

## Form 27 Supplemental Report: Mutual 4-30 Pad Location

### Remediation Project 9816

#### Remediation Summary

On 8/10/18, SandRidge contracted Crossfire LLC to begin excavation of the drill cutting materials from the south side of the Mutual 4-30 Pad located in T7N R81W Sec 13 (ATTACHMENT A). The bulk of excavation, removing all stained material, was completed on 8/24/2018. During excavation activities, Bar-S Trucking and 4X Industrial loaded the excavated material into side-dump and bottom-dump trailers. Excavated material was hauled to Twin Enviro Services Waste Facility for disposal. The facility is located at 20650 County Road 205, Steamboat Springs, Colorado. A total of 5,443 cubic yards of material was hauled for disposal, which was completed on 8/31/2018. Waste disposal manifests are provided with this submittal (ATTACHMENT B).

Absaroka Energy and Environmental Solutions (AE2) was consulted to oversee excavation and hauling activities, and also perform soil screening during excavation. On 8/24/2018, AE2 collected 62 soil samples for PID screening, to roughly determine VOC content of materials in the pit sides and bottom. Sample locations were spaced approximately 30 feet apart in a grid pattern over the excavated area. PID screening was accomplished by collecting approximately 1 liter of freshly dug soil (greater than 6 inches in depth) into plastic sealing bags, and then testing the headspace for VOC concentration using a PID. All samples had VOC PID detections below 100 ppm. A total of 8 confirmation samples were collected within the excavation.

Samples were collected at a variety of excavation depths and locations to best represent the remaining material after the excavation. Below is a summary of sample locations:

- SDE\_SS\_M\_09 and SDE\_SS\_M17 - collected from western side of excavation, approximately 2 feet below ground surface (BGS).
- SDE\_SS\_M25 and SDE\_SS\_M46 - collected from southern portion of excavation, approximately 2.5 and 2 feet BGS, respectively.
- SDE\_SS\_M\_58 - collected from eastern portion of the excavation, approximately 2.5 feet BGS.
- SDE\_SS\_M44 - collected from northern portion of excavation, approximately 3 feet BGS.
- SDE\_SS\_M45 and SDE\_SS\_M31 - collected from deepest portion of excavation, approximately 10 and 12 feet BGS, respectively. SDE\_SS\_M31 - collected in same location as Borehole C identified in the COGCC Site Investigation, collected by Fremont Environmental, provided with this submittal (ATTACHMENT C).

Soil samples were submitted to Pace/ESC Labs for COGCC Table 910-1 Analyses. A map showing sample locations (ATTACHMENT D), summary table of sample information (ATTACHMENT E), summary table of analytical results (ATTACHMENT F) and laboratory reports (ATTACHMENT G) are provided with this submittal.

All analyses for organic compounds were below Table 910-1 concentrations. Samples SDE\_SS\_M\_17, SDE\_SS\_M\_46, SDE\_SS\_M\_58, and SDE\_SS\_M\_44 had arsenic concentrations above the Table 910-1 acceptable concentration. SandRidge is requesting relief from Table 910-1 arsenic concentration limit of 0.39 mg/kg based upon the COGCC 2008 Rulemaking FAQ 31 response stating that "an operator need not meet a concentration level specified in Table 910-1 if the operator can demonstrate to the COGCC's

satisfaction that the Table 910-1 level is exceeded by the background level in the native soils or ground water, as applicable". SandRidge completed an investigation of arsenic concentrations within the region of operations and submitted the report to the COGCC on 10/16/2016. The investigation sufficiently demonstrated that elevated arsenic concentrations (greater than 0.39 mg/kg) are naturally occurring within the region of operations. A summary of the arsenic investigation provided with this submittal (ATTACHMENT H).