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Mr. Randall F. Smith, Director  
Environmental Cleanup Office  
U.S. Environmental Protection Agency  
1200 Sixth Avenue, ECL-117  
Seattle, Washington 98101

Mr. Mike A. Wilson, Program Manager  
Nuclear Waste Program  
State of Washington  
Department of Ecology  
P.O. Box 47600  
Olympia, Washington 98504-7600



Dear Messrs. Smith and Wilson:

**ACTION MEMORANDUM N AREA WASTE EXPEDITED RESPONSE ACTION CLEANUP PLAN**

Please find attached, the subject action memorandum for concurrence by the U.S. Environmental Protection Agency and the State of Washington Department of Ecology.

If you want to discuss this matter further or require additional information, please contact me, or Mr. Glenn Richardson at (509) 373-9629.

Sincerely,

Lloyd L. Piper  
Acting Deputy Manager

NAP:GR

Attachment

cc w/attach:  
P. S. Innis, EPA  
P. R. Staats, Ecology

Action Memorandum  
N Area Waste Expedited Response Action Cleanup Plan  
U.S. Department of Energy, Hanford Site, Richland, WA

This Action Memorandum constitutes approval of the U.S. Department of Energy's (DOE) proposed removal action as outlined in the Engineering Evaluation/Cost Analysis, BHI-00785, Rev. 0 (EE/CA) for disposal of 100-N Area wastes. 44967

A 30 day public comment and review period was held August 23, 1996, through September 23, 1996, however, no comments were submitted. In addition, no comments have been expressed by Hanford stakeholders.

This removal action eliminates the potential for a release of hazardous substances in the 100 Area that could adversely impact human health and the environment, is protective of worker personnel, and minimizes disposal costs. The volume of waste to be disposed to the Environmental Restoration Disposal Facility (ERDF) has been incorporated into ERDF capacity planning and will require no further expansion.

#### I. PURPOSE

The purpose of this action is to mitigate the threat to site workers, public health, and the environment by disposing of waste generated during pre-remediation activities for 100-N Area. The scope of this action is limited to the disposal of sediment and debris from the Emergency Dump Basin (EDB), disposal of wastes generated from deactivation activities, and disposal of wastes accumulated from previous environmental investigations.

#### II. BACKGROUND

Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), the U.S. Environmental Protection Agency (EPA) recommended the 100 Area of the DOE operated Hanford Site for inclusion on the National Priorities List (NPL) on June 24, 1988. In November 1989, the 100 Area was added to the NPL. The 100 Area is located in the northern part of the Hanford Site along the shore of the Columbia River and includes six reactor areas, one of which is the 100-N Area. The 100-N Area consists of the N Reactor and associated facilities and waste site.

In 1994, the N Area Pilot Project was created to ensure consistent, effective, and nonduplicative actions to accomplish remediation, deactivation, and decommissioning for the 100-N Area. Milestone M-16-01 of the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) was developed to set a schedule coordinating these actions. At that time, EPA and the State of Washington Department of Ecology (Ecology) determined that Ecology would serve as the lead regulatory agency for 100-N Area. Pre-remediation activities in support of N Area final remediation are removal of sediment, debris, and water from the EDB, deactivation wastes, and investigation-derived wastes (IDW).

## A. Site Description and Characterization

The 1300-N EDB is located outside and southeast of the 109-N building (Figure 2). It is a open-top steel-lined storage basin with a one million gallon capacity. The EDB was designed to receive primary cooling water in an emergency, although it was never used for this purpose. It did receive steam blowdown from the N Reactor steam generators containing low levels of radioactive activation and fission products, as well as miscellaneous radioactive water from reactor basin operations. The EDB currently contains sediment (primarily windblown sand and dirt), small quantities of debris (e.g., gloves, a sparger, pump casing, and lead and brass parts), and water. As part of the deactivation of 100-N Area facilities, the EDB will be stabilized by removing and disposing of the sediment, debris, and water.

Deactivation involves shutdown, stabilization, and isolation of operational systems and buildings. It typically includes removing equipment fluids, hazardous substances, and unattached equipment and materials from the facilities. Deactivation is necessary to place active facilities into a safe interim condition in preparation for final decommissioning of the facilities and remediation of the 100-N Area. Approximately 90 facilities in the 100-N Area are being deactivated in accordance with the *N Reactor Deactivation Program Plan* (BHI 1995). Deactivation was formally initiated in 1995. About 70 buildings were deactivated as of June 1996, and deactivation of the remaining 19 will be ongoing until 1997.

During deactivation, material contaminated with hazardous substances is removed from 100-N Area facilities. Any material that cannot be reused or recycled is managed as waste. The deactivation waste that will be generated from the remaining facilities will primarily consist of equipment and hardware with radioactive surface contamination and miscellaneous contaminated material such as tools, loose wood, paper, plastic and rubber. Based on radiological surveys and process knowledge, most of this waste will be designated as radioactive Low Level Waste (LLW). Approximately 240 cubic meters (8,500 cubic feet) of LLW are expected from future deactivation activities at the N Fuel Storage Basin. Another 230 cubic meters (8,000 cubic feet) of LLW will be generated from deactivation of other 100-N Area facilities. These volumes include any necessary filler stabilization material and the shipping container. Final designation of deactivation waste will follow the appropriate waste designation procedure required by the selected disposal facility.

Some of the waste (e.g., radiologically-contaminated lead) will potentially be designated as mixed waste. The quantity of mixed waste is estimated at less than 10 cubic meters (350 cubic feet). An even smaller volume of deactivation waste will consist of excess chemical products that will potentially designate as dangerous waste, and petroleum products. Deactivation waste also includes approximately 2 cubic meters (70 cubic feet) of sediment that will be removed from the N Fuel Storage Basin. Based on process knowledge and radiological surveys, the sediment is known to be radioactive, but sampling, analysis, and final waste designation have not been performed. A Data Quality Objective (DQO) workshop that includes DOE and Ecology is in progress to establish characterization requirements for the sediment.

To collect data to support remediation decisions, several investigations have been conducted in or adjacent to waste sites in the 100-N Area. Contaminated soil, water, and miscellaneous debris generated during the investigations were placed in containers and stored temporarily pending final disposal. Two potential disposal options for this waste have been identified, ERDF and Low-Level Burial Grounds.

In 1994, an estimated 5 cubic meters of contaminated soil and miscellaneous materials, and decontamination fluid were generated during field investigations at several sites within the 100-NR-1 and 100-NR-2 Operable Units. Radiological contamination was determined to be the primary concern. Concentrations of metals did not exceed the Model Toxics Control Act residential cleanup levels. Based on the investigation results, waste from these activities have been designated as LLW. Two sites (1324-N and 1324-NA) are designated *Resource Conservation Recovery Act* (RCRA) Treatment, Storage, and Disposal (TSD) units because they received corrosive wastes. However, the soil does not exhibit the corrosivity characteristics. The sampling data will be further evaluated to confirm that there are no other dangerous waste issues. The waste drums are currently stored adjacent to the 1324-N/NA waste units.

A DQO workshop was held in 1995 to establish sampling and analytical requirements for characterization of the 1301-N crib and trench and the 1325-N crib. The water in these units was designated a dangerous waste for corrosivity, acetone, cadmium, lead, mercury, hydrazine, and chromium. Based on existing data and process knowledge, it was expected that the units would contain significant quantities of cobalt-60, strontium-90, and cesium-137. Through the DQO process, it was agreed to drill one borehole through the 1301-N crib, one adjacent the 1301-N trench and one next to the 1325-N crib. The analyses performed as a result of the DQO process confirmed the contaminant assumptions. Information from these investigations will be used for future remediation decisions and waste profile determinations.

### **Cultural Resource Review**

The 100-N area is situated within a cultural resource-rich segment of the Columbia River shoreline. Archaeological sites are located upstream of N Reactor and across the river. The knobs and kettles in and around the perimeter were known to the Wanapum Indian Tribe as "MooliMooli," a phrase meaning little stacked hills. The area was also known as a good salmon fishing location. Rock cairns on some of the knobs in and around the perimeter have been recorded as archaeological features. Many of these sites are either listed on or are considered eligible for listing on the National Register of Historic Places. Finally, several N Reactor buildings and structures are considered contributing properties to the Hanford Site Historic District.

All project activities will be reviewed for potential impacts to cultural resources. Because most project activities are either non-ground disturbing or located in heavily disturbed areas, no impacts to cultural resources are anticipated. Where potential impacts exist, protective measures will be put in place. Cultural resource representatives from the local Indian Tribes and

Nations will be informed about the project activities and provided an opportunity to get involved. Workers in all areas will be instructed to watch for cultural material during all field work.

### **Flora and Fauna Survey**

Biological surveys of the 100-N Area Pilot Project were conducted in 1993 and 1994. No critical or sensitive habitat were identified by those surveys. The reviews noted a wide variety of avian species nests on the ground or on buildings. It is recommended that activities be scheduled to minimize disturbance of the avian species during nesting season (April, June).

### **III. THREAT TO PUBLIC HEALTH, WELFARE, OR ENVIRONMENT**

The wastes addressed in the EE/CA are known to be contaminated with radioactive and/or non-radioactive hazardous substances. While the waste is stored in the 100-N Area, periodic inspections of the waste containers and storage areas are conducted and maintenance is performed as necessary to prevent inadvertent release of the waste. Because public access to the 100-N Area is currently restricted and inspections and maintenance are performed, there is a relatively low risk in the near term to the public and environment. However, the inspections and maintenance result in a potential exposure to personnel. In addition, as long as the waste is in temporary storage in containers there is the possibility of a release that would threaten public health or the environment. As more remediation activities in the 100-N Area are initiated, the potential for a release increases. The waste must ultimately be placed in a more permanent disposal condition to reduce this risk. The potential exposure to personnel and potential threat of a release justify the removal action.

### **IV. ENDANGERMENT DETERMINATION**

Actual or threatened releases of radioactive and hazardous substances from this site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

### **V. PROPOSED ACTION AND ESTIMATED COSTS**

In order to facilitate the disposal of N Area wastes generated in preparation for cleanup, the DOE, in cooperation with Ecology and EPA, proposed the following three alternatives for disposal of 100-N Area wastes (as described in Section II.A. of this Action Memorandum): the no action alternative (as a baseline for comparison), disposal at the ERDF, and disposal at low-level burial grounds (LLBG)/Mixed Waste Disposal Trench (W-025)/offsite facilities. Cost assumptions for each disposal alternative are based on an approximated total waste volume of 633 cubic meters of radioactive LLW and 10 cubic meters of mixed waste.

**No Action**

The No Action alternative would consist of indefinite storage of waste generated by cleanout of the EDB, deactivation, and environmental investigations in the 100-N Area. Waste containers and storage areas would be inspected routinely and maintenance would be performed as necessary to minimize the potential for an environmental release, protect the worker personnel, and maintain compliance with state and federal regulations and DOE orders. The costs associated with the No Action alternative include costs for more extensive packaging of deactivation wastes and the costs associated with inspection and routine maintenance of the waste containers and storage areas. The total costs of this alternative is \$190,000 for additional packaging, and \$60,000 annually for periodic inspections and maintenance.

**Disposal at the ERDF**

Disposal at the ERDF would involve treating the wastes as necessary (e.g., dewatering or solidification) to meet the ERDF waste acceptance criteria before initiating disposal. The ERDF is designed to meet RCRA minimum technological requirements for landfills including standards for a double liner, a leachate collection system, leak detection, and final cover. Under CERCLA, the ERDF has been authorized to accept Hanford cleanup waste including waste generated by CERCLA removal actions. The types of contaminated materials described in the N Area EE/CA are similar to other Hanford wastes going into the ERDF and will not impact the operations or require further expansion. The unit costs for ERDF waste disposal is \$78/cubic meter including cost of transportation from 100-N Area to the ERDF. The total estimated cost of transportation and disposal is \$50,000.

**Disposal at LLBG/Mixed Waste Disposal Trench (W-025)/Offsite Facilities**

This alternative would consist of disposing of radioactive LLW at the LLBG in the 200 Area (unlined trenches without liners or leachate collection systems), disposing of mixed waste at the W-025 trench (a RCRA-authorized landfill in the 200 Area with a double liner and leachate collection system), and transporting dangerous waste to an offsite facility for treatment and/or disposal. The unit cost for disposal at the LLBG is \$540/cubic meter, \$1,500/cubic meter for management of mixed waste, and \$10/cubic meter for transportation. The total estimated cost for this alternative is \$400,000, exclusive of any offsite disposal costs.

**Applicable, or Relevant and Appropriate Requirements (ARAR's)**

The EE/CA was conducted in accordance to the requirements of 40 Code of Federal Regulations (CFR) 300.415; the Hanford Federal Facility Agreement and Consent Order; and CERCLA; and is a removal action which will contribute to the efficient performance of anticipated long term remedial action. All wastes will be evaluated and managed in compliance with substantive waste management standards that have been identified as ARAR's for land disposal of low-level radioactive waste (Subpart C of 10 CFR 61) and management and disposal of dangerous waste (Washington Administrative Code (WAC) 173-303). Wastes disposed in the ERDF will be managed in compliance with appropriate

criteria in the ERDF Waste Acceptance Criteria. The wastes will be packaged and transported in accordance with the substantive requirements of the U.S. Department of Transportation (DOT) Requirements for Hazardous Materials (49 CFR Parts 100 to 179). Standards in DOE Order 5820.2A and 10 CFR Part 835, "Occupational Radiation Protection," will be applied to provide sufficient worker protection for handling and disposal of radioactive wastes. Waste disposal will be conducted in a manner to meet the standards in 40 CFR 61, Subpart H, and WAC 246-247 for the control and/or prevention of the emission of air contaminants.

#### VI. EXPECTED CHANGE IN THE SITUATION SHOULD BE DELAYED OR NOT TAKEN

Continued waste container storage would require routine inspections and maintenance which would increase the potential for an environmental release and personnel exposure.

#### VII. OUTSTANDING POLICY ISSUES

In 1996, the ERDF Record of Decision was modified by an Explanation of Significant Difference that identified the ERDF as an appropriate disposal site for a variety of Hanford Site cleanup wastes, including waste generated during site characterization, deactivation, and decommissioning (EPA, et al 1996). Therefore, there are no policy issues associated with this removal action.

#### VIII. APPROVED ALTERNATIVE

This decision document represents the selected removal action alternative as disposal at ERDF for the 100-N Area wastes based on the evaluation presented in the EE/CA. This alternative removes the potential for a release of hazardous substances that could pose a threat to public health, welfare, and the environment, is protective of workers, and minimizes disposal costs. This document was developed in accordance with CERCLA, as amended by the Superfund Amendments and Reauthorization Act, and the Nation Oil and Hazardous Substance Pollution Prevention Contingency Plan. This decision is based on the information provided in the Administrative Record for this project.

Signature sheet for the Action Memorandum for the DOE Hanford N Area Waste Expedited Response Action Cleanup Plan between the U.S. Department of Energy, U.S. Environmental Protection Agency, and the State of Washington Department of Ecology.



Lloyd Piper, Acting Deputy Manager  
U.S. Department of Energy  
Richland Operations Office

11/7/96  
Date

Randall F. Smith, Director  
Environmental Cleanup Office  
U.S. Environmental Protection Agency, Region 10

Date

Michael A. Wilson, Program Manager  
Nuclear Waste Program  
State of Washington Department of Ecology

Date

