



February 22, 2022

RE: 697-16D Subsurface Site Assessment – Boring Scope
Location ID: 335203
Spill ID: 481628
Garfield County, Colorado

Project Information

As outlined in initial Form 19 spill (DOC 402962090), on 2/14/2022 during a scheduled oil loadout the truck driver notified Laramie that the tanks were empty. Field personnel arrived to inspect and found a frost-free valve was leaking inside lined secondary containment. No free fluids were present in the containment and upon further inspection a failure in the liner was identified. Some residual condensate was recovered from working surface, but it is assumed that the majority of the fluid migrated below the tank battery during the release. Tank and containment removal is pending.

Soil and Groundwater Sampling

Based on the information known, the initial proposed site investigation consists of advancing up to four (4) borings at the 697-16D well site and one (1) monitoring well. Locations of proposed borings and associated monitoring well is included as an attachment. If groundwater is encountered during delineation, a well will be set for monitoring purposes. Historic plat information (DOC 2067651) identifies approximately 15 to 25 feet of fill was brought over to the area where the release occurred.

An Entrada representative will document site lithology, examine the soils for suspected environmental impact (i.e., staining and/or odors), and the soils will be field screened using a photo-ionization detector (PID) for the presence of volatile organic vapors as the borings are advanced. The PID measurements will be recorded on the field boring logs. GPS locations of each boring will be recorded using a sub-meter accurate unit.

All soil will be field screened at 5 foot intervals via split spoon. Impacted soils identified will be analyzed every 5 feet for table 915-1 to total depth of boring. If impacts are noted/discovered during assessment; boring assessment will continue to greater depths to achieve delineation

and/or rig capability. If no impacts are noted during delineation, one soil sample will be collected from the highest elevated PID reading and from the total depth of the boring. It is assumed that we will encounter native soils approximately 15 to 25 feet below grade. If no impacts are discovered within native soils, one soil sample from most likely impacted area identified by field screening and a total depth sample (native) will be collected and boring will not be advanced any deeper to ensure a conduit to groundwater is not created. Impacted borings noted during investigation that do not encounter groundwater will be converted into soil vapor extraction (SVE) wells. SVE wells will be constructed of 2-inch schedule 40-PVC with 0.010 inch slotted screen set within impact(ed) zone(s). Graded sand will be placed within slotted screen interval followed by hydrated bentonite chips extending to the surface.

The proposed down gradient monitor well location was selected to ensure that groundwater will be encountered. This location is within close proximity to the pad and is directly down gradient of the area of release. The proposed monitoring well is not anticipated to exceed a depth of sixty (60) feet. The difference in elevation from the pad surface (7,006 feet) to the dry drainage (6,825 feet) is approximately 181 feet. The difference in elevation from the monitoring well completed at 60 feet below grade and the pad surface is approximately 240 feet. Monitoring wells will be constructed of 2-inch schedule 40-PVC with ten feet of 0.010 inch slotted screen. Graded sand pack will be placed to 2 feet above the well screen interval followed by hydrated bentonite chips extending to the surface. Each monitoring well will be developed prior to sample collection. One groundwater grab sample from each boring will be collected for laboratory analysis for table 915-1.

Sampling equipment, drill augers, and split-spoon sampler will be cleaned between borings using a non-phosphate detergent (such as Alconox®), and potable water.

Groundwater Elevation Survey and Monitoring Well Permitting

In the event that monitoring wells are installed, a survey for the relative elevations of the well casings will be done. Depth to groundwater will be measured in the wells approximately 24 hours to 48 hours after installation. The depth to groundwater measurements and the relative elevation survey data will be used to produce an estimated groundwater flow direction map.

Colorado Division of Water Resources monitoring well permit applications will be completed and submitted by Entrada personnel.

Sample Analysis

Soil

All soil samples will be collected in sample containers appropriate for the specified laboratory analyses, sealed, labeled, and placed into an ice filled cooler for preservation. All soil samples will be submitted to Pace Analytical in Mt. Juliet, Tennessee following chain-of-custody procedures and were analyzed for the following:

- Total petroleum hydrocarbons as gasoline range organics (TPH-GRO) by United States Environmental Protection Agency (EPA) Method 8015D/GRO;
- TPH as diesel range organics (TPH-DRO) and TPH as oil range organics (TPH-ORO) by EPA Method 8015M.
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX), 1,2,3-trimethylbenzene, and 1,3,5-trimethylbenzene by EPA Method 8260B;
- Acenaphthene, anthracene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, Indeno(1, 2, 3-cd)pyrene, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, and pyrene by EPA Method 8270C SIM;
- Electrical conductivity (EC) by EPA Method 9050AMod;
- Sodium adsorption ratio (SAR) by calculation;
- pH by EPA Method 9045D;
- Hot water soluble boron by EPA Method 6010B-NE493, Ch 2;
- Arsenic by EPA Method 6020;
- Barium, cadmium, copper, lead, nickel, selenium, silver, and zinc by EPA Method 6010B; and
- Hexavalent chromium by EPA Method 7199.

Groundwater (if encountered)

All groundwater samples will be collected in sample containers appropriate for the specified analyses, sealed, labeled, and placed into an ice-filled cooler for preservation. Groundwater samples will be submitted to Pace Analytical in Mt. Juliet, TN and analyzed for the following analyses:

- BTEX by EPA Method 8260B; and
- Chloride and sulfate by EPA Method 9056A.
- Total Dissolved Solids by EPA Method 2540 C-2011

IF sheen is noted during groundwater sampling Total Petroleum Hydrocarbons will be analyzed and documented accordingly:

- Total petroleum hydrocarbons as gasoline range organics (TPH-GRO) by United States Environmental Protection Agency (EPA) Method 8015D/GRO;
- TPH as diesel range organics (TPH-DRO) and TPH as oil range organics (TPH-ORO) by EPA Method 8015M.

Schedule

A drilling rig is scheduled for initial investigation on March 7, 2022. Monitoring wells will be purged and sampled within 24 to 48 hours of installation. If SVE wells are installed, a Radius of Influence (ROI) will be conducted to determine effectiveness of wells and be scheduled during the summer of 2022.

All findings will be followed up with Report(s) of Work Completed (ROWC) and will be submitted on supplemental Form 27(s) under the assigned REM number.

Please call me if you have any questions call at (970) 901 – 9007.

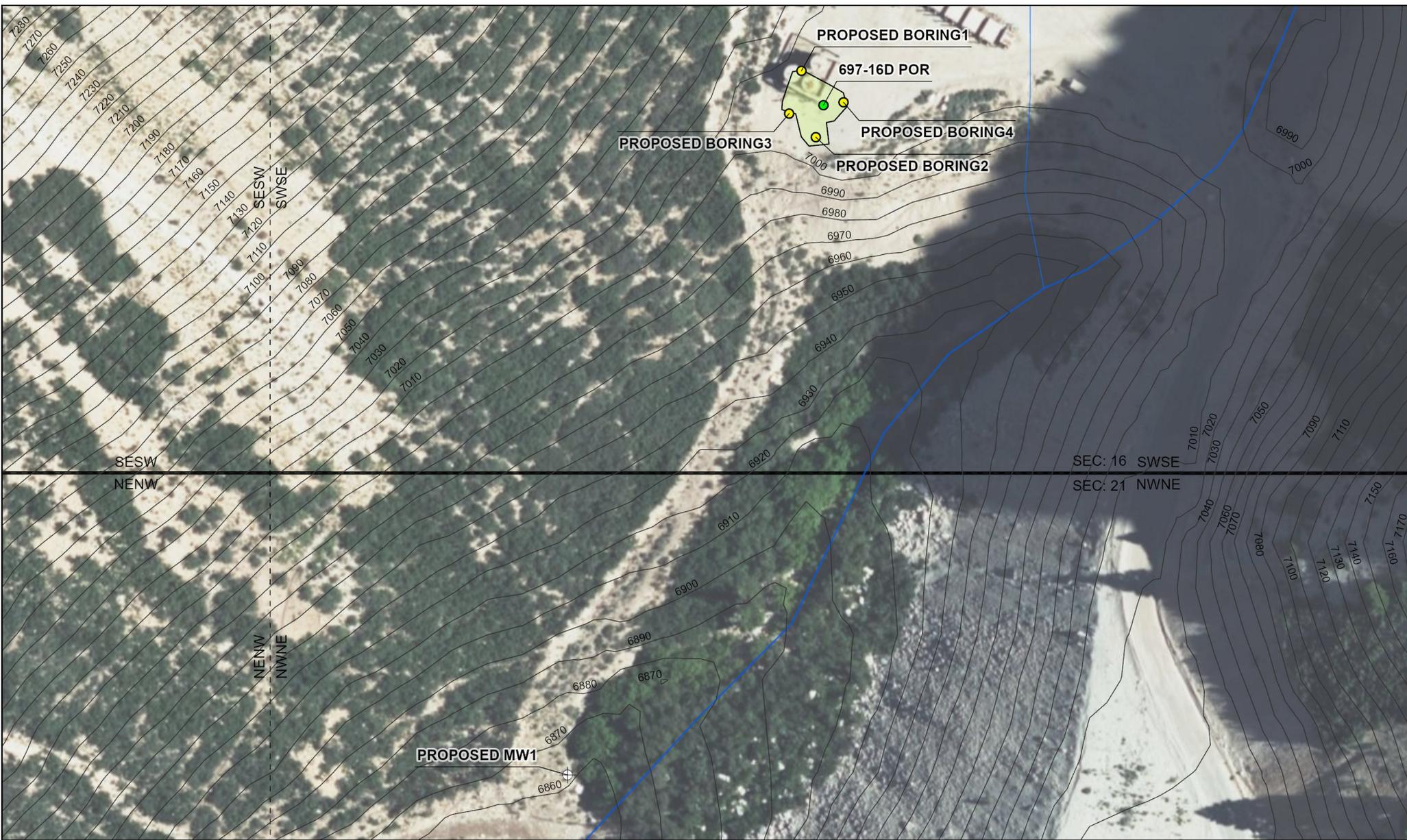
Sincerely,

A handwritten signature in black ink, appearing to read 'Matt Kasten', with a stylized flourish at the end.

ENTRADA CONSULTING GROUP

Matt Kasten
Project Manager

Attachment(s): Proposed Boring/Monitoring Well Diagram



LEGEND

- Boring Location
- Spill Origin
- ⊕ Monitoring Well
- USGS Surface Contour
- Spill Area

0 125 250

 Feet
 1 inch = 125 Feet

Project No: 022-017
Map By: NDB
Date: 2/23/2022

Proposed Boring Locations
Cascade Creek 697-16D
 Laramie Energy
 SWSE, Section 16 / NWNE Section 21, T6S R97W, 6TH PM
 Mesa County, Colorado

330 Grand Avenue, Unit C
 Grand Junction, CO 81501
 970-549-1015

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