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State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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October 16, 1989

TO: Richard V. Smith, Permit Supervisor
FROM: Tom Munson, Reclamation Hydrologist *RVS for*
RE: Sunnyside Oil Spill, Aquatic Inventory Assessment, Sunnyside
Reclamation and Salvage, Inc., Sunnyside Mines, ACT/007/007,
Folder #2, Carbon County, Utah

Synopsis

This memo responds to certain review comments concerning chemical analyses for metals that were presented in a letter dated October 10, 1989 from the Division of Wildlife Resources (DWR) to Dianne R. Nielson.

Analysis

DWR argues that data for certain metals indicate long term chemical pollution is a problem and is related to coal mining. DWR presents metal data for sediment samples on page 3 of their letter, and then compares sediment samples to water quality criteria for a range of values (high and low). An examination of sampling stations and the sediment metal values demonstrates that Chromium and Manganese values were higher above the mine discharge than below, and Cadmium and Lead were listed as non-detectable throughout the whole system (see attachments). When a value is reported by a lab as less than 10 ppb it means that the value was generally not detectable. Accordingly, the value for the metal being analyzed may be anywhere from 0 to 9 ppb. No comparison was made by DWR to state standards for aquatic wildlife. Included are two tables and references from the ACT/007/007 permit application comparing state standards to other standards for aquatic wildlife.

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Table 5, Sediment Analysis Data for Grassy Trail Creek, Carbon County, Utah, on May 5, 1989, reports values for various elements found within the creek sediments. The data found in this table was erroneously reported by the lab and where values were reported as parts per million (PPM) they are parts per billion (PPB), except for chloride, which is PPM (personal communication with Dave Council, October 24, 1989).

In addition to Table 5 reporting 1989 sediment data, another Table 5 is attached, showing 1980 sediment data. The two sets of data are referenced from two separate studies on Grassy Trail Creek. The 1980 data is taken from a report entitled "Aquatic Resource Analysis of Grassy Trail Creek, Carbon County, Utah" by Environmental Consultants. The 1989 data was taken from a report entitled "Analysis of Macroinvertebrate Fauna of Grassy Trail Creek, Carbon County, Utah, May 5, 1989" by Richard W. Baumann. All sediment sampling sites are shown on an attached figure.

An assessment of the sediment data as shown in the attached graphs "1980 Sediment Data" and "1980 Sediment Analysis vs. 1989 Analysis" demonstrates that all 1989 detectable metals values for Grassy Trail Creek are generally lower for sampling stations below the mine discharge point. It should be pointed out that the driving mechanism, low PH, to bring these toxic metals out of the sediments into solution is not available due to the presence of an alkaline environment. Comparisons between metal values in sediment samples and metal concentrations given in water quality standards is tenuous and may lead to erroneous conclusions about sources of water contamination. A Bar chart is attached showing water quality for two (sampling) sites below the 002 mine discharges demonstrating that metal pollution does not appear to be a problem. A long-term documentation of aquatic resources will allow more conclusive assessments regarding aquatic insect and fish populations and potential impacts from mine water discharge versus the naturally occurring hydrologic resource.

It was stated in the Bauman report that the silt fences prevented and were detrimental to downstream migration of aquatic insects, the primary sustainer of the trout population. It also appears that the sediment above the mine discharge contain potentially more toxic compounds than below the mine discharge in some samples and hydro-vacuuming would not change this sediment problem, long term.

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Oil and Grease is another issue, and should be studied yearly to determine any long-term effects or changes.

Recommendations

The aquatic resources should be catalogued long-term (fish and insects) to determine changes to communities once the new Mine Water Pond becomes functional and storm events flush the system naturally. It appears that in a short time following the spill, aquatic insects rebounded significantly. Aquatic insect and fish surveys should be completed in the spring. These data would allow more informed decisions in the future.

djh
Attachments
AT46/32-34