

State of Colorado
Oil and Gas Conservation Commission



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FOR OGCC USE ONLY
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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 Employee:
 Spill Complaint
 Inspection NOAV
Tracking No: **401026744**

OGCC Operator Number: <u>100322</u>	Contact Name and Telephone: <u>Jacob Evans</u>
Name of Operator: <u>Noble Energy, Inc.</u>	No: <u>970-304-5329</u>
Address: <u>1600 Broadway</u>	Fax: <u>303-228-4286</u>
City: <u>Denver</u> State: <u>CO</u> Zip: <u>80202</u>	

API Number: <u>05-123-17596</u>	County: <u>Weld</u>
Facility Name: <u>KNAUS-6N66W / 28NSENE</u>	Facility Number: <u>329608</u> (Spill ID 445476)
Well Name: <u>KNAUS</u>	Well Number: <u>28-8</u>
Location: (QtrQtr, Sec, Twp, Rng, Meridian): <u>SENE S28 T6N R66W 6PM</u> Latitude: <u>40.461743</u> Longitude: <u>-104.775176</u>	

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): Oil / Condensate / 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.): Cropland

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Kim loam, 0 to 1 percent slopes

Potential receptors (water wells within 1/4 mi, surface waters, etc.): Occupied building 940 ft SSW; Water Well 860 ft S; Water Well 1,200ft ESE; No surface water within 1/4 mile

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>Refer to attached Table 1 and Figure 2</u>	<u>Lab sample analysis</u>
<input type="checkbox"/> Vegetation	_____	_____
<input checked="" type="checkbox"/> Groundwater	<u>Refer to the attached Table 2 and Figure 3</u>	<u>Lab sample analysis</u>
<input type="checkbox"/> Surface Water	_____	_____

REMEDIATION WORKPLAN

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

The well was shut in and a site assessment was conducted to determine the nature and extent of impacted material. Site assessment activities included soil sampling from soil borings and groundwater sampling from temporary monitoring wells on April 15, 2016. Refer to Spill/Release Report Document # 401026744 (Initial) and # 401028615 (Supplemental). COGCC issued spill tracking # 445476 for this release.

Describe how source is to be removed:

Soil samples collected during excavation activities indicated BTEX and TPH concentrations in the vadose zone above COGCC Table 910-1 standards. Soil borings BH01 through BH07 indicate that soil impacts do not extend beyond the immediate release area. Soil impacts will be treated in place, along with groundwater once crops are harvested in the fall.

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.:

Soil and groundwater impacts are present above the applicable COGCC Table 910-1 standards, and will be addressed subsequent to the harvesting of the surrounding cropland. Groundwater sampling will be conducted on a quarterly basis to assess dissolved phase impacts.



Tracking Number: 401026744 Name of Operator: Noble Energy, Inc. OGCC Operator No: 100322 Received Date: 7/21/2016 Well Name & No: KNAUS 28-8 Facility Name & No: KNAUS-6N66W / 28NSENE 329608

REMEDIATION WORKPLAN (Cont.)

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If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.): Eight temporary monitoring wells were installed at the site on April 15, 2016 and May 31, 2016, as illustrated on Figure 3. Groundwater samples from these wells indicated that petroleum hydrocarbon concentrations were above COGCC Table 910-1 standards in well BH02 and LNAPL was present in BH03, BH04, and BH05. Groundwater sampling will continue on a quarterly basis to further assess remaining dissolved phase impacts. 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. After remediation and monitoring activities are completed, reclamation will be completed in compliance with COGCC Rule 1004. In addition, subsequent to receipt of a No Further Action (NFA) designation, monitoring wells wells will be properly plugged and abandoned per Colorado Division of Water Resources standards. 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: Quarterly groundwater monitoring will continue on a quarterly basis to assess remaining dissolved phase impacts. Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.): No waste was generated during site assessment and sampling activities.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 4/11/16 Date Site Investigation Completed: 5/31/16 Date Remediation Plan Submitted: 7/21/16 Remediation Start Date: TBD Anticipated Completion Date: 12/1/2016 Actual Completion Date: TBD

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

Print Name: Jacob Evans Signed: Jacob Evans Title: Senior Environmental Specialist Date: 7/21/16 Digitally signed by Jacob Evans DN: cn=Jacob Evans, o=Noble Energy, Inc., email=j.evans@nobleenergyinc.com, c=US Date: 2016.07.21 15:19:08 -06'00'

OGCC Approved: Title: Northeast EPS Date: 7/22/2016