be classified as "radioactive material" for shipment purposes under U.S. Department of Transportation (DOT) regulations.

Based on the nature of the materials, a 10 CFR Part 30.11 byproduct material exemption is required for these materials. However, a 10 CFR Part 70.17 exemption is not being requested because no Special Nuclear Material will be present in these waste streams.

4. RADIOLOGICAL ASSESSMENT

As described in the following exposure scenarios, the dose equivalent for the Maximally Exposed Individual (MEI) has been demonstrated to not exceed "a few millirem per year." This standard of a "few millirem per year" to a member of the public is set forth in NRC Regulatory Issue Summary 2004-08, "Results of the License Termination Rule Analysis," dated May 28, 2004. The transportation workers and workers at the USEI site are treated as members of the public because the USEI site, while permitted by the State of Idaho to accept certain radioactive materials, is not licensed by the US NRC.

External exposure assessments were performed using the MicroShield code, Version 7.02. Evaluations of both potential external and internal dose hazards to USEI workers and transportation workers are discussed in the sections below and in Attachments 2 and 3.

4.1. Transport Dose to the Public

All materials will be transported by truck to the USEI facility in Grand View, ID. For normal highway transport conditions, the material will primarily be enclosed in IP-1 intermodal containers, but some oversized debris may also be shipped on flatbed trailers or in end-dump trucks as well. All conveyances will be verified to be in compliance with DOT external loose surface contamination limits prior to shipment. Therefore, transport will pose no potential for internal dose to the driver or other members of the public.

The distance from HBPP Unit 3 to the USEI disposal facility is approximately 659 miles. Assuming an average speed of 50 miles per hour, the trip is estimated to take 13.18 hours. It is estimated that approximately 11 trucks will be used to transport the entire volume of anticipated waste over the course of the project (four years) to achieve maximum logistical efficiency. Using 11 trucks, it will take a total of approximately 3367 shipments (or 842 shipments per year), with each truck driver making 76 round trips annually between Eureka, CA and Grand View, ID.

Calculated doses to project truck drivers are estimated to be 0.7150 mrem/yr (see Table 2). Because of the very low average concentrations of radionuclides, potential external dose to members of the public has been calculated to be very

low. As a result, the dose to other members of the general public can be reasonably concluded to be much less.

4.2. USEI Worker Dose Assessment

Upon receipt at the facility, the material will be surveyed and screened prior to further processing. Five minutes is required to perform a survey of each truck. Based on current practice, the surveyor is assumed to stand with his body at a distance of one meter from the truck or trailer during the survey with four surveyors sharing the surveying task. Calculated doses to surveyors are estimated to be 0.1~~4~~0 mrem/yr (see Table 2).

The waste will then be delivered to the stabilization building for treatment of the RCRA hazardous constituents. It is conservatively assumed that all waste from HBPP will require treatment, when in fact a portion of the waste will not, as determined by HBPP through its waste analysis and characterization program. The waste will be placed into a steel-lined concrete tank where it will be mixed with stabilization reagents. Wastes are wetted as they are emptied into the stabilization tanks to reduce dusting. The building is also equipped with a negative pressure air handling system so that air only moves into the building and is exhausted through HEPA filters. The stabilization process requires approximately 45 minutes, during which time the excavator operator is approximately six feet~~2.8 meters~~ from the waste wearing a respirator within an enclosed cab. Six operators share the stabilization task. Calculated doses to stabilization operators are estimated to be approximately 0.15~~22~~ mrem/yr (see Table 2).

After stabilization, the excavator operator removes the treated waste from the stabilization tank and places it into an on-site haul truck for transport to the disposal cell for burial. Doses to haul truck operators will be much less than to the truck drivers transporting the waste from HBPP since exposure times are much shorter. As a result, doses to haul truck operators are not analyzed.

After delivery to the disposal cell, a bulldozer operator wearing a respirator within an enclosed cab then spreads and compacts the waste. For the purpose of the dose assessment, dust loading in the stabilization building is used in calculating a bounding case potential dose for all personnel who could possibly receive an inhalation dose. Personnel who work in the stabilization building are the maximally exposed individuals for inhalation dose compared to operations conducted in open air conditions. As noted, all personnel working in the stabilization building and in the disposal cells are required to wear air purifying respirators at all times. A minimal dose is calculated for the two bulldozer operators who share the task of spreading and compacting the stabilized waste material once it has been deposited within the disposal cell. The average time to spread and compact 60 cubic yards of material (which is the capacity of two intermodal containers) is 15 minutes. This shorter exposure time results in a lesser potential dose from airborne radionuclides than what was calculated for the excavator operator.

Calculated doses to disposal cell bulldozer operators are estimated to be 0.1007 mrem/yr (see Table 2).

All USEI employees who work with any hazardous materials are required to participate in an Occupational Safety and Health Administration (OSHA) compliant respiratory protection program. Although respiratory protection is required for the above specified workers, no credit is taken for this proven form of protection in this conservative dose assessment. Table 2 presents a summary of the anticipated annual doses calculated for all transporters as well as USEI workers performing survey, handling, and disposal tasks on wastes from HBPP.

Table 2- Annual Doses to Drivers and USEI Employees for HBPP Project

Function	No. Persons	Waste Contact Time (hr)	External Exposure Rate (mR/hr)	Internal Dose Rate (mrem/hr)	Dist. (m)	No. Trips or Reps	Annual External Dose (mrem/yr)	Annual Internal Dose (mrem/yr)	Total Annual Dose (mrem/yr)
Truck Drivers	11	13.2	4.967.07 E-04	0.00E+00	4.8	842	5.007.13E-01	0.00E+00	5.007.13E-01
Survey Crews	4	0.08	5.688.04 E-03	0.00E+00	1.0	842	9.961.41E-012	0.00E+00	9.961.41E-021
Stab. Cell Workers	6	0.75	5.223.66 E-03	9.61E-07	2.8	337	2.201.54E-01	4.05E-05	2.201.54E-01
Waste Cell Operators	2	0.25	1.682.28 E-03	9.61E-07	2.0	337	7.079.58E-02	4.05E-05	7.079.59E-02

4.3. Post Closure Dose to the General Public

USEI's RCRA permit requires that it demonstrate that no person will receive a dose exceeding 15 millirem for 1,000 years after closure of the facility. This standard is more restrictive than the 25 millirem Total Effective Dose Equivalent (TEDE) NRC decommissioning limits as well as the limits for near surface disposal of low-level radioactive waste set forth in 10 CFR Part 61. The RESRAD code, Version 6.5, was used for these purposes. A number of default parameters in the model have been replaced with site specific parameters consistent with the facility's 2005 permit modification and a report prepared by its consultant (previously submitted to the NRC as part of an RAI for the Westinghouse exemption request for the Hematite project, Docket #07000036).

As can be seen in the RESRAD report (Attachment 3, page 13), the maximum dose calculated by the model for the disposal of the HBPP radionuclides is 4.90E-3 mrem/year at 1,000 years following closure of the facility.

A post-closure intruder scenario was also conducted using the methods found in NUREG-0782. Calculated doses under this scenario for the nuclide concentrations in Table 1 are estimated to be 0.147 mrem/yr, within the NRC's alternate disposal guidance of a few millirem per year. A copy of the intruder spreadsheet is provided in Attachment 4.