

## General Information

NMOCD District:	<u>District 2</u>	Incident #:	<u>NM2005959916</u>
Landowner:	<u>Private</u>		
Client:	<u>Matador Production Company</u>	Site Location:	<u>Black River at Ogden Road</u>
Date:	<u>March 24, 2020</u>	Project #:	<u>20E-00239-004</u>
Client Contact:	<u>Casey Snow</u>	Phone #:	<u>(972) 371-5439</u>
Vertex PM:	<u>Natalie Gordon</u>	Phone #:	<u>(505) 506-0040</u>

## Objective

The objective of this environmental remediation work plan is to identify areas of potential concern found during site assessment and monitoring activities and propose appropriate and feasible remediation techniques to address the potential boring mud release at the Black River bore site (hereafter referred to as “Black River”). The alleged incident may have occurred as a result of nearby boring activities exacerbating an underground fissure, allowing the movement of a small amount of boring mud out of the borehole and into the Black River via an anomaly in the streambed. Some light-colored fine sediments are visible on the bottom and edges of the Black River stream bed, extending downstream from the anomaly approximately 264 feet. The location and boundaries of the Black River site are identified on Figure 1 (Attachment 1). Areas of potential concern identified and delineated include the point of potential release and visible color variations potentially representing fine sediments/potential bentonite as mapped on March 25, 2020.

Initial water and soil sampling were conducted on February 24, including samples collected from both upstream and downstream of the alleged release site. Daily water sampling has been conducted since February 27. All water quality standards as outlined in the Standards for Interstate and Intrastate Surface Waters regulation, 20.6.4 *New Mexico Administrative Code* (NMAC) are being met, with the only issue of concern being the potential bentonite/sediment coating a portion of the streambed. Increased sediment and fines on the streambed could possibly adversely affect periphyton and benthic organisms, decrease light availability for organisms in the river, and potentially affect fish gills and/or change their behavior and normal movement within the river ecosystem. While no evidence of these negative effects has been recorded to date, the regulator has recommended that the preferred course of action is to remove the layer of potential bentonite/sediment and fines from the streambed, while limiting an increase in turbidity to less than ten nephelometric turbidity units (NTU) over background turbidity levels, as required by Subsection J of 20.4.4.13 NMAC.

## Site Assessment/Characterization

Following the alleged release reported on February 24, 2020, and the determination to conduct daily water monitoring and sampling, six sample locations were established on the Black River, both upstream and downstream of the alleged release point (Attachment 2). Water samples were collected from these locations one time per each 24-hour period and soil samples were collected from the riverbed or river bank every fourth day. Water samples were submitted to a National Environmental Laboratory Accreditation Program (NELAP)-approved laboratory for analysis of the following parameters: total dissolved solids (TDS); total suspended solids (TSS); turbidity; pH; volatile organics, including benzene, toluene, ethylbenzene, and xylenes (BTEX); total petroleum hydrocarbons (TPH), including motor oil range organics (MRO), diesel range organics (DRO) and gasoline range organics (GRO); and inorganic compounds – chloride and sulfates. Soil samples were analyzed for pH; volatile organics, including benzene, toluene, ethylbenzene, and xylenes (BTEX); total petroleum hydrocarbons (TPH), including motor oil range organics (MRO), diesel range organics (DRO) and gasoline range organics (GRO); and inorganic compounds – chloride and sulfates. Data from this comprehensive sampling regimen are summarized in Table 1 (Attachment 3). The complete lab data reports are included in Attachment 4. None of the analyzed parameters exceeded state water quality standards as a result of this potential incident, with the exception of turbidity levels on February 25, 2020. Following

that one day of elevated turbidity levels, turbidity returned to normal for each of the sampling locations as shown by the trends exhibited for those locations over time. Table 2 and Table 3 (Attachment 3) summarize bi-weekly soil sampling laboratory analyses data and daily water monitoring field data, respectively.

## **Proposed Remedial Activities**

Vertex proposes to remediate areas in the Black River identified as potentially contaminated with bentonite or other fine sediments. The proposed remediation would include removal of potential bentonite accumulations/deposits from the streambed to the extent feasible. Because consistent water monitoring and sampling have not identified any water quality issues and there are no benchmark contamination standards that the river currently exceeds, Vertex proposes that remediation be considered complete when there are minimal visible signs of the introduced material.

Remediation will involve three phases: (1) prevention of downstream movement of potential bentonite or other sediment material; (2) removal of the potential bentonite and other possibly-introduced sediment materials from the streambed; and (3) disposal of the removed material.

### ***Prevention of downstream movement of potential bentonite/sediment***

Preventative measures to limit any potential movement of bentonite or sediment material downstream from its current location will involve the use of a series of check dams that filter river water through a layer of fine mesh sandwiched between two rows of tightly layered sandbags (Attachment 5). These check dams will be set up across the width of the river at two locations in the remediation area, dividing the area of remediation into three roughly equal sections. Two additional check dams will be set up further downstream, as a safeguard against the downstream migration of solids disturbed by the remediation activities. Specific locations for the check dams will be chosen at the time of remediation and will be dependent on river conditions, including flow rate and depth. The locations for the safeguard check dams will also be chosen at the time of remediation; however, the safeguard check dams will be located not less than 5 feet from the downstream edge of the portion of the riverbed to be remediated, with not less than 5 feet of lateral spacing between each of the dams. An additional set of check-dam structures may be installed at a second downstream location, if river conditions deem that it is warranted.

### ***Removal of potential bentonite or other sediment material from the streambed***

Removal of the potential bentonite or other fine sediment material from the Black River will involve vacuuming the material from the streambed with the use of a trash pump and vacuum hose. The end of the vacuum hose will be fitted with a filter to prevent the removal of larger items, including river rocks, fish, vegetation or other organisms. The hose will carry removed material(s) to a frac tank for holding, pending removal for disposal at an approved off-site location.

In the event that upstream turbidity (at the sample point 25-feet upstream) is determined to be less than 50 nephelometric turbidity units (NTU) and the downstream turbidity (at the sample point 25-feet downstream) increases such that it exceeds ten nephelometric turbidity units (NTU) over background turbidity levels, or upstream turbidity is determined to be greater than or equal to 50 (NTU) and the downstream turbidity increases such that it is equal to or greater than 20% over background turbidity levels as determined by upstream water monitoring, remediation activities will immediately cease until downstream turbidity levels decrease to below 60 NTUs or less than 20% above upstream/background turbidity levels, whichever turbidity limit is applicable.

### ***Disposal of the removed material from the Black River site***

Contents of the frac tanks will be transferred into tanker trucks and removed from site for disposal at an appropriate landfill or other site that accepts this type of material, such as R360.

The vacuum hose and trash pumps will be operated and manned by roustabout crew members. A Vertex environmental technician will be onsite during remediation activities to observe removal activities and ensure that the remediation activities and prevention methods are working as expected. For the duration of the remediation activities, the environmental technician will conduct water monitoring at fifteen-minute intervals, alternating between a point 25-feet upstream from the initial potential point of release and 25-feet downstream from the remediation activities. This water monitoring will use an In-Situ Aquatroll 600 water monitor, which is capable of collecting location and various water quality data.

An estimated 20 cubic yards of potential bentonite and additional fine streambed sediment are projected to be removed during remediation.

In addition to water monitoring conducted during remediation activities, daily water sampling will continue during remediation activities and for the seven consecutive days following completion of remediation activities to ensure that surface water quality standards continue to be met. New sampling locations will be determined prior to the commencement of remediation activities.

The water samples will be placed into laboratory-provided containers, preserved on ice and submitted to a NELAP-approved laboratory for analysis. Laboratory analyses for the following parameters will be ordered: TSS, TDS, total dissolved oxygen, pH, turbidity, chlorides, sulfates, volatile organics (BTEX) and TPH.

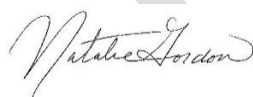
No reclamation or restoration activities are planned at this time as removal of non-introduced materials will be kept to a minimum and the structure and design of the stream are not expected to be altered in any way.

### Timeline for Completion

Remediation activities, as outlined in this work plan, are projected to be completed within 30 days of approval of this work plan by NM OCD.

If there are any questions regarding this report, please contact Natalie Gordon at 505-506-0040.

Sincerely,



Natalie Gordon  
PROJECT MANAGER

### Attachments

- Attachment 1: Black River Site Schematic and Area of Impact
- Attachment 2: Black River Pre-Remediation Daily Sampling Points
- Attachment 3: Summary Tables of Daily Water Sampling and Bi-weekly Soil Sampling
- Attachment 4: Lab Data Reports
- Attachment 5: Check Dam Diagram