Appendix D

DERR Yosemite Release Inspection Report

State of Utah

Department of Environmental Quality

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MEMORANDUM

TO: Kennecott General Administration - Spill Incidences & Reports File

FROM: Douglas Bacon, DERR Kennecott Projects Manager

DATE: August 28, 2007

SUBJECT: July 27, 2007 Yosemite Dump Release Due to Storm Event

Introduction Statements

On July 27, 2007 Ms. Vicky Peacy (Kennecott Utah Copper Corporation, Kennecott) contacted Mr. Craig Barnitz (Division of Environmental Response and Remediation, DERR) to report an unpermitted discharge from the south end waste rock dumps (more specifically the Yosemite Dump in the Yosemite Drainage of Butterfield Canyon). It was noted to DERR that approximately 2 inches of rain fell over a period of 24 hours that overwhelmed the drainage control systems. Mr. Barnitz contacted me to report the spill incident shortly after receiving this report.

I proceeded on July 27th to meet with Mr. Brian Vinton (North American Mine Services NAMS, Kennecott contractor) and Ms. Peacy to perform an inspection of Butterfield Canyon, Butterfield Creek and the lower section of Yosemite Drainage; inspection was performed at approximately 1500. During ingress to the canyon and lower drainage, I observed (while driving) the conditions of the Butterfield Creek drainage and irrigation canals that parallel the County Road (a.k.a. 12600 South) within the Salt Lake County boundaries near the mouth of the Canyon. In the area of impact (lower drainage and canyon) I walked the site to observe conditions. The following observations were made.

Field Observations and Notes

1) As reported by Mr. Vinton, 2.44 inches of rain water was collected at a Kennecott meteoric station located near the top of the waste rock dumps over a period of 24 hours.

2) As reported by Mr. Vinton and Ms. Peacy, storm water scoured the face and toe of the Yosemite Dump and traveled downslope into Yosemite Drainage.

3) As reported by Mr. Vinton, the capacity of the desiltation basin above the drainage cutoff wall was surpassed because of a blockage. As such, the storm water runoff and dump material migrated along the service road, past the cutoff wall and into the lower section of the drainage and Butterfield Canyon.

4) The lower drainage was observed to have matted vegetation and vegetative debris within the boundaries of the storm water flow. Though matted, the vegetation in the migration pathway did not appear to be uprooted. The storm water flow was contained to the north side of the County Road in Butterfield Canyon, until approximately 300 feet east of the Yosemite Drainage bottom.

5) Approximately 300 feet to the east of the lower section of Yosemite Drainage, the County Road runs through a depressed area that has a culvert under the roadway to facilitate the transfer of runoff water, under the road and into Butterfield Creek (located on the south side of the County Road).

6) As observed, the storm water flow surpassed the capacity of and blocked the County constructed culvert, migrated across the County Road and into the constructed drainage channel leading to Butterfield Creek. The roadway had dump material deposited onto its surface within an area horizontally confined (east/west) to about 10 to 20 feet; depositional thickness was approximately 0.5 to 1.0 inches. There was deposited dump material amongst the stand of trees along the south side of the County Road which progressively decreases in volume in a westerly trend.

7) Similar to the lower section of Yosemite Drainage, the drainage channel to Butterfield Creek on the south side of the County Road had stands of vegetation matted with dump material, but not uprooted. There was limited vegetative debris observed, but as noted by Mr. Vinton the County culvert was blocked. Riprap in the drainage channel was still in place but had dump material within the spaces between the rocks.

8) As observed, deposited dump material was yellowish/coffee in color and similar to fine grain sand in structure.

9) Based upon field observations of the spill channel condition, condition of the vegetation in the spill pathway, dimensions of the spill channel and experience, I approximated that the combined storm water/dump material runoff flowed for a couple of hours (2 to 3) and at a low rate (approx. 5 to 10 cfs). Mr. Vinton concurred in the field with my observations and approximation.

10) Both Mr. Vinton and Ms. Peacy made note of the collection of soil samples within the lower section of Yosemite Drainage and Butterfield Canyon, and a water sample collected from the stagnant water located around the County culvert.

Site Visit Photos / Notes:

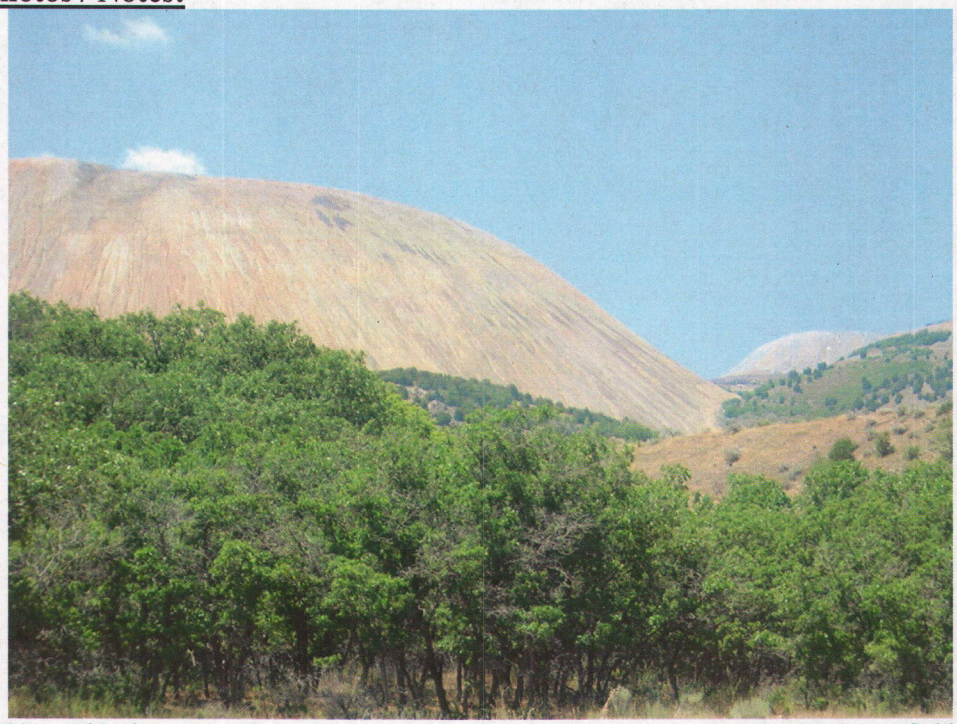

Photo No. 1 – Pictured is the eastern face of the Yosemite Dump. From the County Road in Butterfield Canyon, rills and gullies on the dump face were visible.

Photo No. 2 – Pictured is the drainage channel in the lower section of Yosemite Drainage. Note the stands of sage brush (or rabbit brush) and the tufts of standing grass amongst the dump material runoff (yellowish/coffee colored sands).

Photo No. 3 – Pictured is the same section of the lower Yosemite Drainage pictured in Photo No. 2 from a different angle. As noted, the tufts of grass and stands of sage brush (or rabbit brush) appeared to be intact, though in some locations matted by the runoff dump material.

Photo No. 4 – Pictured is the County Road viewed from the lower section of Yosemite Drainage. The Black arrow points out a location where runoff material skirted onto the road surface. The Red arrow points out the location (approximately 300 feet to the east) that the runoff flow (storm water / dump material) crossed the County Road. Note that for the most part the runoff was contained to the north side of the County Road.

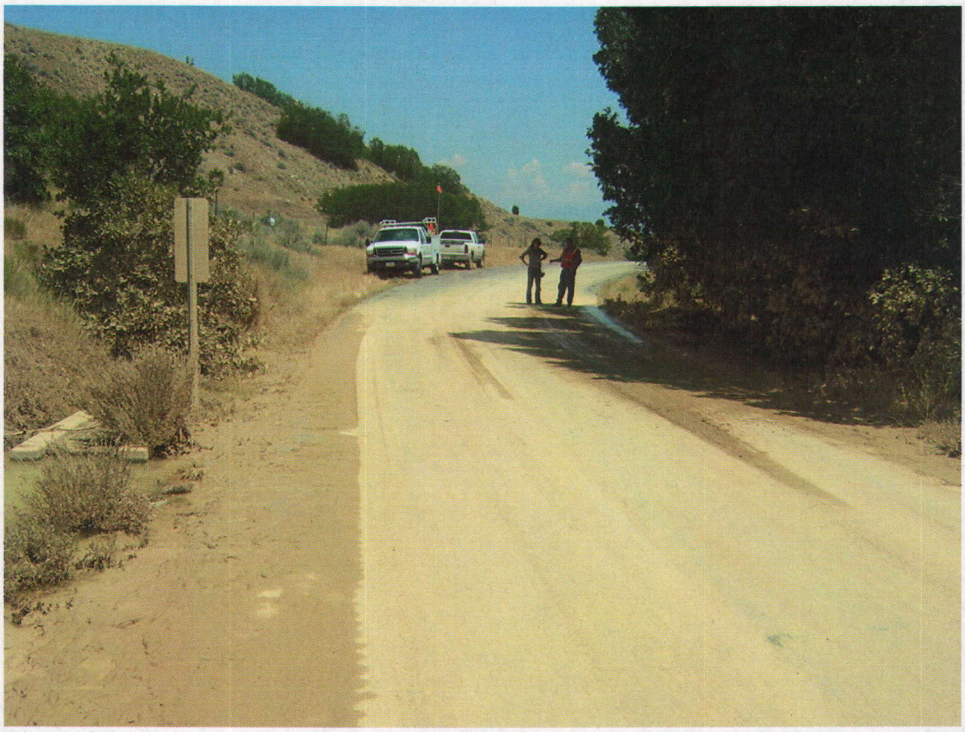

Photo No. 5 – Pictured is a lower (in elevation) section of the County Road in Butterfield Canyon, where because of a blockage in the underlying culvert (inlet pictured to the forefront of the street sign) the runoff flow (storm water / dump material) from Yosemite Drainage crossed to the south side of the County Road and into the County constructed drainage channel to Butterfield Creek. The two persons in the shadow of the trees are Ms. Peacy and Mr. Vinton. Note the stagnant water surrounding the inlet to the County constructed culvert.

Photo No. 6 – Pictured is the north side of the County Road and the County constructed culvert inlet. Note the stagnant water and dump material deposited along the side of the road.

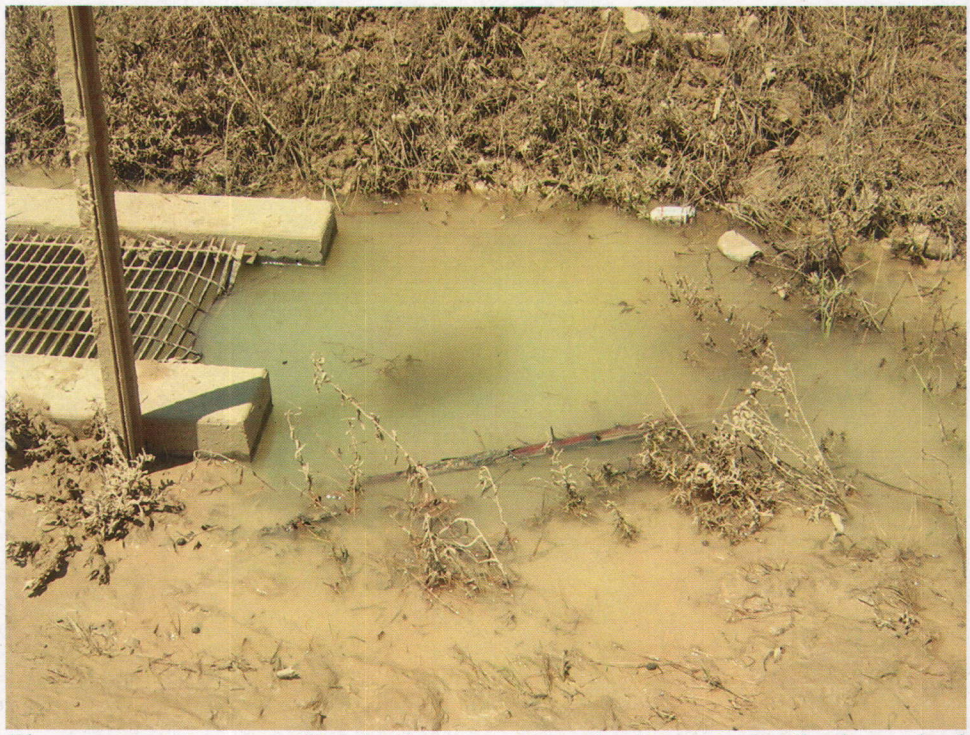

Photo No. 7 – The stagnant water surrounding the County constructed culvert was visually observed to be opaque and high in total suspended solids. The dump material matted nearby vegetation but the vegetation was still not uprooted.

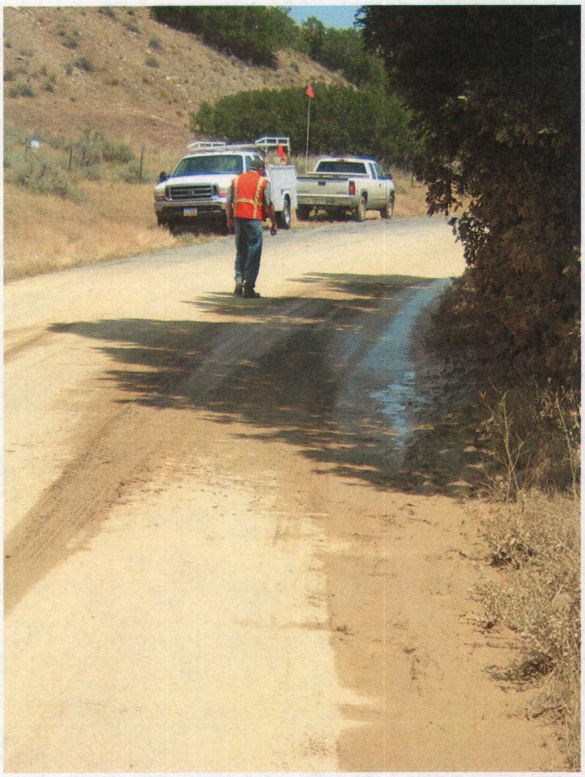

Photo No. 8 – Pictured is the south side of the County Road (the individual in the back ground is Mr. Vinton). The road surface had dump material dried on it. There was significant buildup of dump material (0.5 to 1.0 inches in depth); however the deposited material was not consistently distributed.

Photo No. 9 – Pictured is the south side of the County Road in Butterfield Canyon with the stand of trees noted earlier. Note the dump material and its deposition along the side of the road. In a westerly trend toward the County constructed drainage channel to Butterfield Creek (red arrow) the amount of dump material becomes less.

Photo No. 10 – From the same vantage point as Photo No. 9 (but looking southeast from the County Road), one can view the distribution of dump material. Note that even though matted significantly, the vegetation along the south side of the road (grasses predominantly) were not uprooted.

Photo No. 11 – Pictured is the County constructed drainage channel leading from the outlet of the County constructed culvert underlying the County Road in Butterfield Canyon. The outlet for the culvert was (when pictured) buried. The vegetation in the channel appeared to be relatively intact, with some matting due to deposited dump material. The riprap in the lower section of this channel also appeared to be intact. Butterfield Creek channel is denoted by the red arrow.

Photo No. 12 – Pictured is the approximate location of the outlet to the County constructed culvert. Photo was taken to again document the condition of existing grasses and other vegetation located along the spill pathway. Note the deposition of dump material (coffee color when wet), red arrows.

Photo No. 13 – Pictured is the County constructed drainage channel just below the outlet structure for the culvert. Note the established vegetation and intact riprap. Also note the limited distribution of dump material (coffee color) located between the rocks comprising the riprap cover (red arrows).

Kennecott Follow-up Statements and Actions:

Subsequent to the initial spill report to DERR, Rohan McGowan-Jackson (General Manager – Health, Safety, Environment and Quality for Kennecott) delivered to DERR a follow up report, dated August 8, 2007. Within this report the following (amongst other statements) admissions or notations were made:

1) During the evening hours of July 26th and the early morning hours of July 27th the Salt Lake Valley and surrounding areas experienced a sustained period of severe thunderstorms.

2) The KUCC meteorological station located in the area recorded 3.13 inches of rainfall over a 24 hour period; records indicated the most intense rainfall occurred between 1600 on July 26th to 0700 on July 27th.

3) Based on the National Oceanic and Atmospheric Administration (NOAA) point precipitation frequency estimate for Bingham Canyon, Utah the accumulated rainfall exceeded the 10 year-24 hour (2.31 inches), 25 year-24 hour (2.69 inches) and 50 year-24 hour (2.98 inches) storm events (as determined by Kennecott).

4) An investigation (by Kennecott) concluded that a very intense and localized precipitation event had deposited silt and debris in the desilting basin up-gradient of the Yosemite cutoff wall. It appeared that the rapid build-up of sediment coupled with the inordinate surge of storm water resulted in plugging the overflow pipeline that is designed to evacuate water from the desilting basin and avoid overtopping of sediments.

5) As a result, water and sediment overflowed the northern side of the desilting basin and flowed down the access road, past the Yosemite cutoff wall containment and then back into the drainage, overflowing additional check dams located downgradient.

6) Five composite sediment samples were collected (by Kennecott) and analyzed for metals concentrations:

    a. YOSEM-2, collected immediately adjacent to the Kennecott property boundary;
    b. HIC-001, collected within Butterfield Creek;
    c. DS-001, DS-002 and DS-003, collected from the agricultural field in Herriman.

7) As reported (by Kennecott), sample YOSEM-2 was found to contain 2140 mg/kg of lead, while sample HIC-001 was found to contain 747 mg/kg of lead. Lead content in the three sediment samples DS-001 to DS-003 averaged 1363 mg/kg of lead, while arsenic was below 100 mg/kg. Of the three samples DS-001 to DS-003, the maximum lead/arsenic concentrations found were 1520 mg/kg and 88 mg/kg, respectively. The minimum lead/arsenic concentrations found were 1150 mg/kg and 67 mg/kg, respectively.

8) Kennecott estimates that approximately 491 cubic yards (717 short tons) of sediment was released onto the area between the Yosemite cutoff wall and Butterfield Creek and

approximately 35 cubic yards (50 short tons) was released onto the third party agricultural field in Herriman.

9) As reported (by Kennecott), the release is believed to exceed the reportable quantity (RQ) for lead sulfate of 10 pounds. The combination of lead concentrations, the estimated volume of sediment and Kennecott's knowledge of the waste rock mineralogy, indicates that an estimated 3063 pounds of lead were released onto land between the Yosemite cutoff wall and Butterfield Creek and about 137 pounds of lead were transported onto the third party agricultural field in Herriman.

10) As reported, Kennecott intends to take the following actions:

a. Pursuant to the requirements of the groundwater discharge permit for the Bingham Canyon Mine (UGW350010) the desilting basins and cutoff wall collection system were inspected;
b. Kennecott (as of the Aug. 8th report) was in the process of removing accumulated sediment from the desilting basin, reestablishing the berms at the crest of the dumps, and repairing washouts within earthen check dams to maintain storm water capacity;
c. Kennecott will retain the services of a consultant engineer to assess the current storm water management infrastructure in order to outline the options for modifications to pipelines and existing check dam configurations to enable increased storm water retention capacity and prevent future releases off site;
d. Though assessed below the agricultural clean-up levels established by EPA for lead and arsenic (10,000 mg/kg and 300 mg/kg respectively) in the Herriman area [Sept. 2001 Record of Decision, ROD] Kennecott has initiated the removal of the sediment build-up between the Yosemite cutoff wall and Butterfield Creek. This is to prevent the further deposition of fines into Butterfield Creek;
e. Due to the relatively small amount of sediment deposition into Butterfield Creek, the volume is not considered by Kennecott to be large enough to physically consolidate and remove. In addition, Kennecott asserts that the concentrations are well below the EPA removal action levels established for lead and arsenic. As such, cleanup of the deposited sediments in the creek is not proposed.
f. Kennecott intends to follow up with the third party land owner in order to assist in addressing the release of sediments from this event.

CERCLA Agency Response

The response actions being pursued by Kennecott in response to the release of sediment into or onto the Yosemite Drainage, Butterfield Creek and the agricultural field located in the Salt Lake County boundary area to the west of the City of Herriman are acceptable. The Agencies (EPA and DERR CERCLA authorities) acknowledge that the lead and arsenic concentrations of the deposited sediments are below the agricultural removal concentrations listed in the September 2001 ROD. The Agencies further acknowledge that outside of the sediments deposited at the confluence of the Yosemite Drainage and Butterfield Canyon (lead 2140 mg/kg and arsenic 159 mg/kg), the analytical results for the samples collected in the creek and on the agricultural field

are within the range of lead concentrations (as a range, 1200 mg/kg to 1600 mg/kg) and arsenic concentrations (as a range, 50 mg/kg to 100 mg/kg) documented in EPA's September 2001 ROD for residential land use.

The Agencies will encourage Kennecott to report on response actions it may take to address engineering deficiencies, which Kennecott or its consultant identifies from the investigation of the design capacity for the existing storm water control facilities located within the confines of the waste rock dumps. The Agencies will also encourage Kennecott to ensure that these types of releases are minimized in the future.

cc: Rebecca Thomas, U.S. Environmental Protection Agency Region VIII
Kelly Payne, Kennecott Utah Copper Corporation
Dan Hall, Division of Water Quality
Jennifer Robinson, Division of Water Quality
Beth Erickson, Division of Oil, Gas and Mining