the operation, cleanup, and/or closure of these facilities and areas are the subject of other cleanup decision documents. However, these wastes are discussed in the cumulative impacts section (Section 5.14) of this HSW EIS.

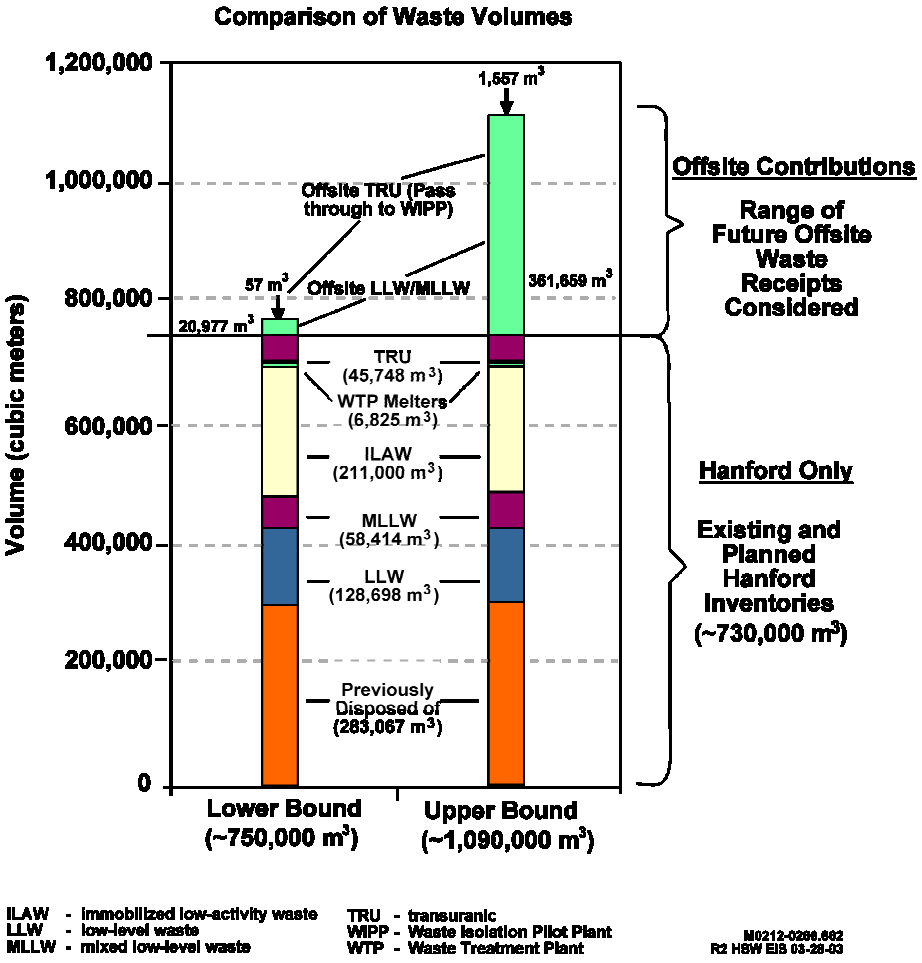

Figure S.6. Range of Waste Volumes Considered in the HSW EIS

S.5 Waste Management Activities and Facilities

In 1999, we developed a land-use plan based on the *Final Hanford Comprehensive Land-Use Plan EIS* (DOE 1999). This plan divided the site into five geographical areas: the Wahluke Slope, the Columbia River Corridor, the Central Plateau, the Fitzner/Eberhardt Arid Lands Ecology Reserve, and other areas (Figure S.7). The Comprehensive Land-Use Plan EIS Record of Decision (64 FR 61615) designates the Central Plateau as an Industrial-Exclusive zone, specifically for operating waste management and similar industrial facilities.

The Solid Waste Program activities at Hanford (located on the Central Plateau) include storage, treatment, and disposal of LLW and MLLW, as well as storage and processing of TRU waste and disposal of ILAW and melters from the tank waste treatment plant (currently under construction). To

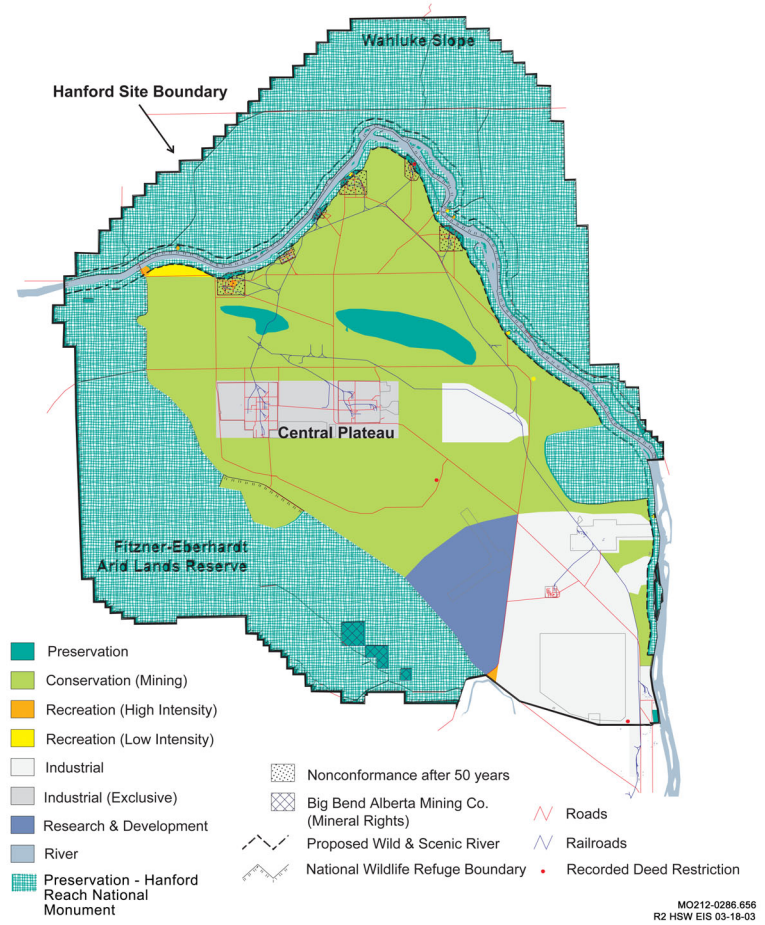

Figure S.7. Hanford's Land-Use Plan

fully understand the scope of this HSW EIS, it is important to understand the pieces of this complex program. Figure S.8 has been prepared to illustrate approximately where on Hanford's Central Plateau current and proposed treatment, storage, and disposal facilities are located.

The Hanford Solid Waste Program has three major functions: treatment, storage, and disposal of radioactive and chemically hazardous radioactive mixed waste. Solid radioactive waste from onsite and offsite generators is **stored** until it can be transferred to an appropriate treatment or disposal facility. **Treatment** of solid radioactive wastes may include size reduction, stabilization, encapsulation, and/or destruction or neutralization of non-radioactive waste. We also often use the term treatment to encompass the concepts of waste characterization, certification, and processing. Solid waste **disposal** facilities at Hanford currently accept LLW and MLLW, and, in the future would also accept ILAW and tank waste treatment plant melters. TRU waste will continue to be processed and stored until it can be disposed of at the Waste Isolation Pilot Plant in New Mexico.

Solid Radioactive Waste Storage

Waste is often stored prior to treatment or disposal. The specific storage methods we use depend on the chemical, radioactive, and physical characteristics of the waste. We store the waste in both

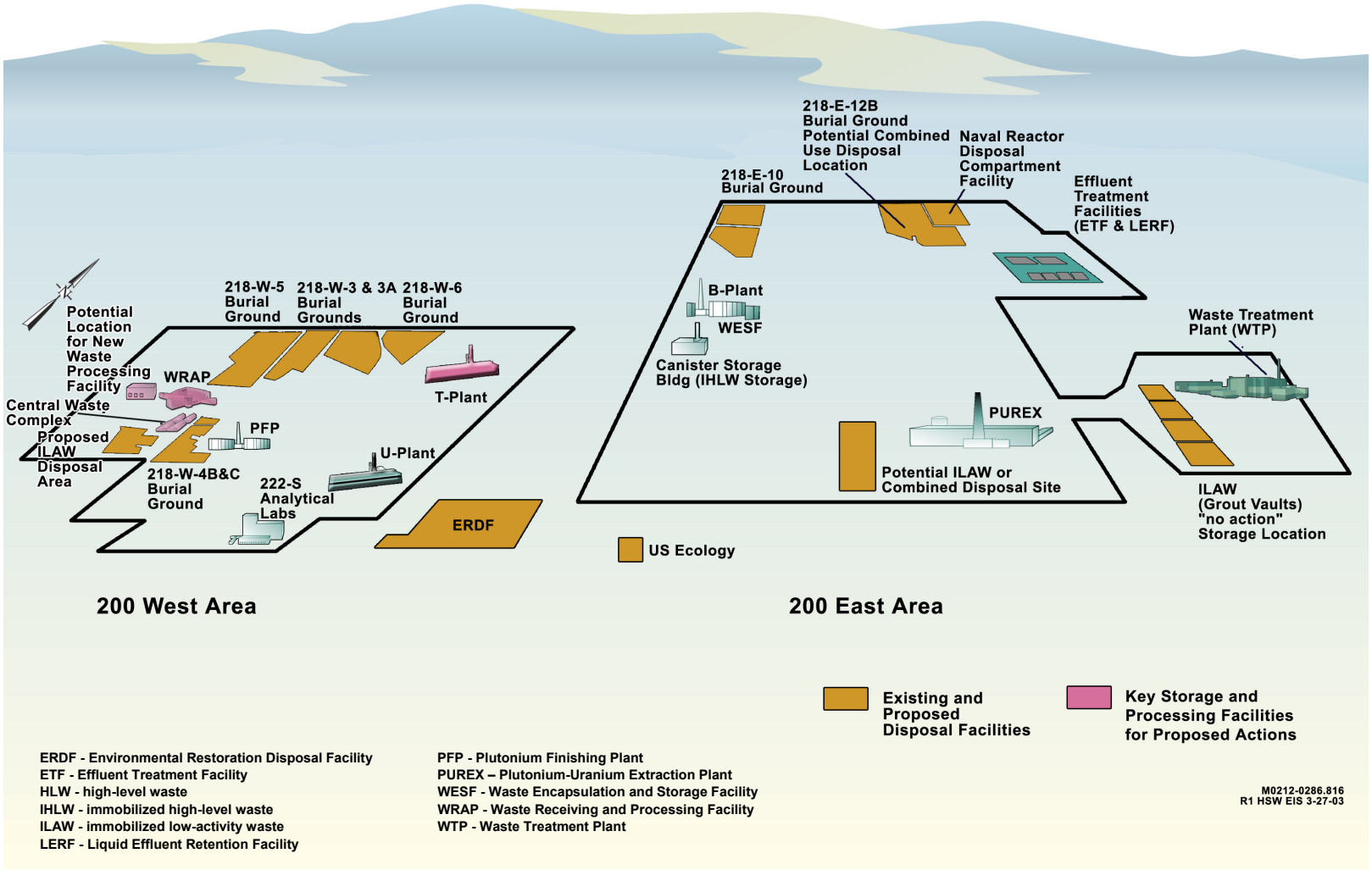

Figure S.8. Hanford's Waste Management Operations

aboveground and belowground facilities. Our primary waste storage facility is the Central Waste Complex (Figure S.9), a group of enclosed metal buildings on concrete pads. Some waste is also stored outdoors in the Central Waste Complex on concrete pads if the outer containers are corrosion-resistant and suitable for such storage.

The T Plant Complex and Waste Receiving and Processing Facility also have some waste storage capabilities. The T Plant Complex will be used to store K Basin sludge and potentially other remote-handled waste. We are also considering storage of ILAW in an existing lined vault in the 200 East Area.

Hanford has limited ability to treat MLLW, so we need facilities in which to store this waste until we obtain the capability to treat it. The primary storage facility we now use is the Central Waste Complex, which is constructed to meet RCRA and State environmental regulations for MLLW interim storage.

TRU waste was not defined as a separate waste type until 1970. Beginning in 1970, Hanford waste suspected of containing TRU waste radionuclides was stored in the Low Level Burial Grounds in trenches or in caissons (underground structures intended for storage of some higher-activity waste). This waste is referred to as "suspect TRU" waste because only some of the stored waste contains TRU waste radionuclides at concentrations that meet the current definition of TRU waste. Since 1985, TRU waste has more typically been stored in surface facilities, such as the Central Waste Complex or the T Plant Complex, until it can be disposed of at the Waste Isolation Pilot Plant.

Solid Radioactive Waste Treatment and Processing

Waste treatment is often the key to safe, efficient storage and disposal of waste. We use waste treatment processes to change the physical, chemical, or biological characteristics of waste, to reduce its volume, or to make it safer for disposal.

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Figure S.9. Aerial View of the Central Waste Complex

MLLW requires treatment to specific standards defined by RCRA and State regulations before it can be disposed of. Because we have limited capability to treat MLLW at Hanford, we have contracted with offsite RCRA-permitted private commercial facilities to begin treating limited quantities of stored contact-handled MLLW. These contracts provide for the stabilization of inorganic solids, encapsulation of debris waste, and thermal treatment. One of the challenges facing all DOE sites is that commercial treatment capabilities and capacities are limited. The 200 Area Effluent Treatment Facility treats our liquid wastes, including leachate collected from the MLLW trenches.

TRU waste may require processing before it can be sent to the Waste Isolation Pilot Plant for disposal. Processing may include activities such as repackaging, characterization, and certification that the waste meets the Waste Isolation Pilot Plant waste acceptance criteria. Under current plans, we will address contact-handled and remote-handled TRU wastes differently. Contact-handled newly generated and retrievably stored TRU waste would be sent to Hanford's Waste Receiving and Processing Facility for processing and certification. Remote-handled TRU waste would be stored at Hanford until we develop processing and certification capabilities. We anticipate that the Waste Isolation Pilot Plant will have its remote-handled waste acceptance criteria and infrastructure in place to begin receiving such waste in approximately the 2005 timeframe.

Treatment is not required for most kinds of LLW. However, we treat some LLW to meet specific waste acceptance criteria. One type of LLW, called "Category 3 LLW," does require grouting waste in the trench or placing it in high-integrity containers.

Solid Radioactive Waste Disposal

The final step in the waste management process is disposal. Some types of waste can be disposed of safely in existing facilities using conventional methods, such as shallow-land burial. However, that method is objectionable to some commenters. We are considering moving exclusively to burial of LLW and MLLW in lined disposal facilities with leachate collection systems. We now dispose of LLW and treated MLLW in Hanford's Low Level Burial Grounds and are considering disposal of ILAW and tank waste treatment plant melters someplace onsite. The decision on specific location would be supported by the analyses in this EIS. We will continue to ship TRU waste offsite to the Waste Isolation Pilot Plant for disposal and plan to ship spent nuclear fuel and HLW from the underground storage tanks to Yucca Mountain for disposal.

The Low Level Burial Grounds have formed the foundation of Hanford's Solid Waste Program. Each burial ground consists of a series of trenches on the Central Plateau. There are six Low Level Burial Grounds in the 200 West Area and two in the 200 East Area. Figure S.10 illustrates disposal of LLW within Hanford's Low Level Burial Grounds.

While most Low Level Burial Grounds contain LLW, one Low Level Burial Ground in the 200 West Area contains two trenches permitted under RCRA and State regulations for disposal of MLLW. The MLLW trenches (Figure S.11) are constructed with a low-permeability liner and a system for collecting water that drains through the waste disposal area. The collected liquids, referred to as leachate, are shipped to the Effluent Treatment Facility and converted to a solid form suitable for disposal.

Figure S.10. Hanford's Low Level Burial Grounds

The Environmental Restoration Disposal Facility is located in the center of the Hanford Site between the 200 East and 200 West Areas. It is a RCRA-compliant large-scale landfill, authorized by the U.S. Environmental Protection Agency (EPA) under CERCLA. The facility is designed to receive and isolate LLW and MLLW generated from Hanford's environmental restoration activities (which primarily involve digging up and removing contaminated soil and infrastructure along the Columbia River). The Environmental Restoration Disposal Facility currently has four disposal cells and will be expanded further. The cells are lined and have a leachate collection system. This HSW EIS analyzes whether we should use the Environmental Restoration Disposal Facility location not only for environmental restoration waste, but other wastes as well (such as LLW, MLLW, and ILAW).

TRU waste is disposed of at the Waste Isolation Pilot Plant in New Mexico, the DOE underground repository for TRU waste. We began shipping TRU waste from Hanford to the Waste Isolation Pilot Plant in the summer of 2000, made several more shipments through 2002, and intend to dramatically increase Hanford TRU waste exports beginning in 2003 (Figure S.12). The disposal of TRU waste was evaluated in previous EISs and is not reconsidered in this EIS. We currently plan to dispose of both contact- and remote-handled TRU waste at the Waste Isolation Pilot Plant. Because the Waste Isolation Pilot Plant is not yet prepared to receive remote-handled TRU waste, we must temporarily store these

Figure S.11. Mixed Low-Level Waste Disposal Trench

Figure S.12. Packaging of TRU Waste for Shipment to WIPP

wastes at Hanford. We anticipate that the Waste Isolation Pilot Plant will have its remote-handled waste acceptance criteria and infrastructure in place to begin receiving such waste in approximately the 2005 timeframe.

Solid Radioactive Waste Transportation and Emergency Preparedness

About 300 million hazardous material[(a)] shipments (DOT 1998) occur in the United States every year. About 3 million (1 percent) of these involve shipments of radioactive material.[(b)] Currently, less than one percent of these 3 million radioactive material shipments are DOE shipments (NEI 2003).

The annual number of DOE radioactive material shipments is expected to increase over the next several years. However, the number of DOE radioactive material shipments will continue to be small in comparison to the total number of hazardous material shipments.

Solid radioactive waste is currently transported to and from Hanford by truck. We are considering using rail as an alternative method of transporting waste. Shipment of waste by rail may require constructing a spur or developing an intermodal transfer capability. If rail shipment is proposed it will be evaluated under future National Environmental Policy Act reviews.

While the U.S. Department of Transportation regulates shipment of hazardous materials (including radioactive materials), the Nuclear Regulatory Commission and DOE have additional regulations that address transportation of radioactive materials. In addition, local, State, tribal, and federal governments and carriers all have responsibility for preparing for and responding to transportation emergencies. Local or tribal personnel typically are the first responders and incident commanders for offsite transportation accidents. Although many local jurisdictions have special hazardous material response units, most seek State or federal technical assistance during radiological incidents.

S.6 Description of Alternatives

There are both action alternatives and a No Action Alternative in this HSW EIS. Each action alternative is defined by a general waste management activity (storage, treatment, or disposal); a specific waste stream; and a specific design, location, or option for the proposed action. For example, an alternative for treatment of MLLW would be to use offsite contracts for thermal treatment of the contact-handled mixed waste stream; or an alternative for disposal of ILAW might be to use a combined-use modular facility located in the 200 East Area. We considered a number of other alternatives, but did not evaluate them in detail because DOE determined that they are not reasonable alternatives.

Under all alternatives evaluated in this HSW EIS, some waste storage operations (as opposed to waste disposal operations discussed later) would continue at the Central Waste Complex and within the Low

(a) For the purposes of this transportation discussion, hazardous materials include items that present chemical hazards, radioactive hazards, and physical hazards (e.g., compressed gases).
(b) Radioactive materials include radioactive waste.