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## Workplan for the Characterization of Impacts

August 16, 2018

**Oilfield Water Logistics (OWL) SWD Operating, LLC  
Produced Water Pipeline Release Nearby Unit Letter G, Section 25,  
T25S, R36E, Lea County, New Mexico – Case No. 1RP-5106**

**Prepared For:**

Mr. Phillip Sanders  
Oilfield Water Logistics  
8214 Westchester Drive, Suite 850  
Dallas, Texas 75225

***APPROVED***

***By Olivia Yu at 2:08 pm, Sep 10, 2018***

**NMOCD approves of the  
proposed delineation  
plan for 1RP-5106.**

New Mexico Energy Minerals and Natural Resources Department (EMNRD)  
Oil Conservation Division (OCD)  
Ms. Olivia Yu  
1220 South Saint Francis Drive  
Santa Fe, New Mexico 87505

**Prepared By:**



500 Moseley Road  
Cross Roads, Texas 76227  
(940) 387-0805 Phone  
(940) 387-0830 Fax

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August 16, 2018

New Mexico, Energy Minerals and Natural Resources (EMNRD)  
Oil Conservation Division (OCD) – District 1  
Ms. Olivia Yu  
Environmental Specialist  
1625 North French Drive  
Hobbs, New Mexico 88240

**Re: *Work Plan for the Characterization of Impacts Due to a Pipeline Release  
Nearby Unit Letter G, Section 25, T25S, R36E, Lea County, New Mexico – Case No.  
1RP-5106***

Dear Ms. Yu:

KJ Environmental Management, Inc. (KJE) proposes to perform the following environmental consulting services for OWL SWD Operating, LLC (OWL) for the investigation portion of the project.

Environmental Investigation

The proposed scope of work will consist of performing an Environmental Investigation to evaluate the presence/absence of environmental contaminants in the soil at the above-referenced produced water release location.

KJE understands that the goals of this Work Plan and characterization effort are: 1) Determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) Determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact 4) The characterization of any other adverse impacts that may have occurred (ex. Impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.).

The Investigation will consist of the following activities:

- KJE will prepare a Health and Safety Plan (HASP) for investigatory personnel.

- KJE will contact New Mexico 811 to request that they provide contact information for KJE to communicate with underground utility companies in the site area for the location and associated setbacks for their pipelines beneath the site and the site area.
- Multiple soil borings will be installed to the maximum depth necessary to reach chloride and other constituent delineation levels as noted below (horizontal and vertical delineation), by direct push probe or flight augers. A site map (Figure A1) is attached showing the general location and extent of the release, as well as the proposed soil boring locations. KJE notes that quantity of borings and boring locations may be field adjusted due to onsite conditions. The drilling contractor may use a five (5) foot split-spoon continuous sampling device (or similar) to allow for sampling of soil at regular intervals for laboratory analysis. The actual number of borings and number of samples collected for analysis will be determined in the field based on assessment of release areas, field screening data, and direct push probe access points available.
- Horizontal delineation of soil impacts will be attempted in each of the four cardinal compass directions. Adsorbed soil contamination will be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes (BTEX) by either Method 8260 or 8021, total petroleum hydrocarbons (TPH) by Method 8015 extended range (GRO+DRO+MRO; C6 thru C36), and for chloride by Method 300. KJE understands that delineation to 10 ppm Benzene, 50 ppm BTEX, 5,000 ppm TPH, and 600 ppm chlorides horizontally is required. Soil sampling will be both within the impacted area and beyond as field determined.
- Vertical delineation of soil impacts will also be attempted. Adsorbed soil contamination will be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes (BTEX) by either Method 8260 or 8021, total petroleum hydrocarbons (TPH) by Method 8015 extended range (GRO+DRO+MRO; C6 thru C36), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified if required by OCD. Vertical characterization samples should be taken at depth intervals no greater than five (5) feet apart. Lithologic description of encountered soils will also be provided. KJE understands that delineation to 10 ppm Benzene, 50 ppm BTEX, and 5,000 ppm TPH, and 600 ppm chlorides vertically is required. At least five vertical feet of soils with contaminant concentrations at or below these values will be demonstrated as existing above the water table.
- In addition to the horizontal and vertical delineation borings, KJE will install one (1) soil boring up-gradient of the release area to a depth of ten (10) feet and collect background samples at regular intervals for laboratory analysis.
- Discrete, grab soil samples will be collected from each of the sampling intervals for contingent laboratory analysis. A clean, decontaminated sampling trowel will be used to sample from each depth interval selected. For each soil boring, soil samples will be field screened using a

calibrated Hanna HI993310 soil conductivity meter and Photo-ionization Detector (PID) (Model RAE MINIRAE 3000 Lite 0-15K ppm) for the highest reading for each boring. The sample exhibiting the highest chloride concentration and/ or PID reading and the sample collected at the bottom of each boring will be submitted for laboratory analysis.

- A statistically significant set of split/ duplicate samples will be submitted for confirmatory laboratory analysis, including the laterally farthest from the release sites and vertically deepest set of soil samples collected. In addition, we will ensure that there are at least two samples submitted for laboratory analysis from each boring, as noted above.
- Each soil sample will be handled with nitrile-gloved hands. The samples will be placed in clean, dedicated, laboratory-supplied, 4-ounce glass containers, and labeled with pertinent sampling information. The soil samples will be then placed in a cooling chest with adequate ice, providing a 4°C environment for sufficient preservation until delivery to Xenco Laboratory (a third-party, NELAP Certified, independent, and licensed environmental laboratory in Midland, Texas). The sample collection and handling activities will be conducted in accordance with USEPA Standard Operating Procedures and strict chain-of-custody protocols. The drilling equipment, sampling equipment, and tools will be decontaminated before and between each sampling location. All personnel will use dedicated nitrile gloves that will be changed frequently during the drilling activities.
- For this investigation, groundwater is not anticipated to be encountered during environmental drilling activities. According to records obtained from the New Mexico Office of the State Engineer's Hydrology Bureau records, in conjunction with information obtained from the United States Geological Survey (USGS), the well in closest proximity to the site was situated approximately 2,600 feet southeast and in 2017, the depth to water was reported at 213 feet. Water from this well is from the Pecos River Basin alluvial aquifer. Due to the depth of groundwater reported in this area, groundwater is not anticipated to be encountered during subsurface assessment activities. As such, KJE proposes to advance one boring in the area of the initial release (anticipated to be the area of furthest vertical impact) to a depth up to 10 feet below soil exhibiting indications of impact. This boring is intended to verify the deepest contamination as well as identify the presence or absence of a shallow groundwater-bearing formation.
- If groundwater is encountered in any of the soil borings, the boring will be left open for twenty-four (24) hours to determine if substantial water accumulates for sample collection and lab analysis. After 24 hours, KJE will attempt to collect a groundwater sample using a new disposable bailer and submit the samples for laboratory analysis of BTEX, TPH, and Chloride, if possible.

### Report of Findings

KJE will prepare and provide an electronic copy of the final report describing the findings, conclusions, and recommendations from the Environmental Investigation. KJE will present the laboratory analytical results in a tabular format and compare these levels to the NMOCD specified delineation levels. Accurately scaled and well-drafted site maps will be provided showing the location of all borings, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Digital photographic documentation of the release location and field work will also be included.

If we can be of further assistance, please do not hesitate to contact us at 940-387-0805. We look forward to receiving comments in order to proceed with the project and closure.

Sincerely,



William B. Soderstrom  
Environmental Project Manager



Dena M. Vandenberg, REM/ LEED AP  
Director of Environmental Services



Attachments: Figure A1 – Proposed Soil Boring Locations  
C-141 and NMOCD Directive





NOTE:  
GOOGLE MAPS WAS USED AS AN UNDERLAY IMAGE FOR THIS MAP.  
(<http://google.com/>)

 PROPOSED SOIL BORING LOCATIONS

<p>FIGURE:</p> <p><b>01</b></p>	<p>Scale:</p> <p>NTS</p> <p>Date:</p> <p>JULY 2018</p>	<p>APPROXIMATE SPILL PATH OILFIELD WATER LOGISTICS (OWL) SWD OPERATING, LLC PRODUCED WATER PIPELINE RELEASE UNIT LETTER G, SECTION 25, T25S, R36E, LEA</p> <p>LEA COUNTY</p> <p>NEW MEXICO</p>	<p> 500 Moseley Road Cross Roads, Texas 76227 Phone (940) 387-0805 Fax (940) 387-0830</p> <p>ENVIRONMENTAL &amp; CIVIL ENGINEERING</p>	<p>THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION OR DEMOLITION PURPOSES. IT IS TO BE USED FOR INFORMATION PURPOSES ONLY.</p>	<p></p>
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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 April 3, 2017

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	OWL SWD OPERATING LLC	Contact	Phillip Sanders
Address	8214 Westchester Dr. #850 Dallas, TX 75225	Telephone No.	210-906-3551
Facility Name	N/A	Facility Type	N/A

Surface Owner	Private Land- Fulfer Property	Mineral Owner	Federal	API No.	
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LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
G	25	25S	36E					Lea

Latitude 32.104632 Longitude -103.214835 NAD83

NATURE OF RELEASE

Type of Release	Produced Water	Volume of Release	715 BBLs	Volume Recovered	120 BBLs
Source of Release	Ruptured 12" Poly Aboveground Pipeline	Date and Hour of Occurrence	06/05/18 @ 1400	Date and Hour of Discovery	06/05/18 @ 1402
Was Immediate Notice Given?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?	Ms. Olivia Yu, Environmental Specialist, NMOCD, District I		
By Whom?	KJ Environmental Management, Inc.	Date and Hour	06/06/18 @ 1402		
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.\*

**RECEIVED**

By Olivia Yu at 10:54 am, Jun 21, 2018

Describe Cause of Problem and Remedial Action Taken.\*

A rupture of a 12" poly pipeline occurred on the Red Hills/Bobcat Pipeline. OWL employees closed the appropriate valves to cease flow to prevent the spill from migrating. An emergency "one call" was placed to locate pipelines in the area. OWL employees constructed an earthen berm on the perimeters of the spill area.

Describe Area Affected and Cleanup Action Taken.\*

From the ruptured poly pipeline, spill migrated down a caliche road approximately 0.75 miles. Approximately 2.34 acres was affected by the release. Vacuum trucks were brought on site to recover fluids. OWL removed 3-4 inches of affected surface soil and placed the soil into a roll off container. The spill boundary was demarcated by orange flagging until further directives from OCD.

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.

Signature: <i>Phillip Sanders</i>	OIL CONSERVATION DIVISION	
Printed Name: Phillip Sanders	Approved by Environmental Specialist: <i>[Signature]</i>	
Title: Safety Director	Approval Date: 6/21/2018	Expiration Date:
E-mail Address: psanders@oilfieldwaterlogistics.com	Conditions of Approval: see attached directive	Attached <input checked="" type="checkbox"/>
Date: 6/20/18	Phone: 210-906-3551	

\* Attach Additional Sheets If Necessary

1RP-5106

nOY1817239803

fOY181723963332

pOY1817239755

Operator/Responsible Party,

The OCD has received the form C-141 you provided on 6/20/2018 regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number 1RP-5106 has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

*The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC. [emphasis added]*

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District 1 office in Hobbs on or before 7/21/2018. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C<sub>6</sub> thru C<sub>36</sub>), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.
- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C<sub>6</sub> thru C<sub>36</sub>), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.
- Nominal detection limits for field and laboratory analyses must be provided.
- Composite sampling is not generally allowed.
- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted



for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

- Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

- If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

- Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

**Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.**

**Jim Griswold**

OCD Environmental Bureau Chief  
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Santa Fe, New Mexico 87505  
505-476-3465  
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