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May 12, 2000

Mr. LeRoy S. Person
Project Manager
United States Nuclear Regulatory Commission
Low Level Waste and Decommissioning Projects Branch
Division of Waste Management
Office of Nuclear Material Safety and Safeguards
Washington, D.C. 20555

Decommissioning Plan Part 1
WASHINGTON SMB-1393

Dear Mr. Person:

Enclosed please find supplemental information regarding the Part 1 Decommissioning Plan for the Washington Facility. This information is provided as a result of request made during conference calls between the staff and Molycorp to discuss the responses to the last RAI.

Do not hesitate to contact me if you require any additional information.

Sincerely,

George W Dawes

George W. Dawes
Senior Scientiest

NMSS01 Public

MOLYCORP WASHINGTON, PA, SITE

Supplemental Information Regarding the Part 1 Decommissioning Plan
May 12, 2000

1. Building 32 was not used for Ferrocolumbium processing and is classified as unaffected.

2. Building 31 may have contained licensed ore in containers. Building 34 has been, and continues to be, used to weigh ore. However, there is no recollection of Building 34 being used to weigh licensed ore. Although Molycorp does not expect these buildings to be contaminated, they will be classified as affected because of their operational history. Additional information regarding the status of these, and all of the other buildings on the Washington site, will be provided through a scooping survey to be performed in May 2000.

3. The majority of the equipment on the Washington site was not used for Ferrocolumbium processing. To confirm the status of equipment on the site, a comprehensive inventory will be performed to identify each piece or type of equipment, document the use and operational history of the equipment, and categorize the equipment according to contamination potential. Equipment will be placed into one of three categories including; 1) not used for processing licensed material and located in an unaffected building, 2) not used for processing licensed material but located in an affected building, and 3) used for processing licensed material. The equipment in Category 1 does not require a radiological survey to be removed from the site. Category 2 equipment will undergo a limited scoping survey to confirm that equipment surfaces do not contain residual contamination above the free release limits. Category 3 equipment will require a free release survey before removal from the site. The equipment inventory and category designation, and scoping survey results, will be available at the Washington site for NRC review.

   Residual contamination levels on any equipment removed from the site will not exceed the limits listed in NRC's "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material," Policy and Guidance Directive FC 83-23. Any equipment exceeding these values that cannot be decontaminated will be disposed at an NRC approved facility

4. Surface water runoff and soil erosion will be controlled during excavation activities using silt fencing, berms, or other control measures as appropriate. Although not considered likely, if significant volumes of water accumulate in control areas, the water will be collected and batch sampled before discharge to ensure that the liquid effluent limits in 10 CFR 20, Appendix B, Table 2 are met. Standing water onsite will be periodically sampled as a part of the routine operational and environmental monitoring programs. In addition to NRC regulations, Molycorp must comply with a State of Pennsylvania NPDES permit for the site.

5. The volume of contamination below the water table does not appear to be large. During the remediation of the Findlay property, on the northern boundary of the property, excavations were completed down to a depth of 12 feet without encountering standing water. Using 12 feet as the approximate depth to the water table, the volume of material requiring excavation in some amount of standing water was estimated to be 6104 yd^3 using Earthvision. This is less than 6% of the total soil volume estimated to require excavation in the Part 1 Decommissioning Plan.

   The control of mobilization or migration during excavation in areas with free-standing water will be accomplished using the methods described above for runoff. It is not expected that the excavation will provide a pathway for migration to groundwater. In some cases, it may be necessary to pump water from the excavation area. Any pumped water will be collected in a suitable container or tank and batch sampled prior to release to ensure compliance with the effluent limits in 10 CFR 20 Appendix B, Column 2. If the water does not meet the effluent limits, it will be filtered and re-sampled before releasing. In the unlikely event that the water exceeds the effluent limits after filtration, it will disposed at an NRC approved facility. Because the volume of contaminated material that may be below the water table is relatively low, it should not cause a major impact on the decommissioning schedule. However, the areas potentially below the water table may require excavation early in the project to allow the material time to dry sufficiently to meet the acceptance criteria at the NRC approved disposal location prior to loading into railcars. Soil in excavated areas below the water table will be sampled for final survey at the same frequency as other site areas, i.e, one sample per 25 m^2. If significant levels of water are present that do not allow demarcation of the sample location, pumping may be required.

6. The environmental monitoring program will include air, water, sediment, stream water, and groundwater. At least 5 sediment samples, and 2 stream-water samples will be collected monthly during excavation, including the storm drain outlet. The groundwater monitoring program will be submitted for NRC approval after the decommissioning plan approval but prior to beginning excavation activities.

7. The public dose during decommissioning of the Washington site would result from airborne effluents during excavation and loading railcars, and is expected to be very low. The public dose from liquid effluent is expected to be negligible. A conservative estimate of public dose can be calculated by assuming that the airborne concentrations at the site boundary are equal to the 10 CFR 20 Appendix B limits for the entire time excavation is occurring. Assuming 105,000 yards volume and an excavation/loading rate of 1000 yards per day, the duration would be 105 days. Assuming that a member of the public were standing at the Washington site fenceline for the entire 105 days for 8 hours per day the dose would be calculated as follows.

Assumptions:

- Airborne concentration at site boundary is equal to 10 CFR 20 Appendix B, Table 2 limit for Th-232, i.e., 4E-15 uCi/ml. It is assumed that all of the activity is Th-232, as opposed to Th-232 plus Th-228 in equilibrium. This is conservative and appropriate for the purposes of this estimate.
- Inhalation Dose Conversion Factor for Th-232 of 4.43E-04 Sv/Bq (Federal Guidance Report No.11, September 1988)
- Breathing Rate of 20 l/min (ICRP 23, Report of the Task Group on Reference Man, 1974)

Calculation:

(4E-15 uCi/ml)(4.43E-04 Sv/Bq)(3.7E+09 mrem/uCi per Sv/Bq)(20 l/m) x (1000 ml/l)(60 m/hr)(8 h/d)(105 d) =

= 6.6 mrem public dose

8. The estimate of dose from the transportation of waste by railcar is provided below. Rail is the preferred method of shipping waste to an offsite disposal facility.

   This estimate was calculated using the assumptions and conversion factors provided in Section 11.4 and Table 11.4-1 from NUREG-0130, " Technology, Safety, and Costs of Decommissioning a Reference Pressurized Water Reactor Power Station." These factors were derived from "Environmental Safety of Transportation of Radioactive Materials to and from Nuclear Power Plants," WASH-1238. The assumptions are considered conservative for the shipment of soil.

   Several adjustments to the dose estimates provided in Table 11.4-1 were required to account for site-specific conditions at the Washington site. These include:

   - Dose rate – NUREG-0130 assumed 25 mrem/hr exposure rate at two meters from the railcar. The estimated exposure rate from the average activity waste from Washington was estimated to be 0.25 mrem/hr (Table A-2 from Molycorp Response to NRC comments).
   - Number of Railcars - 28 railcars were assumed for the NUREG-0130 estimate. Approximately 1330 railcars would be required to ship 105,000 yards of soil.
   - Miles to Disposal Site - Assuming the waste is shipped to the Envirocare site in Utah, the distance to the disposal site would be 2,000 miles as opposed to the 1500 miles assumed in NUREG-0130.

   The total dose for rail transport calculated in NUREG-0160 is 3.5 person-rem occupational and 0.9 person-rem general public. Applying the site-specific corrections listed above, the following correction factor is applied:

(2000 mi/1500 mi)(0.25 mrem/hr/25 mrem/hr)(1330 railcars/28 railcars) = 0.63

Therefore, the estimated dose from shipping the waste by railcar is:

- Occupational Dose = (3.5 person-rem)(0.63) = 2.2 person-rem
- General Public Dose = (0.9 person-rem)(0.63) = 0.57 person-rem

9. The location of the groundwater well that is nearest to the Washington site is not known with certainty at this time. However, city water supply is available to at least 1 mile to the west of the site. City water is available for several miles in other directions. The question regarding the nearest groundwater well will be addressed more specifically, as necessary, in Molycorp's groundwater monitoring plan to be submitted to NRC prior to excavation activities beginning.

10. The accident analysis provided in Molycorp's response to NRC comments assumed a truck overturns with a full 20 ton load of contaminated soil, fuel spills on the soil, and the soil burns for 8 hrs. This accident is the bounding/worst case scenario and has an exceedingly low probability of occurrence. A more credible event, although still unlikely, is that a full truck overturns spilling the soil. Using the factors listed in Molycorp Response B.1.j, the airborne concentration would be reduced by a factor of 15.1. Assuming an eight-hour exposure period at this concentration, the dose to a member of the public would be of 16 mrem. Assuming the spill/burn accident did occur it is very unlikely that the fire would burn to the point of consuming the entire 20 ton pile. Assuming that 25% of the pile is consumed, the dose would be 59 mrem.