

APPENDIX H.1

OPERATING FACILITIES EVALUATION UNITS

OVERVIEW

The operating facilities evaluation units (EUs) will be organized around three principal operating functions: (1) solid waste treatment, storage, and disposal; (2) liquid waste processing and disposal; and (3) supporting infrastructure facilities. Considerations of the operating functions, interactions of waste processing functions, and geographic proximity will be used in assembling the EUs for the operating facilities. A brief description of the overall process flow for each of these functional areas will be provided as context for the roles these facilities play in the cleanup efforts and to provide insight into the hazards present. In addition, a description of the offsite facilities that are important elements of the Hanford Site cleanup will be referenced as part of the overall cleanup context. They include such facilities as the Waste Isolation Pilot Plant (WIPP), where transuranic (TRU) waste is disposed, various commercial waste treatment and disposal facilities, and the yet to be established geologic repository.

SOLID WASTE TREATMENT, STORAGE AND DISPOSAL

The Solid Waste Operations Complex (SWOC) facilities are permitted treatment, storage, and/or disposal units that manage low-level radioactive waste (LLW), mixed low-level waste (MLLW), TRU waste, transuranic mixed (TRUM), and Toxic Substances Control Act (TSCA) polychlorinated biphenyl (PCB) waste at Hanford Site as illustrated in the process flow diagram provided in Figure H-1.

1. **Store, package, certify, and ship transuranic, hazardous, and mixed wastes.** The SWOC consists of four facilities: the Central Waste Complex (CWC), two Resource Conservation and Recovery Act permitted disposal trenches, the T Plant, and the Waste Receiving and Processing Facility (WRAP). Collectively, these four facilities enable the storage, packaging, and certification of transuranic, mixed and hazardous waste. This waste results from the retrieval of stored waste and from TRU-contaminated materials that are newly generated as a result of cleanup operations. The CWC accepts LLW/MLLW with no identifiable disposition path and the TRU and TRUM that has to be certified for shipment to WIPP in New Mexico throughout cleanup. Once generated, the TRU waste is stored in the CWC. In addition, LLW, MLLW, hazardous waste, and other materials are also stored at CWC awaiting treatment or final disposition. Trenches 31 and 34 are permitted disposal units for certain MLLW and LLW and also certain types of TSCA PCB waste.

Transuranic waste is packaged and certified for shipment in the WRAP, adjacent to the CWC. WRAP is a multipurpose facility for processing and treating LLW and TRU waste including mixed and TSCA PCB waste. It can also perform nondestructive assay (NDA) and nondestructive examination (NDE) of waste containers. Some mixed waste is shipped offsite for treatment at commercial facilities and returned to the site for disposal. WRAP is being maintained in an operational status, even though it has been several years since TRU waste was sent to WIPP. The CWC and WRAP facilities, both located in the 200 West Area, will be maintained and operated until Hanford Site cleanup operations are completed, at which time all inventory will be removed and the facilities closed.

The T Plant complex is currently used by SWOC for storage, repackaging, treatment, and decontamination of radioactive waste. T Plant can accept LLW and TRU waste, including mixed and TSCA PCB waste. T Plant can also perform NDA/NDE analysis, including the sampling of gases trapped inside drums of waste. Radioactive and mixed wastes are processed and packaged to meet state and federal regulations as well as criteria associated with transporting waste to certain specific waste disposal facilities. The T Plant complex is also being evaluated for

receiving, storing, and treating the radioactive sludge that has been containerized within the K-West Basin. T Plant has been identified as a potential historic site as part of the Manhattan Project National Historical Park legislation, and as such, for the purpose of this Risk Review Project, T Plant operations will need to be partitioned from any potential deactivation (decontamination) and decommissioning (D&D) activities (including possible preservation under the National Historical Park legislation).

2. **Safely store used fuel and nuclear materials.** The Hanford Site will continue to operate the Canister Storage Building (CSB) and the adjacent interim storage area for management of used fuel and nuclear materials that will eventually be moved to offsite locations. In addition, nearly 2000 cesium and strontium capsules are currently stored underwater inside the Waste Encapsulation and Storage Facility adjoining the B Plant canyon facility. For the purpose of this Risk Review Project, the disposition of the capsules will need to be partitioned from the D&D of the B Plant canyon, yet their schedules are linked. Some of these materials are yet to be generated (e.g., immobilized high-level waste from Hanford's tanks), and to date the final disposition pathway, schedule, and location for off-site disposal is uncertain. Therefore, safe management of these materials (for interim storage and preparation for shipment) may be required for decades in new facilities similar to the CSB.
3. **Operate solid low-level waste and mixed low-level waste disposal facilities.** Waste disposal facilities including solid waste burial grounds (two mixed waste trenches in the 200 West Area), the Integrated Disposal Facility (IDF), and the Environmental Restoration Disposal Facility (ERDF) will continue to operate and receive inventory well into the future, and when no longer needed will be closed. The ERDF receives bulk low-level radioactive, hazardous, and mixed wastes generated during environmental remediation and building demolition activities. The mixed waste trenches received containerized mixed-waste generated during cleanup operations. IDF is designed to hold the immobilized low-activity waste and other low-level and mixed wastes generated during the tank waste processing mission. Strictly hazardous wastes and municipal solid wastes are packaged and shipped offsite for disposal at commercial facilities.

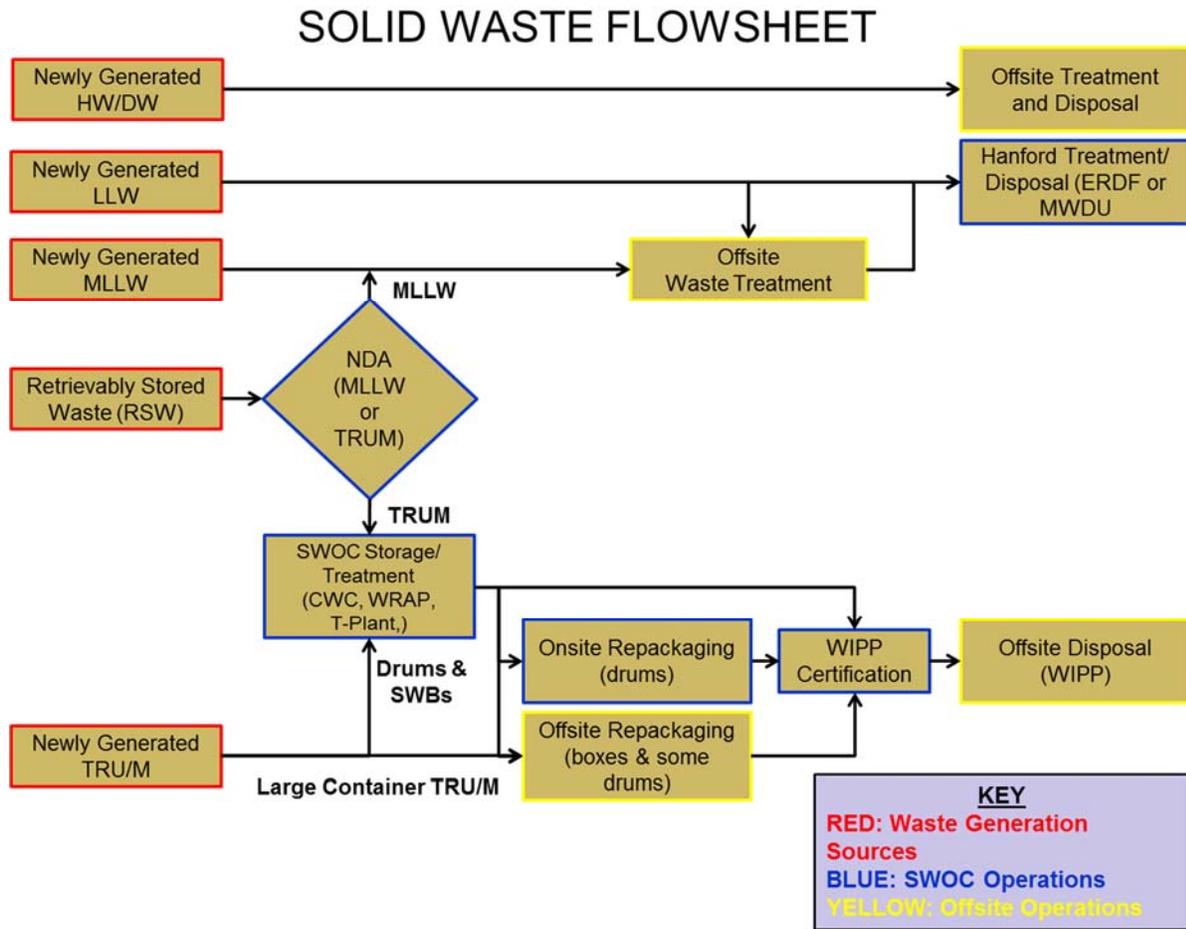


Figure H-1. Hanford solid waste operations flow sheet.

LIQUID WASTE TREATMENT, STORAGE AND DISPOSAL

There are four primary facilities for processing and disposing of Hanford liquid waste: Treated Effluent Disposal Facility (TEDF), Effluent Treatment Facility (ETF), Liquid Effluent Retention Facility (LERF), and the State-Approved Land Disposal Site (SALDS). These four facilities are permitted under the Washington State Waste approved Water Discharge Permit Number ST-4500 and provide collection, conveyance, treatment, and disposal system liquid effluents from numerous Hanford Site facilities. After being sampled at the facility of origin, the liquid waste is pumped to LERF to await treatment at the ETF. Treated liquid waste then is pumped to either TEDF or SALDS. TEDF handles non-contaminated waste only and SALDS accepts delisted waste with the exception of tritium (i.e., is no longer a dangerous waste subject to the hazardous waste management requirements of RCRA with the exception of tritium).

SUPPORTING INFRASTRUCTURE FACILITIES

Several facilities on the Hanford site provide services and support the overall mission of environmental restoration. One of which that was evaluated in this appendix is the 222-S Laboratory. The 222-S Laboratory provides analytical chemistry services for the site projects, operations, and environmental cleanup activities. Laboratory personnel complete organic, inorganic, and radioisotope analysis of liquid and solid samples brought to the 222-S by the Hanford Site customers. The present programs at the laboratory include: testing waste compatibility and physical characteristics to support tank to tank

transfers, performing corrosion rate studies and chemical testing to support tank corrosion inhibition, providing input to the engineering specifications for each of the 242-A Evaporator campaigns, studying the physical and chemical characteristics of waste necessary to enable waste retrievals and tank closures, and Vadose Zone Program support.