Project: Kielian 2-2

MW04-3.5

8/17/2021 1:50:00PM

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

Y108396-04 (Soil)

PAH by 8270D SIM

1-Methylnaphthalene	ND	0.00048	0.00067	mg/Kg	1	L570192	08/20/2021	08/20/2021
2-Methylnaphthalene	ND	0.000542	0.00067	"	"	"	"	"
Acenaphthene	ND	0.000431	0.00067	"	"	"	"	"
Anthracene	ND	0.000426	0.00067	"	"	"	"	"
Chrysene	ND	0.000256	0.00067	"	"	"	"	"
Fluorene	ND	0.000501	0.00067	"	"	"	"	"
Naphthalene	ND	0.000467	0.00067	"	"	"	"	"
Pyrene	ND	0.000387	0.00067	"	"	"	"	"

Surrogate: 2-Fluorobiphenyl	63.9 %	33-115	"	"	"
Surrogate: 4-Terphenyl-d14	65.7 %	33-122	"	"	"
Surrogate: Nitrobenzene-d5	55.1 %	29-110	"	"	"

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: [none]
Project: Kielian 2-2

MW05-6

8/17/2021 3:10:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y108396-05 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	57.2		25.0	mg/kg	1	B1H1918	08/19/2021	08/20/2021	
Residual Range Organics (C28-C40)	ND		100	"	"	"	"	"	U

Surrogate: o-Terphenyl	89.6 %		50-150			"	"	"	
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GBTEX+TMBs

1,2,4-Trimethylbenzene	0.390		0.00200	mg/kg	1	B1H1917	08/19/2021	08/20/2021	
1,3,5-Trimethylbenzene	ND		0.00200	"	"	"	"	"	U
Benzene	ND		0.00200	"	"	"	"	"	U
Ethylbenzene	0.0246		0.00200	"	"	"	"	"	
Toluene	ND		0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	6.24		0.200	"	"	"	"	"	
Xylenes, total	ND		0.00200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	108 %		70-130			"	"	"	
Surrogate: Toluene-d8	96.4 %		70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	109 %		70-130			"	"	"	

PAH by 8270D SIM

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: [none]

Project: Kielian 2-2

MW05-6

8/17/2021 3:10:00PM

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

Y108396-05 (Soil)

PAH by 8270D SIM

1-Methylnaphthalene	0.0794	0.0024	0.00335	mg/Kg	5	L570192	08/20/2021	08/20/2021	
2-Methylnaphthalene	0.159	0.00271	0.00335	"	"	"	"	"	
Acenaphthene	0.0112	0.00216	0.00335	"	"	"	"	"	
Anthracene	ND	0.00213	0.00335	"	"	"	"	"	
Chrysene	0.00254	0.00128	0.00335	"	"	"	"	"	J
Fluorene	0.0194	0.00251	0.00335	"	"	"	"	"	
Naphthalene	0.0361	0.00234	0.00335	"	"	"	"	"	
Pyrene	ND	0.00194	0.00335	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	62.1 %	33-115	"	"	"
Surrogate: 4-Terphenyl-d14	67.3 %	33-122	"	"	"
Surrogate: Nitrobenzene-d5	51.8 %	29-110	"	"	"

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: [none]
Project: Kielian 2-2

SB01-5.5

8/17/2021 9:30:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y108396-06 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B1H1918	08/19/2021	08/20/2021	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 90.5 % 50-150 " " "

GBTEX+TMBs

1,2,4-Trimethylbenzene	0.00298	0.00200	mg/kg	1	B1H1917	08/19/2021	08/20/2021	
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 107 % 70-130 " " "
Surrogate: Toluene-d8 97.6 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 100 % 70-130 " " "

PAH by 8270D SIM

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: [none]

Project: Kielian 2-2

SB01-5.5

8/17/2021 9:30:00AM

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

Y108396-06 (Soil)

PAH by 8270D SIM

1-Methylnaphthalene	ND	0.00048	0.00067	mg/Kg	1	L570192	08/20/2021	08/20/2021
2-Methylnaphthalene	0.00122	0.000542	0.00067	"	"	"	"	"
Acenaphthene	ND	0.000431	0.00067	"	"	"	"	"
Anthracene	ND	0.000426	0.00067	"	"	"	"	"
Chrysene	ND	0.000256	0.00067	"	"	"	"	"
Fluorene	ND	0.000501	0.00067	"	"	"	"	"
Naphthalene	ND	0.000467	0.00067	"	"	"	"	"
Pyrene	ND	0.000387	0.00067	"	"	"	"	"

Surrogate: 2-Fluorobiphenyl	63.3 %	33-115	"	"	"
Surrogate: 4-Terphenyl-d14	68.2 %	33-122	"	"	"
Surrogate: Nitrobenzene-d5	55.5 %	29-110	"	"	"

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: [none]
Project: Kielian 2-2

SB02-6.5

8/17/2021 9:50:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y108396-07 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B1H1918	08/19/2021	08/20/2021	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl	92.3 %	50-150	"	"	"
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GBTEX+TMBs

1,2,4-Trimethylbenzene	0.209	0.0500	mg/kg	25	B1H1917	08/19/2021	08/20/2021	
1,3,5-Trimethylbenzene	ND	0.00200	"	1	"	"	08/20/2021	U
Benzene	0.105	0.00200	"	"	"	"	"	
Ethylbenzene	0.00268	0.00200	"	"	"	"	"	
Toluene	ND	0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	6.21	0.200	"	"	"	"	"	
Xylenes, total	ND	0.00200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	108 %	70-130	"	"	"
Surrogate: Toluene-d8	96.1 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	106 %	70-130	"	"	"

PAH by 8270D SIM

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: [none]

Project: Kielian 2-2

SB02-6.5

8/17/2021 9:50:00AM

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

Y108396-07 (Soil)

PAH by 8270D SIM

1-Methylnaphthalene	0.0156	0.00048	0.00067	mg/Kg	1	L570192	08/20/2021	08/20/2021	
2-Methylnaphthalene	0.0363	0.000542	0.00067	"	"	"	"	"	
Acenaphthene	ND	0.000431	0.00067	"	"	"	"	"	
Anthracene	ND	0.000426	0.00067	"	"	"	"	"	
Chrysene	ND	0.000256	0.00067	"	"	"	"	"	
Fluorene	ND	0.000501	0.00067	"	"	"	"	"	
Naphthalene	0.0276	0.000467	0.00067	"	"	"	"	"	
Pyrene	ND	0.000387	0.00067	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	62 %	33-115	"	"	"
Surrogate: 4-Terphenyl-d14	64.5 %	33-122	"	"	"
Surrogate: Nitrobenzene-d5	52.4 %	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: [none]
Project: Kielian 2-2

SB03-5

8/17/2021 10:50:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y108396-08 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B1H1918	08/19/2021	08/20/2021	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl	106 %	50-150	"	"	"
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GBTEX+TMBs

1,2,4-Trimethylbenzene	0.563	0.0500	mg/kg	25	B1H1917	08/19/2021	08/20/2021	
1,3,5-Trimethylbenzene	ND	0.00200	"	1	"	"	08/20/2021	U
Benzene	0.0765	0.00200	"	"	"	"	"	
Ethylbenzene	0.0244	0.00200	"	"	"	"	"	
Toluene	ND	0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	0.660	0.200	"	"	"	"	"	
Xylenes, total	ND	0.00200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	107 %	70-130	"	"	"
Surrogate: Toluene-d8	97.7 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	103 %	70-130	"	"	"

PAH by 8270D SIM

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: [none]

Project: Kielian 2-2

SB03-5

8/17/2021 10:50:00AM

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

Y108396-08 (Soil)

PAH by 8270D SIM

1-Methylnaphthalene	0.587	0.0048	0.0067	mg/Kg	10	L570192	08/20/2021	08/20/2021
2-Methylnaphthalene	1.41	0.00542	0.0067	"	"	"	"	"
Acenaphthene	0.0926	0.00431	0.0067	"	"	"	"	"
Anthracene	ND	0.00426	0.0067	"	"	"	"	"
Chrysene	ND	0.00256	0.0067	"	"	"	"	"
Fluorene	0.0503	0.00501	0.0067	"	"	"	"	"
Naphthalene	0.322	0.00467	0.0067	"	"	"	"	"
Pyrene	ND	0.00387	0.0067	"	"	"	"	"

Surrogate: 2-Fluorobiphenyl	70.9 %	33-115	"	"	"
Surrogate: 4-Terphenyl-d14	73.3 %	33-122	"	"	"
Surrogate: Nitrobenzene-d5	62 %	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: [none]
Project: Kielian 2-2

SB04-5

8/17/2021 11:35:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y108396-09 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B1H1918	08/19/2021	08/20/2021	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl	88.3 %	50-150	"	"	"
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GBTEX+TMBs

1,2,4-Trimethylbenzene	0.0848	0.00200	mg/kg	1	B1H1917	08/19/2021	08/20/2021	
1,3,5-Trimethylbenzene	0.0104	0.00200	"	"	"	"	"	
Benzene	0.00754	0.00200	"	"	"	"	"	
Ethylbenzene	0.0251	0.00200	"	"	"	"	"	
Toluene	ND	0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	1.29	0.200	"	"	"	"	"	
Xylenes, total	ND	0.00200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	106 %	70-130	"	"	"
Surrogate: Toluene-d8	98.2 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	70-130	"	"	"

PAH by 8270D SIM

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: [none]

Project: Kielian 2-2

SB04-5

8/17/2021 11:35:00AM

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

Y108396-09 (Soil)

PAH by 8270D SIM

1-Methylnaphthalene	ND	0.00048	0.00067	mg/Kg	1	L570192	08/20/2021	08/20/2021
2-Methylnaphthalene	0.000722	0.000542	0.00067	"	"	"	"	"
Acenaphthene	ND	0.000431	0.00067	"	"	"	"	"
Anthracene	ND	0.000426	0.00067	"	"	"	"	"
Chrysene	ND	0.000256	0.00067	"	"	"	"	"
Fluorene	ND	0.000501	0.00067	"	"	"	"	"
Naphthalene	0.00164	0.000467	0.00067	"	"	"	"	"
Pyrene	ND	0.000387	0.00067	"	"	"	"	"

Surrogate: 2-Fluorobiphenyl	69 %	33-115	"	"	"
Surrogate: 4-Terphenyl-d14	74.4 %	33-122	"	"	"
Surrogate: Nitrobenzene-d5	57.2 %	29-110	"	"	"

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: [none]
Project: Kielian 2-2

SB05-5

8/17/2021 11:55:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y108396-10 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B1H1918	08/19/2021	08/20/2021	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl	91.8 %	50-150	"	"	"
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GBTEX+TMBs

1,2,4-Trimethylbenzene	0.00282	0.00200	mg/kg	1	B1H1917	08/19/2021	08/20/2021	
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	106 %	70-130	"	"	"
Surrogate: Toluene-d8	97.0 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	102 %	70-130	"	"	"

PAH by 8270D SIM

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: [none]

Project: Kielian 2-2

SB05-5

8/17/2021 11:55:00AM

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

Y108396-10 (Soil)

PAH by 8270D SIM

1-Methylnaphthalene	ND	0.00048	0.00067	mg/Kg	1	L570192	08/20/2021	08/20/2021
2-Methylnaphthalene	ND	0.000542	0.00067	"	"	"	"	"
Acenaphthene	ND	0.000431	0.00067	"	"	"	"	"
Anthracene	ND	0.000426	0.00067	"	"	"	"	"
Chrysene	ND	0.000256	0.00067	"	"	"	"	"
Fluorene	ND	0.000501	0.00067	"	"	"	"	"
Naphthalene	ND	0.000467	0.00067	"	"	"	"	"
Pyrene	ND	0.000387	0.00067	"	"	"	"	"

Surrogate: 2-Fluorobiphenyl	69.8 %	33-115	"	"	"
Surrogate: 4-Terphenyl-d14	73.5 %	33-122	"	"	"
Surrogate: Nitrobenzene-d5	54.9 %	29-110	"	"	"

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: [none]

Project: Kielian 2-2

SB06-5

8/17/2021 12:25:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.

Y108396-11 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B1H1918	08/19/2021	08/20/2021	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl	88.1 %	50-150	"	"	"
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GBTEX+TMBs

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B1H1917	08/19/2021	08/20/2021	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	106 %	70-130	"	"	"
Surrogate: Toluene-d8	95.7 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	70-130	"	"	"

PAH by 8270D SIM

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: [none]

Project: Kielian 2-2

SB06-5

8/17/2021 12:25:00PM

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

Y108396-11 (Soil)

PAH by 8270D SIM

1-Methylnaphthalene	ND	0.00048	0.00067	mg/Kg	1	L570192	08/20/2021	08/20/2021
2-Methylnaphthalene	ND	0.000542	0.00067	"	"	"	"	"
Acenaphthene	ND	0.000431	0.00067	"	"	"	"	"
Anthracene	ND	0.000426	0.00067	"	"	"	"	"
Chrysene	ND	0.000256	0.00067	"	"	"	"	"
Fluorene	ND	0.000501	0.00067	"	"	"	"	"
Naphthalene	ND	0.000467	0.00067	"	"	"	"	"
Pyrene	ND	0.000387	0.00067	"	"	"	"	"

Surrogate: 2-Fluorobiphenyl	61.5 %	33-115	"	"	"
Surrogate: 4-Terphenyl-d14	65.2 %	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: [none]
Project: Kielian 2-2

SB07-5

8/17/2021 2:40:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y108396-12 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B1H1918	08/19/2021	08/20/2021	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 87.2 % 50-150 " " "

GBTEX+TMBs

1,2,4-Trimethylbenzene	0.177	0.00200	mg/kg	1	B1H1917	08/19/2021	08/20/2021	
1,3,5-Trimethylbenzene	0.00264	0.00200	"	"	"	"	"	
Benzene	0.00436	0.00200	"	"	"	"	"	
Ethylbenzene	0.0778	0.00200	"	"	"	"	"	
Toluene	ND	0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	"	"	U
Xylenes, total	0.0359	0.00200	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 108 % 70-130 " " "
Surrogate: Toluene-d8 94.7 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 109 % 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: [none]

Project: Kielian 2-2

SB07-5

8/17/2021 2:40:00PM

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

Y108396-12 (Soil)

PAH by 8270D SIM

1-Methylnaphthalene	0.0122	0.0024	0.00335	mg/Kg	5	L570192	08/20/2021	08/20/2021	
2-Methylnaphthalene	0.0251	0.00271	0.00335	"	"	"	"	"	
Acenaphthene	ND	0.00216	0.00335	"	"	"	"	"	
Anthracene	ND	0.00213	0.00335	"	"	"	"	"	
Chrysene	ND	0.00128	0.00335	"	"	"	"	"	
Fluorene	ND	0.00251	0.00335	"	"	"	"	"	
Naphthalene	0.0183	0.00234	0.00335	"	"	"	"	"	
Pyrene	ND	0.00194	0.00335	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	52.9 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	59.3 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	45.9 %		29-110			"	"	"	

Origins Laboratory, Inc.



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.

Jen Pellegrini, Project Manager

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

Ben Baugh
Project Number: [none]
Project: Kielian 2-2

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
Batch B1H1917 - EPA 5030 (soil)										
Blank (B1H1917-BLK1)					Prepared: 08/19/2021 Analyzed: 08/20/2021					
1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							U
Naphthalene	ND	0.00380	"							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	0.13		"	0.125	102		70-130			
Surrogate: Toluene-d8	0.12		"	0.125	97.6		70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125	101		70-130			

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: [none]
Project: Kielian 2-2

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
Batch B1H1917 - EPA 5030 (soil)										
LCS (B1H1917-BS1)					Prepared: 08/19/2021 Analyzed: 08/20/2021					
1,2,4-Trimethylbenzene	0.0569	0.00200	mg/kg	0.0500		114	70-130			
Naphthalene	0.0513	0.0100	"	0.0500		103	70-130			
1,3,5-Trimethylbenzene	0.0563	0.00200	"	0.0500		113	70-130			
Benzene	0.0591	0.00200	"	0.0500		118	70-130			
Ethylbenzene	0.0552	0.00200	"	0.0500		110	70-130			
m,p-Xylene	0.114	0.00400	"	0.100		114	70-130			
o-Xylene	0.0561	0.00200	"	0.0500		112	70-130			
Toluene	0.0576	0.00200	"	0.0500		115	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		103	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.4	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.4	70-130			

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: [none]
Project: Kielian 2-2

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
Batch B1H1917 - EPA 5030 (soil)										
Matrix Spike (B1H1917-MS1)		Source: Y108396-01			Prepared: 08/19/2021 Analyzed: 08/20/2021					
1,2,4-Trimethylbenzene	0.0524	0.00200	mg/kg	0.0500	0.000800	103	70-130			
Naphthalene	0.0463	0.0100	"	0.0500	0.00336	85.9	70-130			
1,3,5-Trimethylbenzene	0.0521	0.00200	"	0.0500	0.000480	103	70-130			
Benzene	0.0554	0.00200	"	0.0500	ND	111	70-130			
Ethylbenzene	0.0526	0.00200	"	0.0500	ND	105	70-130			
m,p-Xylene	0.108	0.00400	"	0.100	ND	108	70-130			
o-Xylene	0.0529	0.00200	"	0.0500	ND	106	70-130			
Toluene	0.0544	0.00200	"	0.0500	ND	109	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		105	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.7	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.5	70-130			

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: [none]
Project: Kielian 2-2

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
Batch B1H1917 - EPA 5030 (soil)										
Matrix Spike Dup (B1H1917-MSD1)		Source: Y108396-01			Prepared: 08/19/2021 Analyzed: 08/20/2021					
1,2,4-Trimethylbenzene	0.0469	0.00200	mg/kg	0.0500	0.000800	92.2	70-130	11.1	20	
Naphthalene	0.0439	0.0100	"	0.0500	0.00336	81.1	70-130	5.32	20	
1,3,5-Trimethylbenzene	0.0472	0.00200	"	0.0500	0.000480	93.5	70-130	9.83	20	
Benzene	0.0503	0.00200	"	0.0500	ND	101	70-130	9.61	20	
Ethylbenzene	0.0470	0.00200	"	0.0500	ND	94.1	70-130	11.2	20	
m,p-Xylene	0.0960	0.00400	"	0.100	ND	96.0	70-130	12.0	20	
o-Xylene	0.0476	0.00200	"	0.0500	ND	95.1	70-130	10.7	20	
Toluene	0.0475	0.00200	"	0.0500	ND	95.0	70-130	13.6	20	
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		103	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.5	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		99.6	70-130			

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: [none]

Project: Kielian 2-2

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
Batch B1H1918 - EPA 3550B										
Blank (B1H1918-BLK1)					Prepared: 08/19/2021 Analyzed: 08/19/2021					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	22		"	25.0		88.0	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: [none]

Project: Kielian 2-2

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 B1H1918 - EPA 3550B**LCS (B1H1918-BS1)**

Prepared: 08/19/2021 Analyzed: 08/19/2021

Diesel (C10-C28)	934	50.0	mg/kg	1000		93.4	70-130			
Residual Range Organics (C28-C40)	1200	200	"	1000		120	70-130			
Surrogate: o-Terphenyl	54		"	50.0		108	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: [none]

Project: Kielian 2-2

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 B1H1918 - EPA 3550B

Matrix Spike (B1H1918-MS1)		Source: Y108394-01			Prepared: 08/19/2021 Analyzed: 08/19/2021					
Diesel (C10-C28)	932	50.0	mg/kg	1000	ND	93.2	70-130			
Residual Range Organics (C28-C40)	1170	200	"	1000	ND	117	70-130			
Surrogate: o-Terphenyl	53		"	50.0		105	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: [none]

Project: Kielian 2-2

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 B1H1918 - EPA 3550B

Matrix Spike Dup (B1H1918-MSD1)		Source: Y108394-01			Prepared: 08/19/2021 Analyzed: 08/19/2021					
Diesel (C10-C28)	939	50.0	mg/kg	1000	ND	93.9	70-130	0.770	35	
Residual Range Organics (C28-C40)	1180	200	"	1000	ND	118	70-130	1.15	35	
Surrogate: o-Terphenyl	46		"	50.0		92.3	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: [none]
Project: Kielian 2-2

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 L570192 - 3550B

MSD (L 92749-MSD-L570192)		Source: 92749			Prepared: 08/20/2021 Analyzed: 08/20/2021					
Acenaphthene	0.0918	0.000431	mg/Kg	0.166	<0.000431	55.3	30-130	6.1	30	
Pyrene	0.104	0.000387	"	0.166	<0.000387	62.6	30-130	4.6	30	
Naphthalene	0.0872	0.000467	"	0.166	<0.000467	52.5	30-130	5.8	30	
Fluorene	0.095	0.000501	"	0.166	<0.000501	57.2	30-130	4.5	30	
Anthracene	0.103	0.000426	"	0.166	<0.000426	62	30-130	6.5	30	
2-Methylnaphthalene	0.0892	0.000542	"	0.166	<0.000542	53.7	30-130	6.4	30	
1-Methylnaphthalene	0.0907	0.00048	"	0.166	<0.000480	54.6	30-130	5.1	30	
Chrysene	0.105	0.000256	"	0.166	<0.000256	63.2	30-130	4.6	30	
Surrogate: Nitrobenzene-d5	49.6		"	0.332	187	49.6	29-110			
Surrogate: 4-Terphenyl-d14	59.3		"	0.332	218	59.3	33-122			
Surrogate: 2-Fluorobiphenyl	57.5		"	0.332	216	57.5	33-115			

MS (L 92749-MS-L570192)		Source: 92749			Prepared: 08/20/2021 Analyzed: 08/20/2021					
Anthracene	0.11	0.000426	mg/Kg	0.163	<0.000426	67.4	30-130			
Fluorene	0.0994	0.000501	"	0.163	0.0194	60.9	30-130			
Pyrene	0.109	0.000387	"	0.163	<0.000387	66.8	30-130			
Naphthalene	0.0925	0.000467	"	0.163	0.322	56.7	30-130			
Chrysene	0.11	0.000256	"	0.163	0.00254	67.4	30-130			
2-Methylnaphthalene	0.0951	0.000542	"	0.163	0.159	58.3	30-130			
1-Methylnaphthalene	0.0955	0.00048	"	0.163	0.0122	58.5	30-130			
Acenaphthene	0.0976	0.000431	"	0.163	<0.000431	59.8	30-130			
Surrogate: 4-Terphenyl-d14	63.8		"	0.326	218	63.8	33-122			

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

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

Ben Baugh
Project Number: [none]
Project: Kielian 2-2

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
Batch L570192 - 3550B										
MS (L 92749-MS-L570192)			Source: 92749		Prepared: 08/20/2021 Analyzed: 08/20/2021					
Surrogate: 2-Fluorobiphenyl	64.1		mg/Kg	0.326	216	64.1	33-115			
Surrogate: Nitrobenzene-d5	53.6		"	0.326	187	53.6	29-110			
LCS (LCS-L570192)			Prepared: 08/20/2021 Analyzed: 08/20/2021							
Fluorene	0.11	0.000501	mg/Kg	0.167		65.8	30-130			
Pyrene	0.118	0.000387	"	0.167		70.6	30-130			
Naphthalene	0.101	0.000467	"	0.167		60.4	30-130			
Chrysene	0.119	0.000256	"	0.167		71.2	30-130			
Anthracene	0.12	0.000426	"	0.167		71.8	30-130			
2-Methylnaphthalene	0.104	0.000542	"	0.167		62.2	30-130			
1-Methylnaphthalene	0.105	0.00048	"	0.167		62.8	30-130			
Acenaphthene	0.107	0.000431	"	0.167		64	30-130			
Surrogate: 4-Terphenyl-d14	73.5		"	0.333		73.5	33-122			
Surrogate: 2-Fluorobiphenyl	73.8		"	0.333		73.8	33-115			
Surrogate: Nitrobenzene-d5	60.6		"	0.333		60.6	29-110			
LRB (LRB-L570192)			Prepared: 08/20/2021 Analyzed: 08/20/2021							
Naphthalene	ND	0.00067	mg/Kg				-			
Fluorene	ND	0.00067	"				-			
Chrysene	ND	0.00067	"				-			
Anthracene	ND	0.00067	"				-			
Acenaphthene	ND	0.00067	"				-			
2-Methylnaphthalene	ND	0.00067	"				-			
1-Methylnaphthalene	ND	0.00067	"				-			
Pyrene	ND	0.00067	"				-			
Surrogate: 2-Fluorobiphenyl	66.9		"	0.333		66.9	33-115			
Surrogate: Nitrobenzene-d5	57		"	0.333		57	29-110			

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: [none]

Project: Kielian 2-2

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 L570192 - 3550B

LRB (LRB-L570192)

Prepared: 08/20/2021 Analyzed: 08/20/2021

Surrogate: 4-Terphenyl-d14	66.9		mg/Kg	0.333		66.9	33-122			
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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: [none]

Project: Kielian 2-2

Notes and Definitions

U Sample is Non-Detect.

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.

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.



August 26, 2021

Entrada Consulting Group

Ben Baugh

330 Grand Ave. Unit C

Grand Junction CO 81501

Project Name - Kielian 2-2

Project Number - [none]

Attached are your analytical results for Kielian 2-2 received by Origins Laboratory, Inc. August 19, 2021. This project is associated with Origins project number Y108416-01.

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



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Entrada Consulting Group

330 Grand Ave. Unit C

Grand Junction CO 81501

Ben Baugh

Project Number: [none]

Project: Kielian 2-2

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01	Y108416-01	Water	August 19, 2021 10:25	08/19/2021 15:01
MW02	Y108416-02	Water	August 19, 2021 12:25	08/19/2021 15:01
MW03	Y108416-03	Water	August 19, 2021 11:15	08/19/2021 15:01
MW04	Y108416-04	Water	August 19, 2021 11:55	08/19/2021 15:01
MW05	Y108416-05	Water	August 19, 2021 13:00	08/19/2021 15:01
MW06	Y108416-06	Water	August 19, 2021 13:20	08/19/2021 15:01

Origins Laboratory, Inc.



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: [none]

Project: Kielian 2-2

Bill to J. Davidson
Great Western Operating Company

4108416

Client: Entrada Consulting Group
Address: [blank]
Telephone Number: 435-630-4748
Email Address: bbaugh@entradainc.com, jpike@entradainc.com, jdavidson@gwp.com

Project Manager: Ben Baugh
Project Name: Kielian 2-2 Wellhead
Project Number: [blank]
Samples Collected By: Jeremy Pike

1725 Elk Ridge Drive, CO 80211 Phone: 303.483.1322 FAX: 303.483.9645

Sample ID Description	Date Sampled	Time Sampled	Preservative				Matrix				Sample Instructions	
			HCl	HNO ₃	Other	Groundwater	Soil	As Specified	Other	OTLA (2,4 and 1,3 DMI) ng/mL/ug/L		
MW01	8/19/21	1025	X			X					X	1
MW02		1225										2
MW03		1115										3
MW04		1155										4
MW05		1300										5
MW06		1320										6
												7
												8
												9
												10

Requisitioned By: [Signature] Date: 8/19/21 Time: 1500
Received By: [Signature] Date: 8/19/21 Time: 1501
Turnaround Time: Same Day ☐ 24 Hr ☐ 48 Hr ☐ 72 Hr ☐ Standard ☒

36

Origins Laboratory, Inc.

Jordan A. Merrill

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: [none]

Project: Kielian 2-2

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 4108416

Client: Entrada

Client Project ID: Kielian 2-2

Checklist Completed by: KH

Shipped Via: HD

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 8/19/12

Airbill #: N/A

Matrix(s) Received: (Check all that apply): ☐ Soil/Solid ☒ Water ☐ Other

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

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 ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (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 ₃ , HCL, H ₂ SO ₄) / (pH > 10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾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: pm (Project Manager)

8-20-12
Date/Time Reviewed

Origins Laboratory, Inc.

Jordan A. Merrill

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: [none]

Project: Kielian 2-2

MW01

8/19/2021 10:25:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	---------	----------	----------	-------

Origins Laboratory, Inc.

Y108416-01 (Water)

BTEX+N+TMBs by 8260D

1,2,4-Trimethylbenzene	ND	1.00	ug/L	1	B1H2008	KDK	08/20/2021	08/20/2021	U
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	KDK	"	"	U
Benzene	ND	1.00	"	"	"	KDK	"	"	U
Ethylbenzene	ND	1.00	"	"	"	KDK	"	"	U
Naphthalene	ND	4.00	"	"	"	KDK	"	"	U
Toluene	ND	1.00	"	"	"	KDK	"	"	U
Xylenes, total	ND	1.00	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4

105 % 70-130

"

"

"

Surrogate: Toluene-d8

104 % 70-130

"

"

"

Surrogate: 4-Bromofluorobenzene

91.9 % 70-130

"

"

"

Origins Laboratory, Inc.

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: [none]

Project: Kielian 2-2

MW02

8/19/2021 12:25:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	---------	----------	----------	-------

Origins Laboratory, Inc.

Y108416-02 (Water)

BTEX+N+TMBs by 8260D

1,2,4-Trimethylbenzene	ND	1.00	ug/L	1	B1H2008	KDK	08/20/2021	08/20/2021	U
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	KDK	"	"	U
Benzene	ND	1.00	"	"	"	KDK	"	"	U
Ethylbenzene	ND	1.00	"	"	"	KDK	"	"	U
Naphthalene	ND	4.00	"	"	"	KDK	"	"	U
Toluene	ND	1.00	"	"	"	KDK	"	"	U
Xylenes, total	ND	1.00	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4

107 %

70-130

"

"

"

Surrogate: Toluene-d8

102 %

70-130

"

"

"

Surrogate: 4-Bromofluorobenzene

91.0 %

70-130

"

"

"

Origins Laboratory, Inc.

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: [none]

Project: Kielian 2-2

MW03

8/19/2021 11:15:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	---------	----------	----------	-------

Origins Laboratory, Inc.

Y108416-03 (Water)

BTEX+N+TMBs by 8260D

1,2,4-Trimethylbenzene	ND	1.00	ug/L	1	B1H2008	KDK	08/20/2021	08/20/2021	U
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	KDK	"	"	U
Benzene	ND	1.00	"	"	"	KDK	"	"	U
Ethylbenzene	ND	1.00	"	"	"	KDK	"	"	U
Naphthalene	ND	4.00	"	"	"	KDK	"	"	U
Toluene	ND	1.00	"	"	"	KDK	"	"	U
Xylenes, total	ND	1.00	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4

105 % 70-130

"

"

"

Surrogate: Toluene-d8

105 % 70-130

"

"

"

Surrogate: 4-Bromofluorobenzene

94.0 % 70-130

"

"

"

Origins Laboratory, Inc.



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: [none]

Project: Kielian 2-2

MW04

8/19/2021 11:55:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	---------	----------	----------	-------

Origins Laboratory, Inc.

Y108416-04 (Water)

BTEX+N+TMBs by 8260D

1,2,4-Trimethylbenzene	ND	1.00	ug/L	1	B1H2008	KDK	08/20/2021	08/20/2021	U
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	KDK	"	"	U
Benzene	ND	1.00	"	"	"	KDK	"	"	U
Ethylbenzene	ND	1.00	"	"	"	KDK	"	"	U
Naphthalene	ND	4.00	"	"	"	KDK	"	"	U
Toluene	ND	1.00	"	"	"	KDK	"	"	U
Xylenes, total	ND	1.00	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4

108 % 70-130

"

"

"

Surrogate: Toluene-d8

103 % 70-130

"

"

"

Surrogate: 4-Bromofluorobenzene

91.6 % 70-130

"

"

"

Origins Laboratory, Inc.



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: [none]

Project: Kielian 2-2

MW05

8/19/2021 1:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	---------	----------	----------	-------

Origins Laboratory, Inc.

Y108416-05 (Water)

BTEX+N+TMBs by 8260D

1,2,4-Trimethylbenzene	4.41	1.00	ug/L	1	B1H2008	KDK	08/20/2021	08/20/2021	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	KDK	"	"	U
Benzene	ND	1.00	"	"	"	KDK	"	"	U
Ethylbenzene	1.07	1.00	"	"	"	KDK	"	"	
Naphthalene	ND	4.00	"	"	"	KDK	"	"	U
Toluene	ND	1.00	"	"	"	KDK	"	"	U
Xylenes, total	ND	1.00	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4

108 % 70-130

"

"

"

Surrogate: Toluene-d8

102 % 70-130

"

"

"

Surrogate: 4-Bromofluorobenzene

93.6 % 70-130

"

"

"

Origins Laboratory, Inc.

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: [none]

Project: Kielian 2-2

MW06

8/19/2021 1:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	---------	----------	----------	-------

Origins Laboratory, Inc.

Y108416-06 (Water)

BTEX+N+TMBs by 8260D

1,2,4-Trimethylbenzene	240	4.00	ug/L	4	B1H2008	KDK	08/20/2021	08/20/2021	
1,3,5-Trimethylbenzene	ND	4.00	"	"	"	KDK	"	"	U
Benzene	14.7	4.00	"	"	"	KDK	"	"	
Ethylbenzene	11.0	4.00	"	"	"	KDK	"	"	
Naphthalene	ND	16.0	"	"	"	KDK	"	"	U
Toluene	ND	4.00	"	"	"	KDK	"	"	U
Xylenes, total	ND	4.00	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4

105 %

70-130

"

"

"

Surrogate: Toluene-d8

106 %

70-130

"

"

"

Surrogate: 4-Bromofluorobenzene

92.6 %

70-130

"

"

"

Origins Laboratory, Inc.



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Entrada Consulting Group

330 Grand Ave. Unit C

Grand Junction CO 81501

Ben Baugh

Project Number: [none]

Project: Kielian 2-2

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
Batch B1H2008 - EPA 5030B (Water)										
Blank (B1H2008-BLK1)					Prepared: 08/20/2021 Analyzed: 08/20/2021					
1,2,4-Trimethylbenzene	ND	1.00	ug/L							U
1,3,5-Trimethylbenzene	ND	1.00	"							U
Benzene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Naphthalene	ND	4.00	"							U
Toluene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5		98.0	70-130			
Surrogate: Toluene-d8	68		"	62.5		108	70-130			
Surrogate: 4-Bromofluorobenzene	58		"	62.5		92.8	70-130			

Origins Laboratory, Inc.



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: [none]

Project: Kielian 2-2

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
Batch B1H2008 - EPA 5030B (Water)										
LCS (B1H2008-BS1)					Prepared: 08/20/2021 Analyzed: 08/20/2021					
1,2,4-Trimethylbenzene	51.1	1.00	ug/L	50.0		102	70-130			
1,3,5-Trimethylbenzene	50.1	1.00	"	50.0		100	70-130			
Benzene	46.7	1.00	"	50.0		93.3	70-130			
Ethylbenzene	47.5	1.00	"	50.0		95.0	70-130			
m,p-Xylene	98.0	2.00	"	100		98.0	70-130			
Naphthalene	57.5	4.00	"	50.0		115	70-130			
o-Xylene	52.3	1.00	"	50.0		105	70-130			
Toluene	48.7	1.00	"	50.0		97.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	66		"	62.5		105	70-130			
Surrogate: Toluene-d8	65		"	62.5		104	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.3	70-130			

Origins Laboratory, Inc.



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: [none]

Project: Kielian 2-2

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
Batch B1H2008 - EPA 5030B (Water)										
Matrix Spike Dup (B1H2008-MSD1)	Source: Y108416-01				Prepared: 08/20/2021 Analyzed: 08/20/2021					
1,2,4-Trimethylbenzene	59.3	1.00	ug/L	50.0	0.210	118	70-130	8.38	20	
1,3,5-Trimethylbenzene	57.0	1.00	"	50.0	ND	114	70-130	9.07	20	
Benzene	57.8	1.00	"	50.0	ND	116	70-130	5.55	20	
Ethylbenzene	57.4	1.00	"	50.0	ND	115	70-130	7.67	20	
m,p-Xylene	118	2.00	"	100	0.240	117	70-130	6.09	20	
Naphthalene	72.5	4.00	"	50.0	0.960	143	70-130	6.02	20	QM-07
o-Xylene	64.1	1.00	"	50.0	ND	128	70-130	4.71	20	
Toluene	58.5	1.00	"	50.0	ND	117	70-130	6.06	20	
Surrogate: 1,2-Dichloroethane-d4	69		"	62.5		110	70-130			
Surrogate: Toluene-d8	64		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		95.0	70-130			

Origins Laboratory, Inc.



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: [none]

Project: Kielian 2-2

Notes and Definitions

U Sample is Non-Detect.

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

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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.

ATTACHMENT E
SAFETY DATA SHEETS



Safety Data Sheet

COGAC™

Updated: 10/09/2017

1. PRODUCT AND COMPANY IDENTIFICATION:

Product Identifier: Chemically Oxygenated Granular Activated Carbon

COGAC™

Description: Fine Black Powder or Course Granules

Product Use: Water Treatment

Usage Restrictions: For subsurface applications

Manufacturers / Suppliers Name: Remington Technologies LLC,
8100 Arkins Court
Loveland, Colorado 80538
www.remingtontech.net

Emergency Phone: (970) 278-1646
Poison Control Center 1(800) 222-1222

2. HAZARDS (S) IDENTIFICATION:

80% of this material is composed of powdered activated carbon. The remaining 20% includes oxidizers and nutrients. These additives are neutralized by the carbon in solid form. Once the package is opened, dust will be present and an adequate dust mask or respirator is required for handling.

Hazard Classification: Combustible Dust

Signal Word: **Danger**

Potential Health Effects:

Inhalation: Irritation of respiratory system

Skin: Not a primary irritant

Ingestion: Non-toxic through ingestion

Eyes: Irritation

Hazard Statements :

H320- Causes eye irritation :

H335- May cause respiratory irritation

Safety Data Sheet

COGAC™

Updated: 10/09/2017

Precautionary statements (GHS-US) :

P261- Avoid breathing dust :

P264- Wash thoroughly after handling :

P271- Use in well-ventilated area :

P280- Wear protective gloves/clothing/eye & face protect :

P304&340: IF INHALED: Remove person to fresh air

P305&351&P338: If in eyes, Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do so. Continue rinsing. :

P312- Call Poison Control Center/Doctor if you feel sick.

P403& P233- Store in well-ventilated place. Keep container tightly closed :

P405- Store locked up : P501- Dispose of container to appropriate receptacle

Hazards not otherwise classified: Combustible dust. May form combustible dust concentrations in air. All powdered activated carbons are classified as weakly explosive (Dust explosion class St1): Given the necessary conditions of a strong ignition source, right concentrations of airborne carbon dust, adequate oxygen levels, and confinement, the potential for a deflagration event exists.



3. COMPOSITION/INFORMATION ON INGREDIENTS:

Ingredients:	Percentage (W/W):	LD50's and LC50s Route & Species:
Activated Carbon - 7440-44-0	60-100	Oral LD50 (Rat) > 10000 mg/kg

Ingredients:	Percentage (W/W):	EC No:	EC Class:
Sodium Persulfate - 7775-27-1	>99	231-892-1	Xn-O; R8-R22-R36/37/38-R42/43



Safety Data Sheet

COGAC™

Updated: 10/09/2017

Ingredients:	Percentage (W/W):	LD50's and LC50s Route & Species:
Calcium Peroxide – 1305-79-9	100	Oral LD50: Acute (Rat) > 5000 mg/kg DERMAL LD50: Acute (Rat) > 10000 mg/kg DUST LC50: Acute (Rat) 23066 ppm 4 hour(s)

4. FIRST AID MEASURES:

Effects of Overexposure:

Inhalation: Irritation of respiratory system

Skin: Not a primary irritant

Ingestion: Non-toxic through ingestion

Eyes: Irritation

First Aid:

First aid after inhalation Remove person to fresh air. If not breathing, administer CPR or artificial respiration. Get immediate medical attention.

First aid after skin contact If skin reddening or irritation develops, seek medical attention
First aid after eye contact Immediately flush eyes with plenty of water for at least 15 minutes. If irritation persists, get medical attention.

First aid after ingestion If the material is swallowed, get immediate medical attention or advice.
DO NOT induce vomiting unless directed to do so by medical personnel.

5. FIRE FIGHTING MEASURES:

Extinguishing Media: Water, Foam, CO2

Fire & Explosion Hazards: Contact with strong oxidizing catalysts may result in heat generation.

Firefighting procedures: None. Does not support a flame may generate heat as above.

Flash Point: N/A

6. ACCIDENTAL RELEASE MEASURES:

Spilled or released material may be swept up and discarded at a landfill or reused.

Waste disposal at a landfill as non-toxic, non-hazardous material.



Safety Data Sheet

COGAC™

Updated: 10/09/2017

Shovel or sweep up and put in closed container for disposal

7. HANDLING AND STORAGE:

Handling: Store (unopened) in a cool, clean, dry place and away from point source, i.e., radiant heaters or steam pipes. Use first in first out storage system. Avoid contamination of opened product. Avoid prolonged or repeated skin contact using good personal hygiene. In case of fire or decomposition (smoking) use self-contained breathing apparatus with full face piece, acid resistant clothing, and deluge with plenty of water to control decomposition.

Storage: Refer to NFPA 430 Storage of Liquid and Solid Oxidizing Materials.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION:

Airborne Exposure Limits: - OSHA Permissible Exposure Limits (PELs) - For Activated Carbon (graphite, synthetic): total particulate = 15 mg/m³ (TWA), respirable fraction = 5 mg/m³ (TWA).

Ventilation System: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition, for details.

Personal Respirators (NIOSH Approved): For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator.

WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. Where respirators are required, you must have a written program covering the basic requirements in the OSHA respirator standard. These include training, fit testing, medical approval, cleaning, maintenance, cartridge change schedules, etc. See 29CFR1910.134 for details.

Skin Protection: Wear protective gloves and clean body-covering clothing.

Eye Protection: Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.



Safety Data Sheet

COGAC™

Updated: 10/09/2017

9. PHYSICAL AND CHEMICAL PROPERTIES:

Physical State	Solid
Appearance:	Black Powder particulate
Odor:	No data available
pH	6.0-9.0
Melting point	3652 C / 6606 F
Freezing point	3697 C /-6687 F
Boiling Point:	2150 C [decomposes]
Evaporation rate	No data available
Explosion Limit Upper/lower	No Data available
Incompatibility:	Strong catalysts
Solubility in water:	Not Soluble in water
Flash Point:	No data available
Specific Gravity:	0.35
Stability:	Stable
Vapor Pressure	No data available
Vapor density @ 20 deg C :	No data available
Relative Density	28-33 lb/ cubic foot
Viscosity, kinematic	No data available

10. STABILITY AND REACTIVITY:

Stability:	Stable
Incompatibility:	Oxidizing catalysts, metals, nitric acid, hydrogen peroxide
Polymerization:	N/A
Decomposition:	N/A
Hazardous decomposition	Carbon monoxide may be generate in the vent of a fire



Safety Data Sheet

COGAC™

Updated: 10/09/2017

products

11. TOXICOLOGICAL INFORMATION:

Inhalation: Irritation of respiratory system

Skin: Not a primary irritant

Ingestion: Non-Toxic through ingestion

Eyes: Irritation

Acute toxicity: Not classified

Carbon (7440-44-0) LD50 oral rat : >10000 mg/kg Skin corrosion/irritation : Not classified Serious eye damage/irritation : Causes eye irritation Respiratory or skin sensitization : Not classified Germ cell mutagenicity : Not classified Carcinogenicity : Not classified Reproductive toxicity : Not classified Specific target organ toxicity : May cause respiratory irritation (single exposure) Specific target organ toxicity : Not classified (repeated exposure) Aspiration hazard : Not classified

12. ECOLOGICAL INFORMATION (non-mandatory):

No information available for the product. However, ecotoxicity is expected to be minimal.

13. DISPOSAL CONSIDERATIONS (non-mandatory):

Waste Disposal recommendations : Dispose of contents/container in accordance with local/regional/ international regulations

14. TRANSPORTING INFORMATION (non-mandatory):

Note 1: Under the UN classification for activated carbon, all activated carbons have been identified as a class 4.2 product. However, This product has been tested according to the United Nations Transport of Dangerous Goods test protocol for a "self-heating substance" (United Nations Transportation of Dangerous Goods, Manual of Tests and Criteria, Part III, Section 33.3.1.6 - Test N.4 - Test Method for Self Heating Substances) and it has been specifically determined that this product does not meet the definition of a self heating substance (class 4.2)



Safety Data Sheet

COGAC™

Updated: 10/09/2017

or any other hazard class, and therefore should not be listed as a hazardous material. This information is applicable only for the Activated Carbon Product identified in this document.

15. REGULATORY INFORMATION (non-mandatory)

15.1 US Federal regulations Carbon (7440-44-0)

Listed on the United States TSCA inventory 15.3

US State regulations : No additional information available

16. ADDITIONAL INFORMATION:

NFPA Rating Health: 1 Fire: 1 Reactivity: 0

HMIS Rating Health: 0 Fire: 0 Reactivity: 0 Personal Protection: B

Prepared by: Remington Technologies, LLC

Address: 8100 Arkins Court, Loveland, CO 80538

Telephone: (970) 278-1646

REVISION DATE: OCTOBER 2017

SAFETY DATA SHEET

Calcium Peroxide

SDS # : 1305-79-9-1
Revision date: 2017-10-17
Format: NA
Version 1.02



1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Name Calcium Peroxide

Other means of identification

CAS-No 1305-79-9
Synonyms Calcium Peroxide

Recommended use of the chemical and restrictions on use

Recommended Use: Used as a curing agent in certain rubber compounds. Other uses include starch modification, dough conditioner, and ingredient in deodorants, cosmetics and dentifrices.

Restrictions on Use Use as recommended by the label.

Manufacturer/Supplier

PeroxyChem LLC
2005 Market Street
Suite 3200
Philadelphia, PA 19103
Phone: +1 267/ 422-2400 (General Information)
E-Mail: sdsinfo@peroxychem.com

Emergency telephone numbers

For leak, fire, spill or accident emergencies, call:
1 800 / 424 9300 (CHEMTREC - U.S.A.)
1 703 / 527 3887 (CHEMTREC - Collect - All Other Countries)
1 303/ 389-1409 (Medical - U.S. - Call Collect)

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Serious eye damage/eye irritation	Category 1
Specific target organ toxicity (single exposure)	Category 3
Oxidizing Solids	Category 2

GHS Label elements, including precautionary statements

EMERGENCY OVERVIEW

Danger

Calcium Peroxide

SDS # : 1305-79-9-1
Revision date: 2017-10-17
Version 1.02

Hazard Statements

H318 - Causes serious eye damage
H335 - May cause respiratory irritation
H272 - May intensify fire; oxidizer



Precautionary Statements - Prevention

P280 - Wear eye protection/ face protection
P261 - Avoid breathing dust.
P271 - Use only outdoors or in a well-ventilated area
P210 - Keep away from heat
P220 - Keep/Store away from clothing/combustible materials
P221 - Take any precaution to avoid mixing with combustibles

Precautionary Statements - Response

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P312 - Call a POISON CENTER or doctor if you feel unwell
P370 + P378 - In case of fire: Use water spray for extinction

Precautionary Statements - Storage

P403 - Store in a well-ventilated place

Precautionary Statements - Disposal

P501 - Dispose of contents/ container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

No hazards not otherwise classified were identified.

Other Information

Reacts with moisture to liberate oxygen

Unknown acute toxicity

0% of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS-No	Weight %
Calcium Peroxide	1305-79-9	>75
Calcium Hydroxide	1305-62-0	<25

4. FIRST AID MEASURES

Eye Contact

Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids intermittently. Consult a physician.

Skin Contact

Wash off with soap and water. Get medical attention if irritation develops and persists.

Calcium Peroxide

SDS # : 1305-79-9-1
Revision date: 2017-10-17
Version 1.02

Inhalation	Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. If breathing difficulty or discomfort occurs and persists, obtain medical attention.
Ingestion	Rinse mouth with water and afterwards drink plenty of water or milk. Do not induce vomiting or give anything by mouth to an unconscious person. Call a poison control center or doctor immediately for treatment advice. Never give anything by mouth to an unconscious person.
Most important symptoms and effects, both acute and delayed	Corneal lesions and irreversible damage if contact with the eyes.
Indication of immediate medical attention and special treatment needed, if necessary	Treat symptomatically

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media	Flood with water.
Unsuitable extinguishing media	Dry chemical. Foam.
Specific Hazards Arising from the Chemical	Not flammable. Decomposes under fire conditions to release oxygen that intensifies the fire.
<u>Explosion data</u> Sensitivity to Mechanical Impact Sensitivity to Static Discharge	Not sensitive. Not sensitive.
Protective equipment and precautions for firefighters	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Move containers from fire area if you can do it without risk.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	Avoid contact with the skin and the eyes. Avoid dust formation. Ensure adequate ventilation. For personal protection see Section 8.
Other	For further clean-up instructions, call PeroxyChem Emergency Hotline number listed in Section 1 "Product and Company Identification" above.
Environmental Precautions	Prevent material from entering into soil, ditches, sewers, waterways, and/or groundwater. See Section 12, Ecological Information for more detailed information.
Methods for Containment	Vacuum or shovel waste into a drum and label contents for disposal. Do not return product to the original storage container/tank due to risk of decomposition. Keep combustibles (wood, paper, oil, etc) away from spilled material.
Methods for cleaning up	After cleaning, flush away traces with water. Do not flush powdered material to sewer; Runoff to sewer may create fire or explosion hazard.

7. HANDLING AND STORAGE

Handling	Avoid contact with skin and eyes. Ensure adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment if release of airborne dust is expected. If compounded with organics or combustible materials be sure to exclude moisture.
Storage	Keep tightly closed in a dry and cool place. Do not store near combustible materials. Keep away from heat and sources of ignition i.e., steam pipes, radiant heaters, hot air vents or welding sparks. Reacts with moisture. Keep container tightly closed.
Incompatible products	Heavy metals. Combustible materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Calcium Peroxide

SDS # : 1305-79-9-1
Revision date: 2017-10-17
Version 1.02

Control parameters

Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH	Mexico
Calcium Hydroxide 1305-62-0	TWA: 5 mg/m ³	TWA: 15 mg/m ³ TWA: 5 mg/m ³	TWA: 5 mg/m ³	Mexico: TWA 5 mg/m ³
Chemical name	British Columbia	Quebec	Ontario TWAEV	Alberta
Calcium Hydroxide 1305-62-0	TWA: 5 mg/m ³	TWA: 5 mg/m ³	TWA: 5 mg/m ³	TWA: 5 mg/m ³

Appropriate engineering controls

Engineering measures Ensure adequate ventilation.

Individual protection measures, such as personal protective equipment

Eye/Face Protection For dust, splash, mist or spray exposure, wear chemical protective goggles.

Skin and Body Protection Wear suitable protective clothing. Protective shoes or boots.

Hand Protection Rubber/latex/neoprene or other suitable chemical resistant gloves. Wash the outside of gloves with soap and water prior to removal. Inspect regularly for leaks.

Respiratory Protection For dust, splash, mist or spray exposures wear a filtering mask.

Hygiene measures Clean water, preferably an eyewash station and a safety shower, should be available for washing in case of eye or skin contamination. Handle in accordance with good industrial hygiene and safety practice.

General information If the product is used in mixtures, it is recommended that you contact the appropriate protective equipment suppliers. These recommendations apply to the product as supplied.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Powder
Physical State	Solid
Color	White to off white
Odor	odorless
Odor threshold	Not applicable
pH	11.4 - 11.7 (1 % suspension in water) @ 25 °C
Melting point/freezing point	Decomposes on heating @ ~275 °C
Boiling Point/Range	No information available
Flash point	Not applicable
Evaporation Rate	No information available
Flammability (solid, gas)	Substance does not burn but will support combustion
Flammability Limit in Air	Not applicable
Upper flammability limit:	No information available
Lower flammability limit:	No information available
Vapor pressure	No information available
Vapor density	No information available
Density	No information available
Specific gravity	2.92
Water solubility	slightly soluble
Solubility in other solvents	Soluble in acids
Partition coefficient	No information available
Autoignition temperature	No information available Product is not self-ignitable.
Decomposition temperature	275 °C
Viscosity, kinematic	No information available (Solid)

Calcium Peroxide

SDS # : 1305-79-9-1
Revision date: 2017-10-17
Version 1.02

Viscosity, dynamic	No information available
Explosive properties	Not explosive
K _{st}	0
Oxidizing properties	Strong oxidizer
Molecular weight	72.8 (CaO ₂)
Bulk density	34 lb/cu ft (loose)

10. STABILITY AND REACTIVITY

Reactivity	Oxidizer: Avoid contact with combustible materials.
Chemical Stability	Stable under recommended storage conditions. Decomposition can occur on exposure to heat or moisture.
Possibility of Hazardous Reactions	Contamination, heat, and humid conditions will enhance and accelerate decomposition. However, unlike most oxidizers, decomposition is endothermic.
Hazardous polymerization	Hazardous polymerization does not occur.
Conditions to avoid	Heat. (decomposes at 275 °C). Humid air. Contamination. Grinding with organics.
Incompatible materials	Heavy metals. Combustible materials.
Hazardous Decomposition Products	Oxygen which supports combustion. Calcium oxides.

11. TOXICOLOGICAL INFORMATION

Product Information

Unknown acute toxicity	0% of the mixture consists of ingredient(s) of unknown toxicity
LD50 Oral	> 5 g/kg (rat)
LD50 Dermal	> 10 g/kg (rat)
LC50 Inhalation	> 17 mg/L 1 hr (rat)
Serious eye damage/eye irritation	Corrosive. Risk of serious damage to eyes.
Skin corrosion/irritation	Non-irritating (rabbit). May cause skin irritation in susceptible persons.
Sensitization	No information available.

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation	NOAEL Oral Value
Calcium Hydroxide (1305-62-0)	7340 mg/kg (Rat)			

Information on toxicological effects

Symptoms	Dust is irritating eyes, nose, throat, and lungs.
<u>Delayed and immediate effects as well as chronic effects from short and long-term exposure</u>	
Chronic toxicity	No known effect.
Carcinogenicity	There are no known carcinogenic chemicals in this product.
Mutagenicity	This product is not recognized as mutagenic by Research Agencies
Reproductive toxicity	This product is not recognized as reprotox by Research Agencies.
STOT - single exposure	May cause respiratory irritation.
STOT - repeated exposure	No information available.

Aspiration hazard No information available.

12. ECOLOGICAL INFORMATION**Ecotoxicity**

Ecotoxicity effects The environmental impact of this product has not been fully investigated

Chemical name	Toxicity to algae	Toxicity to fish	Toxicity to Microorganisms	Toxicity to daphnia and other aquatic invertebrates
Calcium Hydroxide		96 h LC50: = 160 mg/L (Gambusia affinis) static		

Persistence and degradability Biodegradability does not pertain to inorganic substances.

Bioaccumulation Does not bioaccumulate.

Mobility No information available.

Other Adverse Effects None known.

13. DISPOSAL CONSIDERATIONS

Waste disposal methods This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261). Dispose of in accordance with local regulations.

US EPA Waste Number D001

Contaminated Packaging Empty remaining contents. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION**DOT**

UN/ID no 1457
Proper Shipping Name CALCIUM PEROXIDE MIXTURE
Hazard class 5.1
Packing Group II

TDG

UN/ID no 1457
Proper Shipping Name CALCIUM PEROXIDE MIXTURE
Hazard class 5.1
Packing Group II

ICAO/IATA

UN/ID no 1457
Proper Shipping Name CALCIUM PEROXIDE MIXTURE
Hazard class 5.1
Packing Group II

IMDG/IMO

UN/ID no 1457
Proper Shipping Name CALCIUM PEROXIDE MIXTURE
Hazard class 5.1
Packing Group II

Calcium Peroxide

SDS # : 1305-79-9-1
Revision date: 2017-10-17
Version 1.02

ADR/RID

UN/ID no	UN 1457
Proper Shipping Name	CALCIUM PEROXIDE MIXTURE
Hazard class	5.1
Packing Group	II

OTHER INFORMATION

This material is shipped in 25 lb. plastic pails, and 30 lb. and 100 lb. fiber drums.

15. REGULATORY INFORMATION

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic health hazard	No
Fire hazard	Yes
Sudden release of pressure hazard	No
Reactive Hazard	No

Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA/EPCRA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

US State Regulations

U.S. State Right-to-Know Regulations

This product contains the following substances regulated under state Right-to-Know laws:

Chemical name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Calcium Peroxide		X			
Calcium Hydroxide	X	X	X		X

California Proposition 65

This product does not contain any Proposition 65 chemicals

CANADA

Environmental Emergencies

This product contains no substances listed under Canada's Environmental Emergency regulations.

Canadian National Pollutant Release Inventory

This product contains no substances reportable under Canada's National Pollutant Release Inventory regulations.

International Inventories

Component	TSCA	DSL	EINECS/EL	ENCS	China	KECL	PICCS	AICS	NZIoC
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Calcium Peroxide

SDS #: 1305-79-9-1

Revision date: 2017-10-17

Version 1.02

	(United States)	(Canada)	INCS (Europe)	(Japan)	(IECSC)	(Korea)	(Philippines)	(Australia)	(New Zealand)
Calcium Peroxide 1305-79-9 (>75)	X	X	X	X	X	X	X	X	X
Calcium Hydroxide 1305-62-0 (<25)	X	X	X	X	X	X	X	X	X

Mexico

Mexico - Grade

Moderate risk, Grade 2

16. OTHER INFORMATION

NFPA	Health Hazards 2	Flammability 0	Stability 1	Special Hazards OX
HMIS	Health Hazards 2	Flammability 0	Physical hazard 1	Special precautions J

NFPA/HMIS Ratings Legend

Special Hazards: OX = Oxidizer

Protection=J (Safety goggles, gloves, apron, combination dust and vapor respirator)

Revision date:

2017-10-17

Revision note

(M)SDS sections updated: 14

Disclaimer

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Prepared By:

PeroxyChem

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End of Safety Data Sheet

SAFETY DATA SHEET

Creation Date 24-Nov-2010

Revision Date 18-Jan-2018

Revision Number 3

1. Identification

Product Name Sodium Persulfate

Cat No. : BP26371, O61141, 06114500

CAS-No 7775-27-1

Synonyms Sodium peroxydisulfate

Recommended Use Laboratory chemicals.

Uses advised against Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet**Company**

Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number

CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification**Classification**

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Oxidizing solids	Category 3
Acute oral toxicity	Category 4
Skin Corrosion/irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Respiratory Sensitization	Category 1
Skin Sensitization	Category 1
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	

Label Elements**Signal Word**

Danger

Hazard Statements

May intensify fire; oxidizer
Harmful if swallowed
Causes skin irritation
Causes serious eye irritation
May cause an allergic skin reaction
May cause allergy or asthma symptoms or breathing difficulties if inhaled
May cause respiratory irritation

**Precautionary Statements****Prevention**

Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Wear protective gloves/protective clothing/eye protection/face protection
Avoid breathing dust/fume/gas/mist/vapors/spray
In case of inadequate ventilation wear respiratory protection
Contaminated work clothing should not be allowed out of the workplace
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep/Store away from clothing/ other combustible materials
Take any precaution to avoid mixing with combustibles

Inhalation

If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

Skin

IF ON SKIN: Wash with plenty of soap and water
Take off contaminated clothing and wash before reuse
If skin irritation or rash occurs: Get medical advice/attention

Eyes

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention

Ingestion

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth

Fire

In case of fire: Use CO₂, dry chemical, or foam for extinction

Storage

Store in a well-ventilated place. Keep container tightly closed
Store locked up

Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

None identified

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Sodium persulfate	7775-27-1	>95

4. First-aid measures

Eye Contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact

Wash off immediately with plenty of water for at least 15 minutes. Obtain medical attention.

Inhalation	Move to fresh air. Obtain medical attention. If not breathing, give artificial respiration.
Ingestion	Do not induce vomiting. Call a physician or Poison Control Center immediately.
Most important symptoms and effects	May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause allergic skin reaction. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Flooding quantities of water.
Unsuitable Extinguishing Media	No information available
Flash Point	No information available
Method -	No information available
Autoignition Temperature	Not applicable
Explosion Limits	
Upper	No data available
Lower	No data available
Oxidizing Properties	Oxidizer
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical

Oxidizer: Contact with combustible/organic material may cause fire. Containers may explode when heated or if contaminated with water. Decomposes violently at elevated temperatures. May ignite combustibles (wood, paper, oil, clothing, etc.).

Hazardous Combustion Products

Sulfur oxides.

Sulfur oxides oxygen

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health
2

Flammability
2

Instability
2

Physical hazards
OX

6. Accidental release measures

Personal Precautions	Use personal protective equipment. Ensure adequate ventilation. Avoid dust formation. Avoid contact with skin, eyes and clothing.
Environmental Precautions	See Section 12 for additional ecological information.
Methods for Containment and Clean Up	Keep combustibles (wood, paper, oil, etc) away from spilled material. Avoid dust formation. Sweep up and shovel into suitable containers for disposal. Keep in suitable, closed containers for disposal. Soak up with inert absorbent material.

7. Handling and storage

Handling	Wear personal protective equipment. Use only with adequate ventilation. Keep away from clothing and other combustible materials. Avoid dust formation. Avoid contact with skin and eyes. Do not breathe dust. Do not ingest. Keep containers dry and tightly closed to avoid moisture absorption and contamination.
Storage	Keep containers tightly closed in a dry, cool and well-ventilated place. Do not store near combustible materials. Keep away from acids. Protect from moisture.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Sodium persulfate	TWA: 0.1 mg/m ³			

Legend

ACGIH - American Conference of Governmental Industrial Hygienists

Engineering Measures Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory Protection	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Powder Solid
Appearance	White
Odor	Odorless
Odor Threshold	No information available
pH	5 - 7 550 g/l H ₂ O
Melting Point/Range	100 °C / 212 °F
Boiling Point/Range	No information available
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	Not applicable
Specific Gravity	2.6
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	Not applicable
Decomposition Temperature	180 °C
Viscosity	Not applicable
Molecular Formula	Na ₂ O ₈ S ₂
Molecular Weight	238.09

10. Stability and reactivity

Reactive Hazard Yes

Stability Oxidizer: Contact with combustible/organic material may cause fire. Hygroscopic.

Conditions to Avoid	Incompatible products. Excess heat. Avoid dust formation. Exposure to moisture. Combustible material.
Incompatible Materials	Strong oxidizing agents, Acids, Strong reducing agents, Combustible material
Hazardous Decomposition Products	Sulfur oxides, oxygen
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sodium persulfate	LD50 = 895 mg/kg (Rat)	LD50 > 10000 mg/kg (Rabbit)	LC50 > 21.6 mg/L (Rat) 4 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Irritating to eyes, respiratory system and skin

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Sodium persulfate	7775-27-1	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects, both acute and delayed Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Do not empty into drains. .

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Sodium persulfate	Not listed	LC50: = 771 mg/L, 96h static (Oncorhynchus mykiss) LC50: = 771 mg/L, 96h static	Not listed	EC50: = 133 mg/L, 48h (Daphnia magna)

		(Lepomis macrochirus)		
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Persistence and Degradability Soluble in water Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its water solubility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No UN1505
 Proper Shipping Name SODIUM PERSULFATE
 Hazard Class 5.1
 Packing Group III

TDG

UN-No UN1505
 Proper Shipping Name SODIUM PERSULFATE
 Hazard Class 5.1
 Packing Group III

IATA

UN-No 1505
 Proper Shipping Name SODIUM PERSULPHATE
 Hazard Class 5.1
 Packing Group III

IMDG/IMO

UN-No 1505
 Proper Shipping Name SODIUM PERSULPHATE
 Hazard Class 5.1
 Packing Group III

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Sodium persulfate	X	X	-	231-892-1	-		X	X	X	X	X

Legend:

X - Listed

E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.

F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.

N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.

P - Indicates a commenced PMN substance

R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.

S - Indicates a substance that is identified in a proposed or final Significant New Use Rule

T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.

XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B)).

Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.

Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313 Not applicable

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act) Not applicable

Clean Air Act Not applicable

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA Not applicable

California Proposition 65 This product does not contain any Proposition 65 chemicals

**U.S. State Right-to-Know
Regulations**

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Sodium persulfate	-	X	-	-	-

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security

This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 24-Nov-2010

Revision Date 18-Jan-2018

Print Date 18-Jan-2018

Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS



SAFETY DATA SHEET

Revision Date: 07/29/2015

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY

Product Name: Lesco Chelated Iron Plus

Recommended use

This product is a concentrated liquid fertilizer for landscape use.

Supplier/Manufacturer

LESCO, Inc.
1385 East 36th Street
Cleveland, OH 44114
Tel: 800-347-4272

Emergency telephone numbers

Chemtrec (Spill) 1-800-424-9300

Prosar (Health) 888-208-1368

2. HAZARDS IDENTIFICATION

Signal Word: None

Hazard Statements:

May irritate the digestive tract if ingested.
Keep out of reach of children.

Pictogram: None

Precautionary Statements for handling: See Section 7.

Precautionary Statements for disposal - Dispose in accordance with all federal, state and local regulations.

Hazards not otherwise classified (HNOC): None

Unknown acute toxicity <1% of the mixture consists of ingredients of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Weight %
Non hazardous fertilizer ingredients	Various	60.6%
Water	7732-18-5	39.3%
Preservatives	Various	<0.1% (combined)

4. FIRST AID MEASURES

Eye Contact	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Skin Contact	Wash with soap and water. If injury occurs, or if discomfort or irritation persists contact a physician.
Inhalation	If inhaled and discomfort occurs, move to fresh air, and keep person at rest in a position comfortable for breathing. If difficulty in breathing occurs and/or persists, administer oxygen and get medical attention. If medical advice is needed, have product container or label on hand.
Ingestion	Rinse mouth. Drink Plenty of water. If discomfort occurs, seek medical attention. Do not induce vomiting of an unconscious person.

Self-protection of the first aider: When spraying, use dust/mist mask or any appropriate personal protective equipment as required.

Most important symptoms and effects, both acute and delayed:

Symptoms: Mist inhalation can result in irritation with nasal discomfort; skin irritation possible, but not likely with normal use.

Indication of any immediate medical attention and special treatment needed: Treat Symptoms.

5. FIRE FIGHTING MEASURES

Suitable extinguishing media

Liquid product is not a fire hazard, and will not burn. Use extinguishing media suitable to local circumstances and the surrounding environment. Options in this case include water, CO₂, ABC Dry Chemical extinguisher, or foam.

Specific hazards arising from the chemical

Thermal decomposition can lead to release of irritating and toxic gases and vapors. In the event of fire, do not breathe fumes.

Explosion data

Sensitivity to mechanical impact: None

Sensitivity to static discharge: None

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and standard protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures

Personal Precautions	Use reasonable personal protective equipment as required to prevent contact with eyes or skin, and to avoid breathing mist.
Environmental precautions	Prevent entry into waterways, sewers, basements or confined areas. Do not flush into surface water or sanitary sewer system. See Section 12 for additional ecological information.
Methods for containment	Prevent further leakage or spillage, if safe to do so.
Methods for clean-up	Use reasonable personal protective equipment as required. Soak up excess with inert absorbent material, or take up mechanically, placing in appropriate containers for disposal. Avoid creating mist. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Safe Handling	Use personal protective equipment during use as required to prevent contact with eyes or skin, and to avoid breathing mist. Wash hands thoroughly after handling.
Storage Conditions	Keep containers tightly closed in a cool, well-ventilated place. Keep out of the reach of children.
Incompatible materials	Avoid strong acids or alkali, or other reactive substances.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH REL
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Aerosol mist, nontoxic	5 mg/m ³ TWA	5 mg/m ³ TWA	5 mg/m ³ TWA 10 mg/m ³ STEL
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Engineering controls: Avoid creating fine, inhalable mists during application.

Individual protection measures

Eye protection	Safety glasses, or goggles if eye contact with concentrated product or diluted mist is likely.
Skin and Body Protection	Gloves and normal work coveralls recommended.
Respiratory Protection	Dust/mist mask recommended for misty conditions. If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Respiratory protection must be provided in accordance with current local regulations.
General Hygiene	When using product, do not eat, drink or smoke. Wash hands thoroughly after handling. Wash contaminated clothing before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	Aqueous Liquid
Appearance	Solution
Color	Mixed, various
Odor	Slight
Odor Threshold	No information available
pH	6.5 - 7.5
Melting point/freezing point	No information available
Boiling point / boiling range	No information available
Flash point	Not applicable
Evaporation rate	No information available
Flammability (solid, gas)	Will not burn
Flammability Limit in Air	
Upper flammability limit:	Will not burn
Lower flammability limit:	Will not burn
Vapor pressure	Similar to water
Vapor density	No information available
Specific Gravity	1.318 g/cc
Water solubility	Fully soluble in water
Solubility in other solvents	No information available
Partition coefficient	No information available
Autoignition temperature	Will not burn
Decomposition temperature	No information available
Oxidizing properties	No information available

10. STABILITY AND REACTIVITY

Reactivity

No data available

Chemical stability

Stable.

Possibility of Hazardous Reactions

May release heat and fumes when mixed in solution with incompatible reactive materials.

Hazardous polymerization

Will not occur.

Conditions to avoid

None known

Incompatible materials

Strong acids or alkali, or other reactive substances.

Hazardous Decomposition Products

May emit toxic fumes under fire conditions, such as Nitrogen oxides (NOx), Ammonia, Oxides of sulfur, Hydrogen chloride and Carbon monoxide.

11. TOXICOLOGICAL INFORMATION

Routes of exposure: Ingestion, eyes (contact), skin (contact), mist inhalation

Symptoms	May irritate the digestive tract if ingested in quantity, causing nausea, vomiting and diarrhea.
Sensitization	No information available.
Germ cell mutagenicity	No information available
Carcinogenicity	Not carcinogenic.
Reproductive toxicity	No information available
STOT - single exposure	No information available
STOT - repeated exposure	No information available
Chronic toxicity	No information available
Target Organ Effects	No information available
Aspiration hazard	No information available

12. ECOLOGICAL INFORMATION

Fertilizers may be harmful to aquatic life with short term effects, causing algal bloom and increased BOD, depending on the amount released.

Persistence and degradability	No information available
Bioaccumulation	No information available
Other adverse effects	No information available

13. DISPOSAL CONSIDERATIONS

This material, as supplied is not a hazardous waste according to federal regulations (40 CFR 261).

Disposal of wastes:

This product is a non-hazardous waste material suitable for approved solid waste landfills.

No EPA Waste Numbers are applicable for this product's components.

Dispose of in accordance with Local, State, and Federal regulations.

Contaminated packaging

No US Federal special packaging considerations at the date of this document. Follow local regulations.

14. TRANSPORT INFORMATION

DOT Description: Liquid fertilizer, N.O.S

This product is not a hazardous material and is not regulated by the United States Department of Transportation (D.O.T).

IMDG: Not a dangerous good.

ICAO/IATA: Not a dangerous good.

15. REGULATORY INFORMATION

General Product Information: This product is not federally regulated as a hazardous material.

Clean Air Act: No information is available.

Clean Water Act: No information is available.

State Regulations – General: This product is not regulated by any State as a hazardous material.

Component Analysis – State None of this product's components are on the state lists from CA, FL, MA, MN, NJ, or PA.

Component Analysis – WHMIS IDL No components are listed in the WHMIS IDL.

16. OTHER INFORMATIONDisclaimer

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