

Background on Development of Alternatives

The proposed action could result in changes to DOE's tank waste management program with respect to waste storage, waste retrieval, waste treatment, waste disposal, and tank farm closure at the Hanford Site. These key variables were evaluated to develop the range of reasonable alternatives identified below. In terms of waste storage, the EIS would analyze the use of the existing waste storage systems and evaluate the need for new storage systems. With regard to waste retrieval, DOE would evaluate a range of timing of retrieval and the technologies used, from past-practice sluicing as analyzed in the TWRS EIS to dry retrieval. Treatment and disposal alternatives for portions of the SST and DST waste would be evaluated based on some volume of the waste being classified as LLW or TRU waste pursuant to DOE Order 435.1. The waste identified as LLW could be treated and packaged for onsite or offsite disposal. The waste identified as TRU waste could be treated and packaged for transport and disposal at the Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico.

Unless a specific alternative identifies a waste type as LLW and/or TRU waste, the waste would be analyzed as HLW or LAW for the purposes of treatment and disposal. The alternatives for waste treatment include: 1) Treating all wastes via an enhanced WTP as vitrified waste; 2) treating HLW via the WTP and LAW via WTP or supplemental treatments; or 3) treating the waste as stated in #2 and/or supplemental treatment for LLW and TRU waste in the tank farms, in which case some waste would not be processed through the WTP. The options for waste disposal include disposing of the waste onsite using existing or new facilities, disposing of the waste at offsite government facilities (e.g., a geological repository, WIPP, DOE's Nevada Test Site) or using onsite and offsite commercial facilities (such as Envirocare in Utah) for disposal of Hanford waste. Alternatives for tank closure would be evaluated based on broad closure strategies including clean closure (removal of the tanks, ancillary facilities, and contaminated soils) and landfill closure (residual waste left in place and post closure care).

Proposed Alternatives

Each of the six alternatives contains a waste storage, retrieval, treatment and disposal component. Alternatives 3 through 6 also include a tank closure component. The main differences among the alternatives include the

extent of waste retrieval, the waste treatment and disposal approach, the tank closure approach, and timing to complete the necessary activities.

1. No Action

The Council on Environmental Quality NEPA Regulations (40 CFR parts 1500–1508), and the DOE NEPA Regulations (10 CFR part 1021) require analysis of a No Action alternative.

Storage: DOE would continue current waste management operations using existing storage facilities. Immobilized (i.e., vitrified) High-level Waste (IHLW) would be stored onsite pending disposal at a geologic repository. Once WTP operations are completed, all tank waste system storage (SSTs and DSTs), treatment, and disposal facilities at the Hanford Site would be placed in a stand-by operational condition.

Retrieval: Waste would be retrieved to the extent required to provide waste feed to the WTP using currently available liquid-based retrieval and leak detection technologies (approximately 25–50% of the total waste volume would be retrieved).

Treatment: No new vitrification or treatment capacity beyond that anticipated in the WTP would be deployed. However, the WTP would be modified within parameters provided for in the TWRS ROD to increase throughput. The WTP would continue to operate until its design life ends in 2046.

Disposal: The residual waste in tanks and the waste remaining in tanks that had not been retrieved (approximately 50 to 75% of the total waste volume) would remain in the tank farm indefinitely. Immobilized Low Activity Waste (ILAW) (by vitrification) would be disposed of onsite. IHLW would be stored onsite pending disposal at a geological repository. For purposes of analysis, administrative control of the tank farms would end following a 100-year period.

Closure: Tank closure would not be addressed; under this alternative, some waste would be left in the tanks indefinitely.

2. Implement the 1997 Record of Decision (With Modifications)

This alternative would continue implementation of decisions made in the TWRS ROD and as considered in three supplement analyses completed through 2001. (See "RELATED NEPA DECISIONS AND DOCUMENTS" below for references.) Under these supplement analyses, DOE concluded that changes in the design and operation of the WTP, as defined in its contracts and program plans, were within the bounds of

analysis of environmental impacts in the TWRS EIS. Among the key modifications that would occur under this alternative are: (1) Implementing the initial phase of waste treatment with one ILAW facility rather than two, (2) expanding the design capacity of the ILAW facility from 20 metric tons of glass per day to 30 metric tons of glass per day, and (3) extending the design life of the Phase I facilities from 10 years to 40 years. Under this alternative, no new actions would be taken beyond those previously described in the TWRS ROD and supplement analyses regarding the tank waste.

Storage: DOE would continue current waste management operations using existing storage facilities as described under No Action.

Retrieval: Waste would be retrieved to the Tri-Party Agreement goal (i.e., residual waste would not exceed 360 cubic feet for 100 series tanks or 36 cubic feet for 200 series tanks, which would correspond to 99% retrieval) using currently available liquid-based retrieval and leak detection systems.

Treatment: The existing WTP would be modified to enhance throughput and supplemented with additional vitrification capacity, as needed, to complete waste treatment by 2028. Under this alternative, all waste retrieved from tanks (approximately 99%) would be vitrified.

Disposal: Retrieved and treated waste would be disposed of onsite (ILAW) or stored onsite pending disposal at a geologic repository (IHLW). Once operations are completed, all tank waste system waste storage, treatment, and disposal facilities at the Hanford Site would be placed in a stand-by operational condition. The residual waste would remain in the tank farm indefinitely. For purposes of analysis, DOE assumes under this alternative that it would cease to maintain administrative control after a 100-year period.

Closure: Tank closure would not be addressed under this alternative. Some waste would be left in the tanks indefinitely.

3.0 Landfill Closure of Tank Farms/ Onsite and Offsite Waste Disposal

Storage: DOE would continue current waste management operations using existing storage facilities.

Retrieval: Waste would be retrieved to the Tri-Party Agreement goal (i.e., residual waste would not exceed 360 cubic feet for 100 series tanks or 36 cubic feet for 200 series tanks, which would correspond to 99% retrieval) using currently available liquid-based retrieval and leak detection systems.