

**State of Colorado
Oil and Gas Conservation Commission**



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FOR OGCC USE ONLY
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OGCC Employee:
 Spill Complaint
 Inspection NOAV
Tracking No:

SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

Spill or Release Plug & Abandon Central Facility Closure Site/Facility Closure Other (describe): _____

OGCC Operator Number: <u>10516</u>	Contact Name and Telephone: <u>Derek Johnson, Superintendent</u>
Name of Operator: <u>LINN OPERATING INC</u>	No: <u>970-274-3335</u>
Address: <u>600 Travis St., Suite 4900</u>	Fax: _____
City: <u>Houston</u> State: <u>TX</u> Zip: <u>77002</u>	

API Number: <u>05-045-13250</u>	County: <u>Garfield</u>
Facility Name: <u>GRANLEE OM B10 696</u>	Facility Number: <u>335677</u>
Well Name: <u>GRANLEE OM 02D B10 696</u>	Well Number: <u>02D B10 696</u>
Location: (QtrQtr, Sec, Twp, Rng, Meridian): <u>NWNE 10 6S 96W 6, 6th PM</u>	Latitude: <u>39.54238</u> Longitude: <u>-108.091135</u>

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): Soil impacted by contact with drill cuttings and produced water

Site Conditions: Is location within a sensitive area (according to Rule 901e)? Y N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Industrial, grazing

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: well drained parachute-irigul loams

Potential receptors (water wells within 1/4 mi, surface waters, etc.): approx. 2,200 yards

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):	Extent of Impact:	How Determined:
<input checked="" type="checkbox"/> Soils	<u>Approx. 10,454 cu yards</u>	<u>Visual/olfactory after excavation</u>
<input type="checkbox"/> Vegetation	_____	_____
<input type="checkbox"/> Groundwater	_____	_____
<input type="checkbox"/> Surface Water	_____	_____

REMEDIATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):

Beginning 8/17/15, the pit will be drained and liner sent to an approved disposal facility. Excavated pit material and pit bottoms will be sampled shortly thereafter. Spoil material excavated from the pit will be treated on site through land farming until it meets COGCC Table 910-1 standards.

Describe how source is to be removed:

Pit will be drained, net, fence, and liner removed. Liner will be taken to an approved landfill for disposal. Drill cuttings will be bermed at the south and west ends of the pad and will be landfarmed. The existing spoil material shall remain on site and will continue to be landfarmed. This treatment will include adding a phosphorus amendment and is anticipated to be complete in 2016. Semi-annual sampling will be conducted until all land farming spoils meet COGCC standards. When achieved, the treated material will be blended with clean fill on-site and will be buried on location per COGCC standards.

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

Contaminated soil will be landfarmed on site, turned with heavy machinery, ammended with phosphorus and sampled periodically until clean. Exterior slopes on west, east, and south sides shall be pulled up and clean materials shall be pushed into existing pit excavation. Exterior slopes shall be laid back at a minimum 3:1 slope. Top soil will be spread over all slopes and will be seeded with the landowner's approved seed mix once soils pass Table 910-1 standards. The location will be fenced to keep cattle off the revegetated area.



Tracking Number: Name of Operator: OGCC Operator No: Received Date: Well Name & No: Facility Name & No:

Page 2 REMEDIATION WORKPLAN (Cont.)

OGCC Employee:

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

No groundwater impacts have occurred, as the pit was drained and water hauled to disposal before pit liner will removed and soil in the pit bottom will be sampled. Small amounts of water on the pit liner that could not be captured by vacuum truck may have contact with soil, but not in any volume that could reach or impact groundwater through percolation.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

- Spoil material treated on-site through land farming will be blended with clean fill and buried on location per COGCC standards.
• Exterior slopes on west and north sides shall be pulled up and materials shall be pushed into existing pit. Exterior slopes shall be laid back at a minimum 3:1 slope. Top soil will be spread over all slopes and will be seeded with the landowner's approved seed mix.
• Location will be fenced to keep cattle off revegetated area

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required? [X] Y [] N If yes, describe:

Yes, samples will be sent to COGCC periodically to illustrate progress with soil treatment.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

The impacted soils will be landtreated and incorporated into interim reclamation efforts for disposal/beneficial reuse.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: Date Site Investigation Completed: Date Remediation Plan Submitted: 8-17-15
Remediation Start Date: 8-17-15 Anticipated Completion Date: 10-17-16 Actual Completion Date:

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Bryan Burns Signed: [Signature]
Title: Senior Environmental, Health, & Safety Representative Date: 8-17-15

OGCC Approved: Carlos Lujan, Ph.D. Title: Date:

Conditions of Approval for GRANLEE OM B10 696:

The Form 27 is conditionally approved; however, additional information or activities may be required during the course of remediation.

- On the Form 27, as the “extent of impact,” approximately 10,454 cubic yards of soil was indicated. *Has there been a spill/release that resulted in this substantial volume of impacted material?* A query of COGCC data indicates that as a result of a frozen valve, 5 bbls of oil and 87 bbls of produced water were released within secondary containment, with 100% of the fluids recovered (Spill ID #2523706, reported 1/12/2011).
- Operator shall notify the COGCC 72 hours prior to beginning sampling and/or pit closure activities.
- The extent of impact shall be determined by field instrumentation (PID, Petro Flag, etc.) and confirmation sampling, *NOT* by visual/olfactory evaluation after excavation.
- Submit soil analytical results and a summary of pit closure activities via and amended Form 27.
- Pit excavation shall not be backfilled prior to 910-1 confirmation sampling.
- Fluid and sludge shall be removed prior to liner removal.
- The liner shall be removed intact as practicable, to prevent impact to material beneath the liner; removal of the liner by backhoe, mixing pieces of it with soil, is unacceptable.
- Liners shall be disposed of at an approved facility.
- Discrete samplings shall be collected from the bottom and each of the sidewalls of the pit.
- Provide provisions for maintaining the site and remediation activities during the winter and spring months by September 16, 2015.
- Land Treatment of oily waste shall be performed in strict accordance with the requirements of COGCC Rule 907.e.(2).
- Provide surface owner approval for land treatment.
- The frequency of farming (tilling, disking, nutrient loading, surfactants, etc.) shall be more frequent, and aggressive enough to reduce the constituents of concern (i.e. weekly or every other week). This should be based on analytical results and not visual inspection alone.
- LINN shall provide a schedule for working the treatment areas.
- Soil samples shall be collected from the treatment areas at a frequency to determine rate of biodegradation.
- One soil sample shall be collected to represent *each* 100 cubic yards of soil being treated. A grid shall be established over the treatment area to represent 100 cubic yard volumes based on surface area and thickness of treated material.
- Progress samples shall be analyzed for Total Petroleum Hydrocarbons (TPH) – gasoline range organics (GRO) and diesel range organics (DRO).
- Provide sample results with sample location diagram, summary table of results compared to Table 910-1 standards, and full laboratory reports.

- Final confirmation samples prior to reuse of the material shall be analyzed for TPH – GRO & DRO, Polycyclic Aromatic Hydrocarbons (PAH), Electrical Conductivity (EC), pH, Sodium Adsorption Ratio (SAR).
- If one or more of the inorganics (EC, pH or SAR) exceed Table 910-1 standards, operator will be required to provide a plan to the COGCC for approval to either bury the waste with at least 3-feet of clean fill, or reuse it in another location outside of active agricultural areas. If buried off site, land owner permission is required.
- No additional wastes shall be treated in the land treatment area. Addition of other waste will result in a violation of use of the land treatment area, and the location will be converted a CE&P facility and must meet Rule 908. d. requirements.
- The COGCC requires weekly status reports, until it is determined that the project is moving forward at a satisfactory pace. These status reports can be a brief summary of what was done, if anything. Additionally, a more detailed comprehensive monthly status shall be provided.
- Operator shall complete remediation within three years of the date of this conditional approval – by August 18, 2018. Any treated waste failing to meet Table 910-1 standards within three (3) years, must be removed and disposed of at a commercial facility within 30 days. Disposal documentation must be received by COGCC within 15 days following disposal.