

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

Initial Subsequent Report Final Report

Name of Company: BP	Contact: Steve Moskal
Address: 200 Energy Court, Farmington, NM 87401	Telephone No.: 505-326-9497
Facility Name: Mudge LS 006	Facility Type: Natural gas well
Surface Owner: Federal	Mineral Owner: Federal
API No. 3004510843	

LOCATION OF RELEASE

Unit Letter A	Section 11	Township 31N	Range 11W	Feet from the 1,033	North/South Line South	Feet from the 869	East/West Line West	County: San Juan
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Latitude 36.90884° Longitude -107.96561°

NATURE OF RELEASE

Type of Release: Produced water, oil and condensate	Volume of Release: unknown	Volume Recovered: none
Source of Release: Former drilling reserve pit, compressor	Date and Hour of Occurrence: unknown	Date and Hour of Discovery: August 8, 2014
Was Immediate Notice Given? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom?	
By Whom? Steve Moskal	Date and Hour:	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	

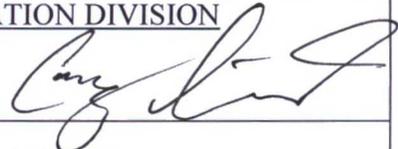
If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.* During construction operations to replace the onsite BGTs impacted soil was discovered. The impacted soil was excavated and transported off site for landfarm treatment. To date approximately 6,000 yards³ have been removed from the site. Groundwater monitoring wells were installed and sample results received on July 1, 2015 confirmed impacts. Additional monitoring wells were installed following an approved remediation work plan during the first half of August 2016. Offsite soil impacts will be remediated via the attached proposed remediation plan.

Describe Area Affected and Cleanup Action Taken.* BP proposes to employ soil shredding to remediate hydrocarbon impacted soils at the location. The areas of concern will be excavated, treated and backfilled according to the attaché remediation plan, pending approval.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

OIL CONSERVATION DIVISION

Signature: 	Approved by Environmental Specialist: 	
Printed Name: Steve Moskal	Approval Date: 3/27/17	Expiration Date:
Title: Field Environmental Coordinator	Conditions of Approval: <u>Sample for TPH (Dro-Gro-mro) BTEX, Benzene</u> Attached <input type="checkbox"/>	
E-mail Address: steven.moskal@bp.com	<u>Initiate Remediation plan</u>	
Date: March 21, 2017	Phone: 505-326-9497	

* Attach Additional Sheets If Necessary

3RP-469
#NCS 14232545 76

within 90 days.
6/27/17

OIL CONS. DIV DIST. 3
MAR 21 2017

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BP Remediation Plan

To: Cory Smith (NMOCD), Whitney Thomas (BLM)
From: Steve Moskal (BP)
CC: Jeff Blagg (Blagg Engineering)
Date: 3/21/2016
Re: Mudge LS 006 - Ex-situ Soil Remediation – Soil Shredding
(A) S-11, T31N, R11W; API #30-045-10843; Serial No.:NM-SF-078040

Dear Mr. Smith and Mrs. Thomas,

The Mudge LS 006 site is an active natural gas production well location within the San Juan Basin Gas Field in San Juan County, New Mexico. The site is located on land managed by the Bureau of Land Management Farmington Field Office (BLM-FFO) and is in an area primarily used for oil and gas production and recreation.

Background

The Mudge LS 006 natural gas well was completed in 1953. Historical impacts were identified at the location on August 11, 2014 during the closure of two below grade tanks (BGTs); a 21 bbl BGT and 95 bbl BGT. The impacts are likely the result of earthen pits formerly used on the location and leaking flowlines. No historical documentation is available regarding these pits. Beginning in October of 2014, BP conducted a remedial excavation removing nearly 7,000 cubic yards for offsite disposal. In December 2014 and March 2015, offsite delineation via hand auger and geoprobe to were executed to determine the extents of impacts. The results of the delineation determine the impacts had migrated offsite to the south, following an ephemeral wash.

During June of 2015, three monitoring wells were installed at the location to determine the extent and magnitude of groundwater impacts. In August of 2016, a total of 10 soil borings were advanced with 8 completed as monitoring wells to further delineate soil and groundwater impacts. During this event it was determined the majority of on-pad soil impacts had been removed during the 2014 excavation and that the groundwater present at the site is likely not connected and is a small perched zone.

On November 19, 2016, BP began a purging program on the two water bearing wells (MW-1 and MW-2) in an effort to demonstrate the perched water theory. The wells are purged until dry once a week and sampled on a quarterly basis. Precipitation is closely monitored to determine if there is a direct correlation to groundwater volumes and recharge.

Site Ranking

Following the NMOCD site ranking criteria, the site closure standard is 100 ppm TPH, 50 ppm BTEX and 10 ppm benzene:

- Depth to groundwater <50' (20 points)
- Nearest water well or domestic water source >1,000' (0 points)
- Distance to nearest surface water body or coarse <200' (20 points)

Proposed Remediation – Soil Shredding

Soil shredding involves the excavation of the impacted soil which is then placed in processing equipment, such as a rock crusher, hammer mill or rock screen, to mechanically process and break-up

the soil. The soil becomes more uniform and is aerated during the mechanical processing. The soil is then ejected from the processing equipment and a chemical oxidizer is applied, in this case, a 35% solution of hydrogen peroxide and water. The applied concentration of hydrogen peroxide typically ranges from 3-8%. The hydrogen peroxide quickly oxidizes the hydrocarbon impacts (reagents), resulting in soil, water and carbon dioxide (products). Once the soil is processed, it is stockpiled and allowed to sit for approximately 1-5 days of residence time. A composite soil sample is collected from each segregated stockpile and submitted for laboratory analysis to determine the effectiveness of the ex-situ remediation process. If the laboratory results are of acceptable levels, the soil will be used as backfill to the excavation; if results are unsatisfactory, the soil is passed through the process once more and a subsequent laboratory sample will be collected for laboratory confirmation as described before. Typically, 24-48 hours of notice is provided to the regulatory agencies for the opportunity to observe and witness the stockpile sampling.

BP proposes to perform the remediation of hydrocarbon impacts by the means of soil shredding. A conservative estimate of approximately 1,000 cubic yards of soil will be treated through the soil shredding process. The attached figure depicts the anticipated area of impacts. BP proposes to treat the impacted soil and segregate windrow stockpiles broken into 100 cubic yard increments. A single, five point composite, soil sample will be collected to represent each 100 cubic yard stockpile. Once a baseline of approximately 1,000 cubic yards of soil is consistently and successfully treated, BP will propose to decrease the sampling frequency to 500 cubic yard stockpile segments. The 500 cubic yard sampling modification will be discussed with the NMOCD and BLM for approval and input prior to implementation. BP would expect to have a sampling modification approval from the agencies within 48 working hours from the time of request. The remediation will then continue until complete and sampling will be based on the regulatory agencies approved sampling plan.

Excavation sampling will be in accordance with a typical dig and haul. The sidewalls and base of the excavation will be sampled in a frequency based on the size and progress of the excavation. Agency notification of excavation sampling will also be issued in advanced, 48 hours if possible.

BP is currently working to establish a schedule to implement remediation at the site. BP plans to shut the well in and remove all surface equipment.

It is understood, that if soil remediation is not successful via the soil shredding, an alternative method such as a dig and haul or soil vapor extraction will be necessary. BP will be in close communications with the agencies in the event an alternative remediation method is required.

Site Closure and Reporting

Once the soil shredding process is complete, the excavated area will be fully backfilled and compacted, and surface equipment will be re-set. Any necessary interim reclamation will be performed. Final reclamation of the well pad will occur at a later date, once the natural gas production well is plugged and abandoned.

A final remediation report will be delivered to NMOCD and BLM for approval of final site closure regarding the excavation and soil shredding activities within 60 days of the end of remediation.

Mudge LS 6

Revised SOW

Legend

- ⊙ Existing GW monitoring well
- ▭ Mudge LS 6 Excavation outline (approx)
- ⊗ Mudge LS 6 Gas collection pipeline
- ▭ Mudge LS 6 Impacted soil
- New GW monitoring well

