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January 4, 2015

Sherri Stumbo
USDA Forest Service
4350 South Cliffs Dr.
Pocatello, ID 83204

Subject: Biological Selenium Removal Treatment Technology Fluidized Bed Bioreactor Pilot Study November 2015 Progress Report

Dear Sherri,

This progress report summarizes key activities in November 2015 associated with the fluidized bed bioreactor (FBR) pilot study located near Hoopes Spring. This pilot study is being conducted as part of the Smoky Canyon Mine Remedial Investigation/Feasibility Study (RI/FS) to provide information on the effectiveness of the active biological treatment system in removing selenium and other COPCs from South Fork Sage Creek Springs and Hoopes Spring. Operation and monitoring of the pilot study follows the *Pilot Study Work Plan and Sampling and Analysis Plan (Work Plan/SAP), Biological Selenium Removal Treatment Technology Fluidized Bed Bioreactor* (prepared by Formation Environmental, dated September 2014, with revised text and tables dated March 5, 2015), along with Work Plan/SAP Addenda 01, 02, and 03 which Simplot submitted to the Agencies (and were subsequently approved) in the summer of 2015.

The FBR system had been shut down between August and the second week of October due to the presence of filamentous sulfide oxidizing bacteria in the aeration tank and the sand filter. An oxidation system was installed in October to dose treated water with a 27% hydrogen peroxide solution to remove sulfides, and kill off the bacteria. The FBR system operated continuously from the second week of October through November. The oxidation system performed to design specifications, and the filamentous sulfide oxidizing bacteria colonies in the aeration tank appear to have been decreasing. As the dead bacteria have been breaking free from the tank walls, there has been entrainment of the biological matter into the sand filter. The wash box and tortuous path were washed out on a daily schedule to maintain a reject flow of less than 12 gallons per minute (gpm) from the sand filter.

The solids in the backwash solids storage tank were tested and found to be non-hazardous. Clean out of the tank began in November, with Dry Creek Pumping removing the solids and taking them to the Afton, Wyoming publicly-owned treatment works for disposal.

At the time of this report, six sampling events occurred in October and November 2015 (Week 0 through Week 5 of the FBR, 60-day, performance startup period). A modification was approved for the Week 5 sampling event to change the analyte list from the full list to the focused list due to the event occurring on a holiday week with reduced laboratory hours thus limiting receipt of samples.

Identification of Deliverables and Data Transmittals

Laboratory data have been received for samples collected in October, including Week 0 and Week 1 (Table 1.1), and Week 2 (Table 1.2). No laboratory data had been received for the November samples as of the end of November. Field data have been received for Week 0 through Week 5 (Table 2.0).

Upcoming Activities

The treatment system was shut down again on November 30, 2015 due to head loss through the sand filter, and the presence of biological growth at the at the treatment system outfall. The following activities associated with the FBR pilot study are scheduled through January 2016:

- Addendum #04 was submitted to the Agencies on December 10, 2015. The addendum proposes adding an ammonia sulfate and a micronutrient dosing system prior to the FBR reactor. A meeting has been scheduled for January 5, 2016 with USFS and IDEQ to discuss water quality discharge expectations for the upcoming planned re-start of the system.

Please contact me if there are questions regarding this monthly progress report.

Sincerely,

Monty Johnson
Environmental Engineering Manager

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