Fawn 2734-2833
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Weld County, Colorado
2/9/2022

304.c.(11): Waste Management Plan

Verdad Resources LLC

Table of Contents

Rules and Requirements

In compliance with Weld County Ordinance Sec. 21-5-450, COGCC Rules 905 and 1000 Series Reclamation Regulations, and the Drill Cuttings Management Policy (9/15/14), the following describes Verdad Resources, LLC's general plan to treat, characterize, manage, store, dispose and transport all types of waste generated. Wastes stored onsite will be stored in compatible containers that are regularly inspected to ensure they are in good condition and free of excessive wear, structural issues or other defects that may impact their effectiveness. Verdad coordinates with Relevant Local Governments on haul routes for transport of waste.
Verdad does not anticipate conducting any on-site disposal or use land-application for waste management. All wastes generated on location will be disposed of at a permitted commercial waste facility. Each individual waste stream hauled off location will be accompanied with an approved waste profile and manifest and estimated volume. The waste profiles are established using knowledge of process.

Construction

At this time, no waste will be produced during the construction operation. If a waste is produced, it will be hauled off site by a licensed third-party transporter to be disposed of at a properly permitted commercial waste facility per Rule 906.

Drilling

Water-Based Bentonitic Drilling Fluid

Regulatory Classification

E&P waste, water with bentonite clay to create native mud with gel and lime as needed.

- Is the waste a "solid waste"? YES, per COGCC definition.
- Is the waste specifically excluded from the RCRA regulations? YES.
- Is the waste a "listed" hazardous waste? NO.
- Does the waste exhibit a characteristic of hazardous waste? NO.

By applying knowledge of the hazardous characteristic(s) of the waste in light of the materials or the processes used ("knowledge of process"), this waste stream does NOT meet the criteria of a hazardous waste as defined by EPA RCRA Hazardous Waste Classification.

Treatment

Water-based bentonitic drilling fluids will be used as drilling mud for drilling the 13.5" surface hole. The water base mud will be pumped down the drill pipe and return up the annulus back into the tanks through a flowline. This is a closed loop system. After returning up the annulus, the fluid is filtered and treated with gel, lime and clays to maintain good hole cleaning and a weight of 8.4-8.8 ppg. The fluid does not pose any physical or chemical hazards.

Volume and Frequency

700 bbls at the end of the pad. When the surface rig finishes drilling all of the wells on the pad, the remaining water-based mud is hauled to disposal.

Water-Based Bentonitic Drill Cuttings

Regulatory Classification

E&P waste, drill cuttings are made up of small pieces of shale, chalk or sand that is cut from the subsurface formations via the drill bit. Such pieces are lifted to the surface via the drilling mud in the hole.

- Is the waste a "solid waste"? YES, per COGCC definition.
- Is the waste specifically excluded from the RCRA regulations? YES.

• Is the waste a "listed" hazardous waste? NO.
• Does the waste exhibit a characteristic of hazardous waste? NO.

By applying knowledge of the hazardous characteristic(s) of the waste in light of the materials or the processes used ("knowledge of process"), this waste stream does NOT meet the criteria of a hazardous waste as defined by EPA RCRA Hazardous Waste Classification.

Treatment

Water-based bentonitic drilling fluids returning up the annulus will be filtered to remove solids through the closed loop system, cuttings are shaken out into impervious bins. The cuttings are mixed with a solidification material until the cuttings are stackable. The cuttings are stored in an impervious bin until loaded into a side dump truck by a loader.

Volume and Frequency

330 tons of water-based cuttings per day requiring 15 loads per day. Each well takes 1 day.

Oil-Based Drilling Fluid

Regulatory Classification

E&P waste, operator utilizes a clear, colorless refined distillate derived from petro hydrocarbons called D822 that is specifically designed for down hole OBM drilling purposes. This product provides a higher aniline point and a lower BTEX than straight diesel which should reduce the odor associated with the OBM system. The refined distillate is generally classified as a Group II fluid per the manufacturer as it is not a diesel nor is it a synthetic mineral oil or an additive/odor neutralizer.

• Is the waste a "solid waste"? YES, per COGCC definition.
• Is the waste specifically excluded from the RCRA regulations? YES.
• Is the waste a "listed" hazardous waste? NO.
• Does the waste exhibit a characteristic of hazardous waste? NO.

By applying knowledge of the hazardous characteristic(s) of the waste in light of the materials or the processes used ("knowledge of process"), this waste stream does NOT meet the criteria of a hazardous waste as defined by EPA RCRA Hazardous Waste Classification.

Treatment

Oil-based drilling fluids returning up the annulus will be filtered to remove solids through the closed loop system, cuttings are shaken out into impervious bins above a mat and hauled off for off-site disposal while fluids will be routed through a suction tank and mud pump, remixed and recirculated.

Management and Storage

Production Hole is to be drilled with an oil-based mud (OBM) system utilizing D822 as the base fluid.
The mud weights will be kept in the 9.2 – 11.5 ppg range as needed to adequately control the well.
Ensure there is enough volume of fluid in the system and be prepared to have Mud Engineer order out or mix up heavier mud for caps and weighting up.
A 40 ml poly liner with foam type berms will be utilized under the drilling rig, mud tanks, and shakers.
Oil-based drilling fluids are stored in impervious upright tanks while on location. Any oil-based drilling fluids brought to location are typically remixed and re-used during drilling operations. Upon completion of drilling operations, the oil-based drilling fluid is returned to provider for reuse or recycle. If disposal of oil-based drilling fluid is required, the waste will be transported off-site and to a permitted commercial waste facility accompanied by an approved waste manifest.

Volume and Frequency

Once per pad. At the end of the pad the rig tanks are cleaned to prepare for moving off the pad. A hydrovac and wash crew clean each tank on the rig. The liquids are moved into a cuttings bin and solidification material is used to make the waste stackable. The stackable waste is loaded into side dumps and hauled to disposal. This can be about 220 tons of material and 10 loads of waste.

The Oil-Based mud that is stored in tanks will either be moved to the next pad or moved back to the mud provider. The volume is 1500-2000 bbls and 15-20 loads.

Oil-Based Drill Cuttings

Regulatory Classification

E&P waste, drill cuttings are made up of small pieces of shale, chalk or sand that is cut from the subsurface formations via the drill bit. Such pieces are lifted to the surface via the drilling mud in the hole.

- Is the waste a "solid waste"? YES, per COGCC definition.
- Is the waste specifically excluded from the RCRA regulations? YES.
- Is the waste a "listed" hazardous waste? NO.
- Does the waste exhibit a characteristic of hazardous waste? NO.

By applying knowledge of the hazardous characteristic(s) of the waste in light of the materials or the processes used ("knowledge of process"), this waste stream does NOT meet the criteria of a hazardous waste as defined by EPA RCRA Hazardous Waste Classification.

Treatment

Oil-based drilling fluids returning up the annulus will be filtered to remove solids through the closed loop system, cuttings are shaken out into impervious bins and hauled off for off-site disposal while fluids will be routed through a suction tank and mud pump, remixed and recirculated.

Management and Storage

Oil-based drill cuttings will be hauled off site by a licensed third-party transporter to be disposed of at a properly permitted commercial waste facility per Rule 905.g.
Oil-based drill cuttings will be stored in an impervious bin where it is mixed with mulch/soil mixture to remove any free liquids before disposal. All oil-based drill cuttings are transported by a licensed third-party transporter to a permitted commercial waste facility. Each truck load will be accompanied with an approved waste profile and manifest before sending to a commercial waste facility.
See attached Rig layout.

Volume and Frequency

220 tons of oil-based cuttings per day requiring 10 loads per day. Each well takes 5 days for a total of 1100 tons per well.

Completions

Frac Flowback Water

Description

Verdad uses a plug and perf frac completion with FR water and sand. During the completion, if a screen out occurs, the well is flowed back to retrieve a ball. This enables wire line to be pumped down to plug and perf the next stage. A screen out can occur anywhere from 2 times per day to not at all for the entire pad. The flowback water is stored in frac tanks until a truck pulls it for disposal. See “Temporary Flowback Water” for Regulatory Classification, and Treatment.

Volume and Frequency

400 bbls requiring 3 loads per instance of flowing the ball back.

Coil-Tubing Drill-Out Flowback Water

Description

After the frac is complete, coil tubing drills out the plugs in the well. Water treated with Friction Reducer and Biocide is pumped down the coil tubing and back up the annulus. The well is drilled underbalanced so some

Flowback water and sand is produced. The water is stored in frac tanks until a truck pulls it for disposal. See "Temporary Flowback Water" for Regulatory Classification, and Treatment.

Volume and Frequency

Drilling underbalanced produces 1 bbl/min. 1440 bbls per day and 13 truckloads. Drill out takes 2 days per well.

Coil-Tubing Drill-Out Flowback Sand

Regulatory Classification

E&P waste, flowback sand is frac sand that is transported to a frac sight and pumped down the well into the formation.

- Is the waste a "solid waste"? YES, per COGCC definition.
- Is the waste specifically excluded from the RCRA regulations? YES.
- Is the waste a "listed" hazardous waste? NO.
- Does the waste exhibit a characteristic of hazardous waste? NO.

By applying knowledge of the hazardous characteristic(s) of the waste in light of the materials or the processes used ("knowledge of process"), this waste stream does NOT meet the criteria of a hazardous waste as defined by EPA RCRA Hazardous Waste Classification.

Description

During drill out, 100 mesh and 40/70 frac sand is flowed back. The sand piles up in a frac tank and an auger removes the sand into an impermeable bin for storage. The sand is loaded into a side dump truck for disposal.

See attached Stimulation Layout

Volume and Frequency

30 tons or 2 side dump loads per day. 2 days per well.

Temporary Flowback Water

Regulatory Classification

E&P waste, frac water pumped into formation is flowed out of the well.

- Is the waste a "solid waste"? YES, per COGCC definition.
- Is the waste specifically excluded from the RCRA regulations? YES.
- Is the waste a "listed" hazardous waste? NO.
- Does the waste exhibit a characteristic of hazardous waste? NO.

By applying knowledge of the hazardous characteristic(s) of the waste in light of the materials or the processes used ("knowledge of process"), this waste stream does NOT meet the criteria of a hazardous waste as defined by EPA RCRA Hazardous Waste Classification

Treatment

Flowback fluid will be disposed of at licensed Class II injection facilities in accordance with rule 905.c(2)A. Verdad wells south of US Highway 34 will be taken to NGL C5 injection well or EWS 4 injection well. Wells north of US Highway 34 will be taken to BNN Wildhorse 16 injection well or EWS 1 injection well.

Description

Once the well is completed, the well is flowed back through a temporary flowback operation. See attached Temporary Flowback layout. At this phase, only water is produced. Without any gas, a permanent production facility cannot run. When enough gas is producing the well is turned over to the permanent facility.

Volume and Frequency

1800 bbls per day at 14 loads per day. Duration is 6 days per well.

Production

Produced water

Regulatory Classification

E&P waste, produced waters are typically naturally occurring saline waters from underground formations that are brought to the surface.

- Is the waste a "solid waste"? YES, per COGCC definition.
- Is the waste specifically excluded from the RCRA regulations? YES.
- Is the waste a "listed" hazardous waste? NO.
- Does the waste exhibit a characteristic of hazardous waste? NO.

By applying knowledge of the hazardous characteristic(s) of the waste in light of the materials or the processes used ("knowledge of process"), this waste stream does NOT meet the criteria of a hazardous waste as defined by EPA RCRA Hazardous Waste Classification.

Treatment

Produced fluids will be routed to HP & LP separators, where the water will be routed to 16 oz closed water tanks prior to being loaded for off-site disposal.

Management and Storage

Water tanks will be fiber glass tanks inside the facility tank berm and installed above the impermeable synthetic liner system to contain any spills or leaks. See attached Production Facility Layout for more information on tank battery design.

Volume and Frequency

50 bbls per day per well for the life of the well. This volume will decrease over time as the well depletes.

General Trash

Regulatory Classification

Trash consists of any unused equipment, junk, or man-made non-E&P, non-hazardous waste.

- Is the waste a "solid waste"? YES, per COGCC definition.
- Is the waste specifically excluded from the RCRA regulations? YES.
- Is the waste a "listed" hazardous waste? NO.
- Does the waste exhibit a characteristic of hazardous waste? NO.

By applying knowledge of the hazardous characteristic(s) of the waste in light of the materials or the processes used ("knowledge of process"), this waste stream does NOT meet the criteria of a hazardous waste as defined by EPA RCRA Hazardous Waste Classification.

Treatment

None

Management and Storage

A trash bin will be located on site to accumulate waste by the personnel drilling the wells. Site will have unused equipment, trash and junk removed immediately as the bin is filled during drilling and completion phases. Lease operator will remove any trash found on site during daily inspections.
Verdad will not bury or burn trash or other waste materials at an oil and gas location.
Trash receptacles will be designed, maintained, and operated to exclude wildlife, and to protect public safety, the environment, and wildlife from exposure to overflowing, leak prone, or insecure trash receptacles.
General trash and other non-hazardous waste will be hauled off site by a licensed third-party

transporter to be disposed of at a properly permitted commercial waste facility per Rule 906.

Volume and Frequency

As needed. Up to once per week.

Oily Waste/Tank Bottoms

Regulatory Classification

E&P waste, a mixture of sediment, dirt, emulsified oil, and water which settles and accumulates in the bottom of storage tanks. Can include the cleaning of the inside of containment.

- Is the waste a "solid waste"? YES, per COGCC definition.
- Is the waste specifically excluded from the RCRA regulations? YES.
- Is the waste a "listed" hazardous waste? NO.
- Does the waste exhibit a characteristic of hazardous waste? NO.

By applying knowledge of the hazardous characteristic(s) of the waste in light of the materials or the processes used ("knowledge of process"), this waste stream does NOT meet the criteria of a hazardous waste as defined by EPA RCRA Hazardous Waste Classification.

Treatment

None

Transport

Oily waste and tank bottoms will be periodically drained via vacuum truck as needed and hauled off site by a licensed third-party transporter to be disposed of at a properly permitted commercial waste facility per Rule 905.

Spill Response and Remediation

E&P Contaminated Soil

Regulatory Classification

E&P waste, in the event of a spill onto soil, the fluid soaks into the ground and the contaminated soil must be removed and disposed of.

- Is the waste a "solid waste"? YES, per COGCC definition.
- Is the waste specifically excluded from the RCRA regulations? YES.
- Is the waste a "listed" hazardous waste? NO.
- Does the waste exhibit a characteristic of hazardous waste? NO.

By applying knowledge of the hazardous characteristic(s) of the waste in light of the materials or the processes used ("knowledge of process"), this waste stream does NOT meet the criteria of a hazardous waste as defined by EPA RCRA Hazardous Waste Classification.

Treatment

E&P waste, oil/produced water contaminated soil will be remediated and disposed of according to Rules 905, 912, 913 and 915.

Transportation

Contaminated soil will be hauled off site by a licensed third-party transporter to be disposed of at a properly permitted commercial waste facility per Rule 905.

Facility Decommissioning

Treatment

Facility decommissioning will generate equipment and materials that will be reused, recycled or disposed of as non-hazardous solid waste and will adhere to Rules 906, 913, and 6 CCR 1007-1 Part 20.

Plugging and Abandonment

Water-Based Bentonitic Drilling Fluid

See “Water-Based Bentonitic Drilling Fluid” on page 3 for Treatment and Regulatory Classification.

Volume and Frequency

750 bbls for open hole re-entry P&A and 150 bbls for a cased hole P&A.

Scrap Metal

Treatment

Recycling or disposal of the tubing, casing and wellhead will adhere to Rules 906 and 6 CCR 1007-1 Part 20.

Volume and Frequency

Refer to the Form 6 Well Abandonment Report for the volumes of tubing, casing and wellhead to be removed from each P&A.

Offsite Disposal

Record Keeping

Licensed third-party transporter will provide load tickets with the following information:

A. The date of the transport;
B. The identity of the waste generator;
C. The identity of the waste transporter;
D. The location of the waste pickup site;
E. The type and volume of waste; and
F. The name and location of the treatment or disposal site.

A manifest specific to the disposal site will be filled out after the waste is loaded. A Verdad representative will sign the manifest and take a copy before the waste leaves location. The manifest will be brought to the disposal site and signed by a disposal site representative and transporter.

Both the load ticket and waste manifest will be stored by Verdad for 5 years in accordance to 905.b.(3).

Haul Routes

Operator will use the appropriate haul routes for all waste transport as coordinated and identified within the approved 1041WOGLA for this location and communicated via the Road Maintenance Agreement with Weld County. See attached Haul Route Map for more information on the approved truck route for disposal hauling.

Receiving Facility Information

Waste Connections Front Range Landfill, 1830 County Road 5, Erie, Colorado

Waste Management Buffalo Ridge, 11655 WCR 59, Keenesburg, Colorado

Pawnee Waste LLC, 47368 WCR 118, Grover, Colorado

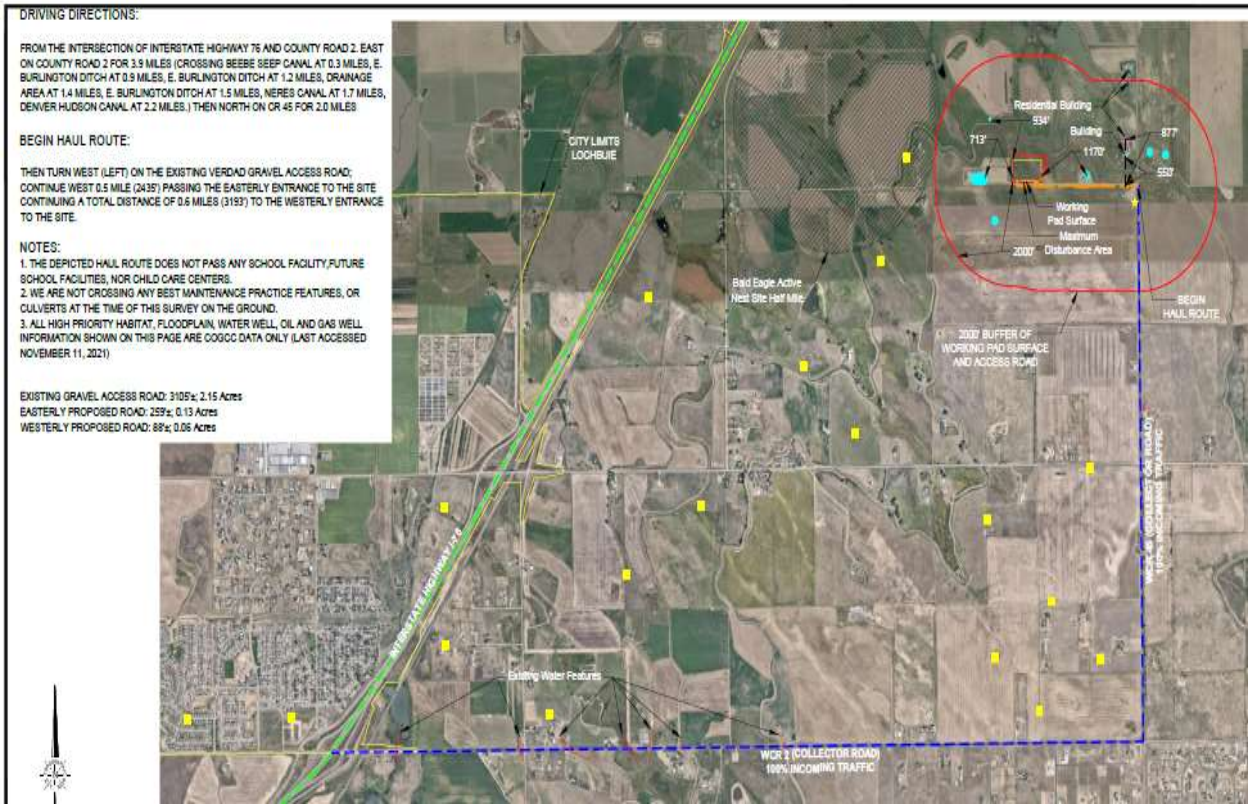
South of Highway 34, NGL C5 injection well or EWS 4 Injection well

North of Highway 34, BNN Wildhorse 16 injection well or EWS 1 Injection well

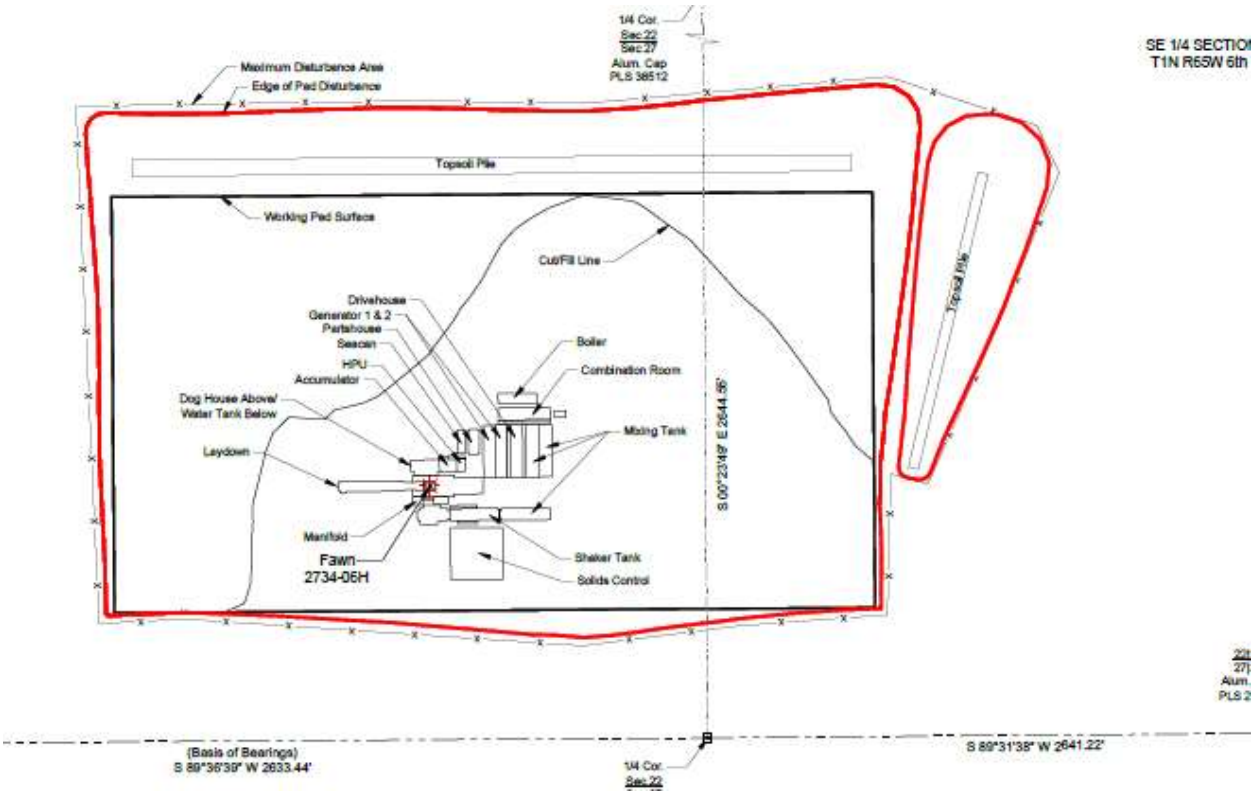
Best Management Practices

- Verdad will not bury or burn trash or other waste materials at an oil and gas location.
- Trash receptacles will be designed, maintained, and operated to exclude wildlife, and to protect public safety, the environment, and wildlife from exposure to overflowing, leak prone, or insecure trash receptacles.
- All waste materials will be disposed of at a properly permitted commercial waste facility, if not reused or recycled.
- When wastes are handled on site from generation, to storage, to transportation and disposal, practices (solidification of liquids and placement of storage) and equipment (secondary containment and liners) are used maintain full control of the waste and to prevent waste from impacting the working surface.

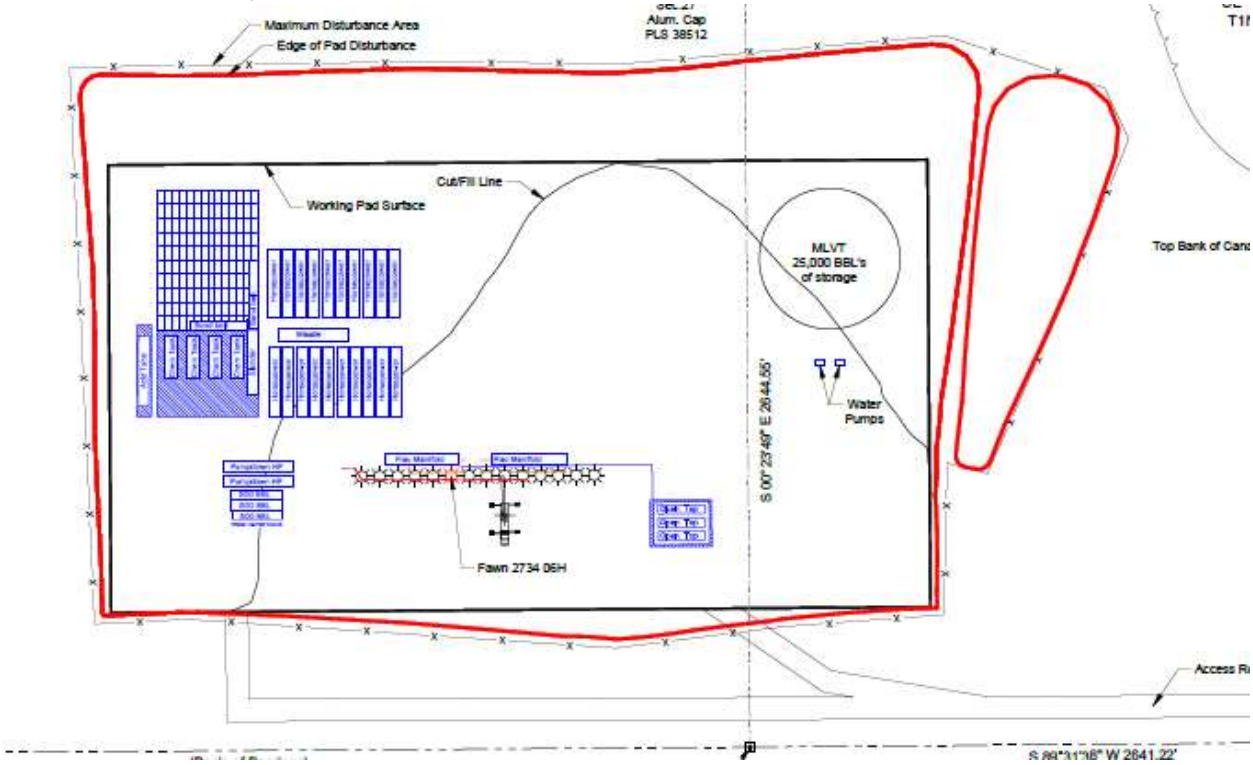
Haul Route Map



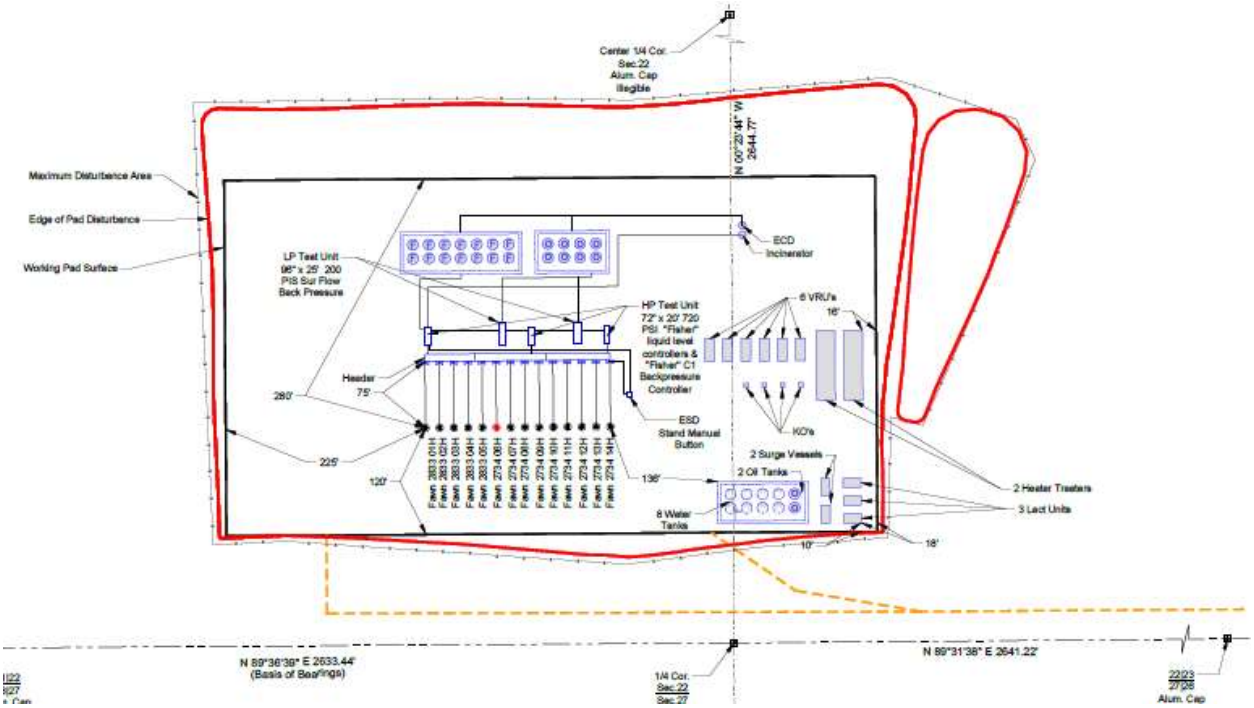
Rig Layout

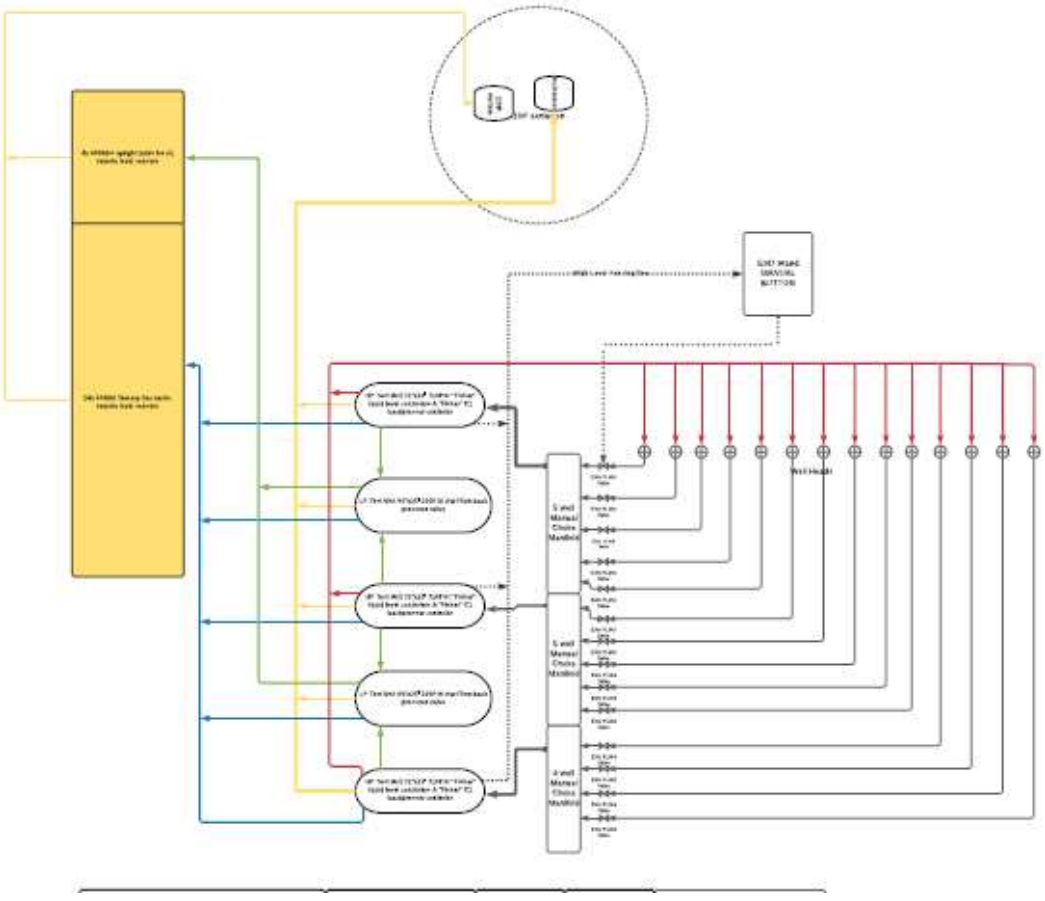

1/4 Cor.
Sec 22
Sec 27
Alum. Cap
PLS 38512
SE 1/4 SECTIO
T1N R65W 6th
Maximum Disturbance Area
Edge of Pad Disturbance
Topsoil Pile
Working Pad Surface
Cut/Fill Line
Drivehouse
Generator 1 & 2
Partshouse
Seacan
HPU
Accumulator
Dog House Above/
Water Tank Below
Laydown
Boiler
Combination Room
Mixing Tank
Manifold
Fawn
2734-06H
Shaker Tank
Solids Control
S 00°23'49" E 2644.55'
Topsoil Pile
(Basis of Bearings)
S 89°36'39" W 2633.44'
1/4 Cor.
Sec 22
S 89°31'38" W 2641.22'

Stimulation Layout

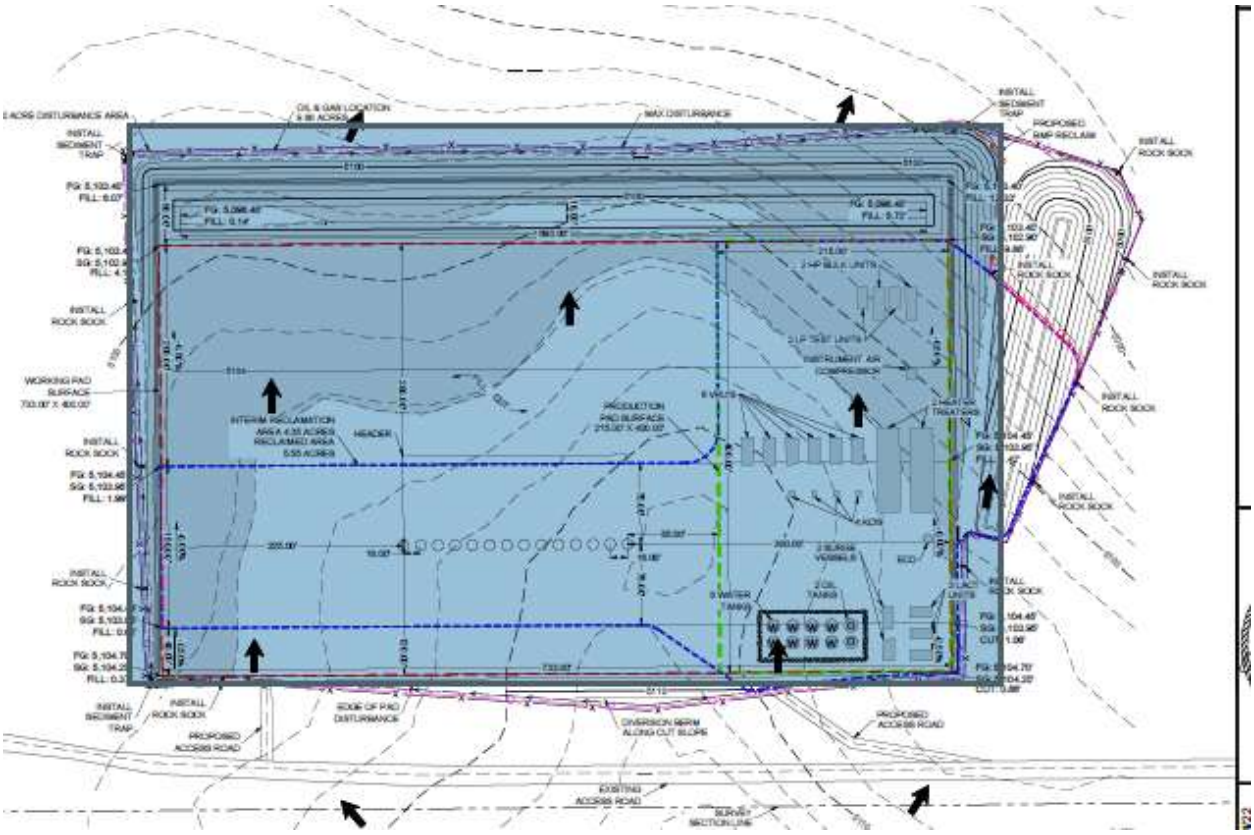


Temporary Flowback Layout and Process Flow Diagram





Oil and Gas Facility Layout



Production Process Flow Diagram