CHAPTER 1
INTRODUCTION

This chapter introduces the U.S. Department of Energy's proposal for onsite management and offsite transportation of radioactive wastes. This chapter describes the types of wastes that are present at the site, the site facilities, and the alternatives that the Department has analyzed to meet certain of its obligations under the West Valley Demonstration Project Act. This chapter includes brief discussions of other National Environmental Policy Act documents that are relevant to the proposed action and alternatives analyzed in this EIS.

As part of its ongoing West Valley Demonstration Project (WVDP), and in accordance with the West Valley Demonstration Project Act and previous U.S. Department of Energy (DOE or the Department) decisions, DOE proposes to:

- Continue onsite management of high-level radioactive waste (HLW) until it can be shipped for disposal to a geologic repository (assumed for the purposes of analysis to be the proposed Yucca Mountain Repository near Las Vegas, Nevada),
- Ship low-level radioactive waste (LLW) and mixed (radioactive and hazardous) LLW offsite for disposal at DOE or other disposal sites,
- Ship transuranic (TRU) radioactive waste to the Waste Isolation Pilot Plant (WIPP), and
- Actively manage the waste storage tanks.

The waste volumes that are the subject of evaluation in this environmental impact statement (EIS) include only those wastes that are either currently in storage or that would be generated over the next 10 years from ongoing operations and decontamination activities. This EIS analyzes activities that would occur during a 10-year period.

The proposed actions and alternatives assessed in this EIS are intended to address DOE's responsibilities under the West Valley Demonstration Project Act and are consistent with the terms of the Stipulation of Compromise reached with the Coalition on West Valley Nuclear Wastes and Radioactive Waste Campaign (Appendix A). Implementation of these actions would allow DOE to make progress in meeting its obligations under the Act that pertain to waste management, and they are consistent with programmatic decisions DOE has made (see Sections 1.7.1.2 and 1.7.1.4) regarding the waste types addressed in this EIS. Those decisions and their respective EISs, as they apply to the WVDP, provide for shipping wastes from the West Valley site to other regional or centralized DOE sites for treatment, storage, and disposal, as appropriate. The Department has analyzed the potential environmental impacts associated with this proposal and reasonable alternatives in accordance with the National Environmental Policy Act (NEPA) and applicable NEPA regulations promulgated by the Council on Environmental Quality (Title 40 of the Code of Federal Regulations [CFR] Parts 1500-1508) and DOE (10 CFR Part 1021).

The scope of this EIS is a departure from that which was announced in a March 2001 Notice of Intent (NOI) (66 Fed. Reg. 16447 (2001)). DOE modified the scope of the EIS as a result of public comments received during scoping and the Department's further evaluation of activities that might be required, and independently justified, before final decisions are made on decommissioning and/or long-term stewardship. The scope is now limited to onsite waste management and offsite waste transportation

activities, and no longer includes decontamination activities as proposed in the NOI. This change in scope is discussed further in Section 1.2, NEPA Compliance Strategy.

1.1 BACKGROUND

This section describes the Western New York Nuclear Service Center (the Center) and its associated facilities. Also discussed are the activities for which DOE is responsible under the West Valley Demonstration Project Act.

1.1.1 Western New York Nuclear Service Center

The Center comprises 14 square kilometers (5 square miles) in West Valley, New York, and is located in the town of Ashford, approximately 50 kilometers (30 miles) southeast of Buffalo, New York. It is the site of the world's first commercial nuclear fuel reprocessing plant and was the only one to have operated in the United States. Figure 1-1 shows the locations of the Center and the WVDP Site within the State of New York (USGS 1979).

The Center operated under a license issued by the Atomic Energy Commission (now the Nuclear Regulatory Commission [NRC]) in 1966 to Nuclear Fuel Services, Inc. and the New York State Atomic and Space Development Authority, now known as the New York State Energy and Development Authority (NYSERDA) (AEC 1966). Under the Energy Reorganization Act of 1974, the regulatory functions of the Atomic Energy Commission were given to the NRC, which became the licensing authority for the Center's operation.

During reprocessing, spent nuclear fuel from commercial nuclear power plants and DOE sites was chopped, dissolved, and processed by a solvent extraction system to recover uranium and plutonium. Fuel reprocessing ended in 1972 when the plant was shut down for modifications to increase its capacity, reduce occupational radiation exposure, and reduce radioactive effluents. At the time, Nuclear Fuel Services, the owner and operator of the reprocessing plant, expected that the modifications would take 2 years and $15 million to complete. However, between 1972 and 1976, there were major changes in regulatory requirements, including more stringent seismic and tornado siting criteria for nuclear facilities and more extensive regulations for radioactive waste management, radiation protection, and nuclear material safeguards. In 1976, Nuclear Fuel Services judged that over $600 million would be required to modify the facility to increase its capacity and to comply with these changes in regulatory standards (DOE 1978).

As a result, the company announced its decision to withdraw from the nuclear fuel reprocessing business and exercise its contractual right to yield responsibility for the Center to NYSERDA. Nuclear Fuel Services withdrew from the Center without removing any of the in-process nuclear wastes. NYSERDA now holds title to and manages the Center on behalf of the people of the State of New York.

In 1978, Congress passed the Department of Energy Act (Pub. L. No. 95-238), which, among other things, directed DOE to conduct a study to evaluate possible federal operation or permanent federal ownership of the Center and use of the Center for other purposes. DOE issued the *Western New York Nuclear Service Center Study: Companion Report* (DOE 1978) to provide historical perspective and to identify options for the future of the Center. The Companion Report did not attempt to select an option for the future of the Center, although it included recommendations that development of technology to immobilize liquid HLW be started immediately. Congress subsequently passed the West Valley Demonstration Project Act (Pub. L. No. 96-368; 42 U.S.C. 2021a) in 1980.

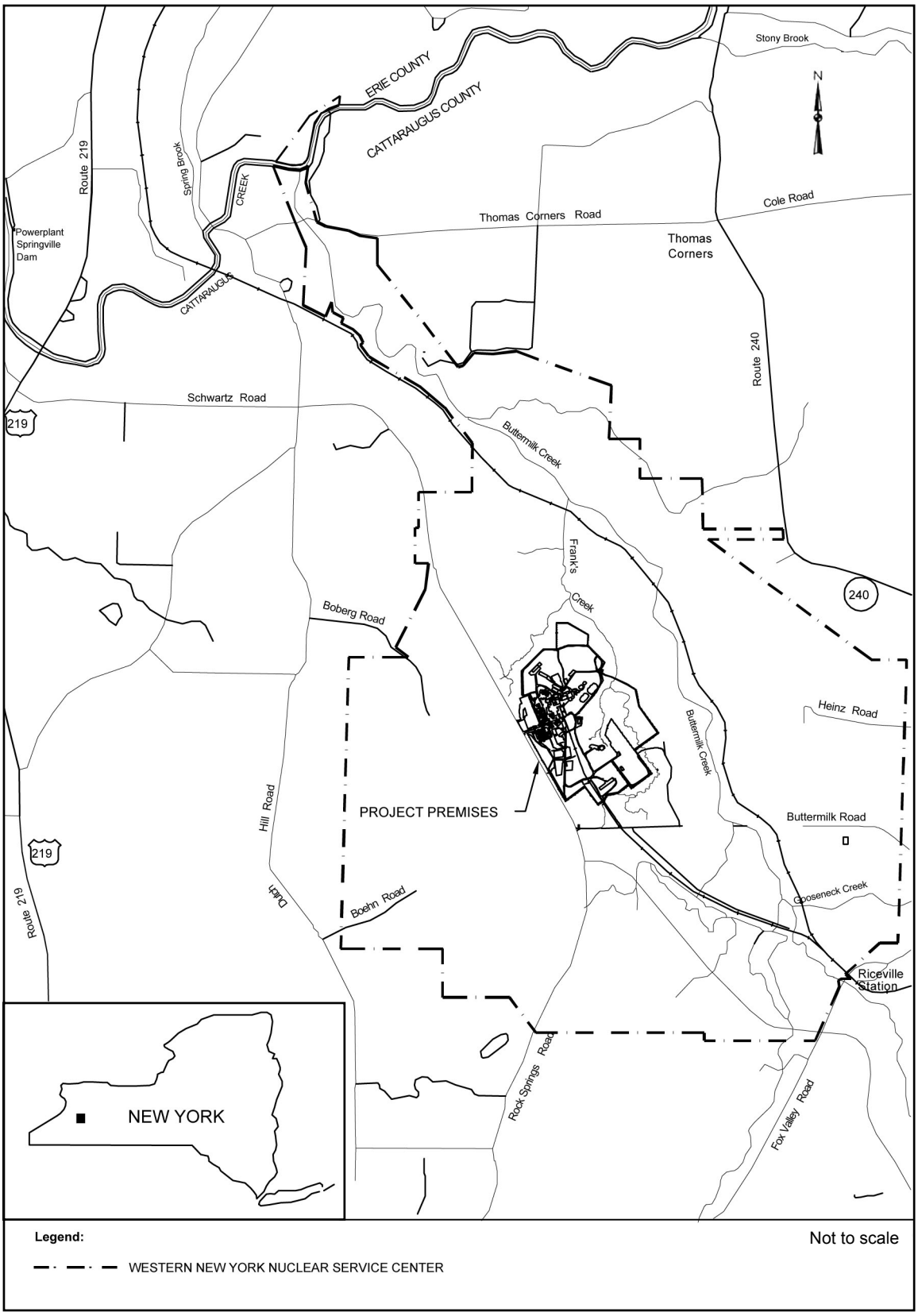

Figure 1-1. Location of the West Valley Demonstration Project

1.1.2 The West Valley Demonstration Project Act

The West Valley Demonstration Project Act requires DOE to demonstrate that the liquid HLW from reprocessing can be safely managed by solidifying it at the Center and transporting it to a geologic repository for permanent disposal. Specifically, Section 2(a) of the Act directs DOE to:

1. Solidify HLW by vitrification or such other technology that DOE deems effective,

2. Develop containers suitable for the permanent disposal of the solidified HLW,

3. Transport the solidified HLW to an appropriate federal repository for permanent disposal,

4. Dispose of the LLW and TRU waste produced by the HLW solidification program,[1] and

5. Decontaminate and decommission the waste storage tanks and facilities used to store HLW, the facilities used for HLW solidification of the waste, and any material and hardware used in connection with the project in accordance with such requirements as the NRC may prescribe.

In the 20 years since the West Valley Demonstration Project Act was enacted, DOE has succeeded in treating 2.3 million liters (600,000 gallons) of HLW by vitrification (combining liquid HLW with borosilicate glass) and has developed stainless-steel canisters suitable for its permanent disposal (actions 1 and 2). The potential environmental impacts of these activities were addressed in the *Environmental Impact Statement, Long-Term Management of Liquid High-Level Radioactive Wastes Stored at the Western New York Nuclear Service Center, West Valley* (DOE 1982).

Implementing actions 3, 4, and 5 will require additional waste management and closure activities. This WVDP Waste Management EIS evaluates alternatives for meeting DOE's onsite waste management and offsite transportation and disposal responsibilities under the Act. As discussed in more detail in Section 1.2, the future *Decommissioning and/or Long-Term Stewardship at the West Valley Demonstration Project and Western New York Nuclear Service Center EIS,* hereafter referred to as the Decommissioning and/or Long-Term Stewardship EIS, will address decommissioning and closure alternatives.

1.1.3 Site Facilities

Several terms are used in this EIS to describe areas, activities, and responsibilities at the Center. These were defined in the *Cooperative Agreement between United States Department of Energy and New York State Energy Research and Development Authority on the Western New York Nuclear Service Center at West Valley, New York, October 1, 1980* (DOE 1980b), amended September 18, 1981. The Cooperative Agreement terms, as used in this EIS, are:

[1] TRU waste is currently defined by NRC and DOE as waste containing more than 100 nanocuries of alpha-emitting isotopes, with half-lives greater than 20 years, per gram of waste. However, the West Valley Demonstration Project Act defined TRU waste as "material contaminated with radioactive elements that have an atomic number greater than 92, including neptunium, plutonium, americium, and curium, and that are in concentrations greater than *10* (emphasis added) nanocuries per gram, or in such other concentrations as the [NRC] may prescribe to protect the public health and safety." [In the event wastes are disposed of offsite, the applicable definitions at the disposal site will be used.]

- ***The Center*** – The 14-square-kilometer (5-square-mile) Western New York Nuclear Service Center in West Valley, New York.

- ***The Project or the WVDP*** – All activities undertaken in carrying out the solidification of the liquid HLW at the Center, including (1) solidification of liquid HLW; (2) preparation of the Project Premises and Project Facilities to accommodate action 1; (3) development of containers suitable for the permanent disposal of the HLW solidified at the Center; (4) transportation; (5) decontamination of facilities used for the Project and decommissioning of the tanks, other facilities at the Center in which the solidified wastes were stored, all Project Facilities, and other facilities, material, and hardware used in carrying out the solidification of the HLW at the Center; (6) disposal of LLW, mixed LLW, and TRU waste; and (7) all other activities necessary to carry out the foregoing.

- ***Project Premises*** – An area of approximately 0.8 square kilometer (200 acres) within the Western New York Nuclear Service Center made available to DOE for carrying out the WVDP. The Project Premises include the Project Facilities and the 0.02-square-kilometer (5-acre) NRC-Licensed Disposal Area (NDA).

- ***Project Facilities*** – The facilities that NYSERDA made available to DOE to be used in the solidification of the HLW at the Center.

- ***Retained Premises*** – The 13-square-kilometer (3,300-acre) portion of the Center, not including the Project Premises, retained by NYSERDA. The Retained Premises include the 0.06-square-kilometer (15-acre) State-licensed Disposal Area (SDA) adjacent to the NDA.

The Project Premises, SDA, and NDA are shown in Figure 1-2 (WVNS 2000).

1.1.3.1 Management Responsibilities at the Center

DOE and NYSERDA have individual and shared responsibilities for nuclear wastes, permits, licenses, environmental management, and stewardship activities at the Center. These responsibilities are conferred on DOE and NYSERDA by their respective statutory authorities and the compliance requirements of applicable federal and state regulatory programs. In general, DOE is responsible for completing the actions at the Center directed by the West Valley Demonstration Project Act, including transportation of nuclear wastes to appropriate facilities for disposal and decontamination and decommissioning facilities used in connection with the WVDP in accordance with requirements prescribed by the NRC. NYSERDA is responsible for the SDA and portions of the Center that would normally be subject to NRC commercial nuclear facility regulations.

New York State Environmental Quality Review Act (SEQRA)

SEQRA establishes the State of New York's requirements for reviewing state actions with potential environmental impacts. The statute is implemented in regulations promulgated by the New York State Department of Environmental Conservation at Section 6, Part 617, of the New York Code Rules and Regulations. SEQRA requires that all state agencies determine whether the actions they directly undertake, fund, or approve might have a significant effect on the environment. If it is determined that the action might have a significant effect on the environment, the agency must prepare or request an EIS. NYSERDA closure or long-term management activities at the Center are subject to the SEQRA review process. Because NYSERDA has no jurisdiction over the waste management activities that are the subject of this EIS, SEQRA provisions requiring the State to prepare an EIS do not apply in these circumstances.

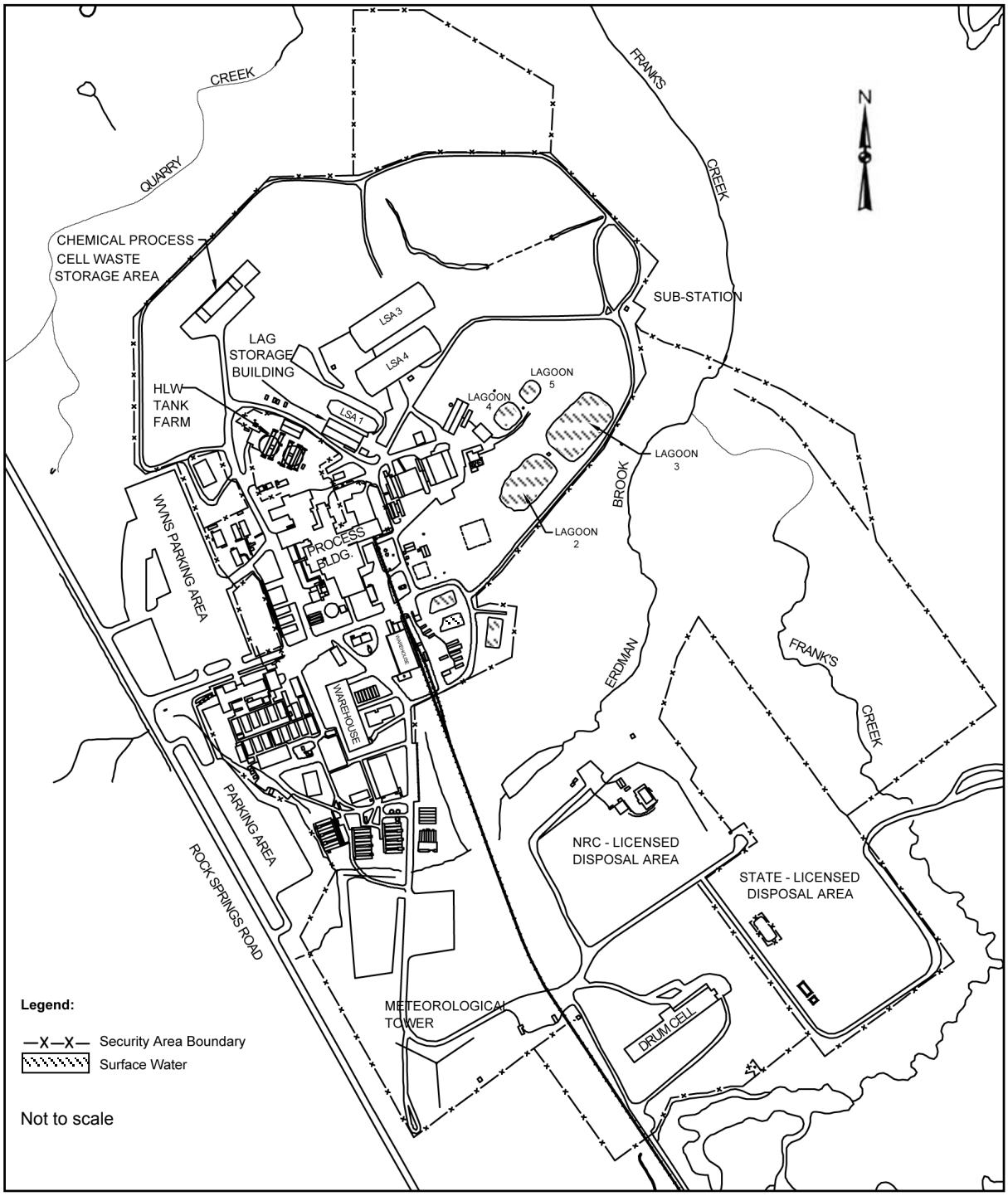

Figure 1-2. Project Premises, NDA, and SDA

Article III of the Cooperative Agreement between DOE and NYSERDA further defined their respective responsibilities to comply with the West Valley Demonstration Project Act. Generally, DOE has sole responsibility for carrying out the Project. This includes (1) exclusive DOE possession of the Project Premises and the Project Facilities used in carrying out the WVDP, and (2) responsibility for protection of public health and safety with respect to the Project Premises and Project Facilities for the duration of the WVDP. Current NYSERDA responsibilities under the Cooperative Agreement include (1) providing services to DOE in connection with the WVDP, and (2) participating in carrying out the WVDP as provided for in the Cooperative Agreement (DOE 1980b). NYSERDA is also responsible for making a timely application for an NRC license as may be required for NYSERDA to reassume possession of the Project Premises and Project Facilities (Article VI).

NYSERDA is not a joint lead agency for this WVDP Waste Management EIS, but it will participate as appropriate under Section 6.03 of the Cooperative Agreement between DOE and NYSERDA on the Center at West Valley, New York (October 1, 1980, amended September 18, 1981). However, NYSERDA will work with DOE, as a joint lead agency, in the preparation of the Decommissioning and/or Long-Term Stewardship EIS for the WVDP and the Center (see Section 1.2, NEPA Compliance Strategy).

The NRC also has limited responsibilities for activities at the Center under the West Valley Demonstration Project Act, under a related Memorandum of Understanding (MOU) with DOE (46 Fed. Reg. 56960 (1981)), and as the successor to the agency that issued the operating license to Nuclear Fuel Services, Inc. and NYSERDA (AEC 1966). The Act provides for informal NRC review and consultation in DOE plans and actions. The Act also directs NRC to prescribe decontamination and decommissioning criteria for the Project. The DOE-NRC MOU established the arrangements for NRC review and consultation, NRC review responsibilities, and NRC monitoring of WVDP activities (53 Fed. Reg. 53054 (1988)). Nuclear Fuel Services' operating license was terminated in 1982 after DOE assumed exclusive possession of the Project Premises and Project Facilities (Rouse 1982), and the NRC will again be involved in licensing the Project Premises and Project Facilities upon completion of the WVDP (DOE 1980b).

1.1.3.2 Project Facilities and Areas

The Project Facilities consist of all buildings, facilities, improvements, equipment, and materials located on the Project Premises. This EIS evaluates continued onsite management and offsite shipping of the LLW, HLW, and TRU waste for which DOE is responsible that is currently stored onsite in the four facilities or areas.

The Project Facilities and areas storing the wastes evaluated in this EIS and shown in Figure 1-2 are:

- ***Process Building***, which includes approximately 70 rooms and cells that comprised the original NRC-licensed spent nuclear fuel reprocessing operations (one of the cells—the Chemical Process Cell—now serves as the storage facility for the vitrified HLW canisters produced by the Project);

- ***Tank Farm***, which includes the underground waste storage tanks and supporting systems for maintenance, surveillance, and waste transfer of the tank waste to the Vitrification Facility.

- ***Waste Storage Areas***, which include several facilities such as the Lag Storage Building (LSB), Lag Storage Areas (LSA) 1, 3, and 4, and the Chemical Process Cell Waste Storage Area, are used to store and manage the radioactive wastes generated from WVDP activities; and

- ***Radwaste Treatment System Drum Cell*** (Drum Cell), which stores cement-filled drums of stabilized LLW produced by the Cement Solidification System.

The NOI to prepare this EIS (issued in March 2001) indicated that the disposition of large containers of soil estimated to have very low levels of radioactive contamination would also be addressed. However, the soils in these containers were shipped offsite for disposal in the summer of 2001, pursuant to earlier NEPA documentation (categorical exclusion ECL 96-01).

1.2 NEPA COMPLIANCE STRATEGY

This section describes DOE's past and present NEPA compliance activities, and the NEPA analysis and documentation the Department expects to undertake in the future. It also addresses why DOE has modified the scope of this EIS from that which was announced in the March 2001 NOI. The scope of this EIS is now limited to onsite and offsite waste management actions and only those decontamination actions previously addressed under NEPA (DOE 1982).

1.2.1 Litigation and NEPA Compliance History

In the early 1980s, DOE prepared an environmental assessment (EA) on the proposed disposal of certain radioactive wastes in two engineered disposal areas in addition to the NDA and SDA that would have been developed near and within the NDA. In 1986, the Coalition on West Valley Nuclear Wastes and Radioactive Waste Campaign filed a lawsuit challenging the EA and subsequent finding of no significant impact (FONSI) prepared by DOE (1986). DOE maintained that the EA and FONSI complied with all aspects of NEPA, but it entered into a Stipulation of Compromise with the Coalition in order to settle the litigation (DOJ 1987). This agreement imposed specific obligations on DOE regarding the scope and content of EIS documentation for Project Completion and Center Closure. In particular, DOE agreed that it would evaluate the disposal of Class A, B, and C LLW generated as a result of activities in a Completion and Closure EIS (see Section 1.5 for definitions of Class A, B, and C LLW). DOE also agreed that this EIS would begin by 1988 and proceed without undue delay and in accordance with applicable law.

DOE began preparation of the *Draft Environmental Impact Statement for Completion of the West Valley Demonstration Project and Closure or Long-Term Management of Facilities at the Western New York Nuclear Service Center* (DOE 1996a), also referred to as the 1996 Completion and Closure Draft EIS, in 1988 with the issuance of a NOI to Prepare an EIS (53 Fed. Reg. 53052 (1988)). DOE and NYSERDA were joint lead agencies for the preparation of the EIS. The scope of that EIS included, among other things, the management of Class A, B, and C LLW and TRU waste that is either stored onsite or that would be generated as a result of site closure activities. The Completion and Closure Draft EIS was issued in January 1996 for a 6-month comment period in accordance with the Stipulation of Compromise.

The 1996 Draft EIS evaluated the environmental impacts of alternatives considered for completing the WVDP and closure or long-term management of facilities at the Center, but it did not specify a preferred alternative. Many of the public comments submitted on the 1996 Draft EIS felt that DOE and NYSERDA should have indicated the preferred alternative in the Draft EIS. Despite long negotiations, DOE and NYSERDA have been unable to reach an agreement on a preferred future course of action for the closure of the Center (GAO 2001).

To allow the Department to continue to meet its obligations under the West Valley Demonstration Project Act, DOE is preparing two EISs: this *West Valley Demonstration Project Waste Management EIS* and the *Decommissioning and/or Long-Term Stewardship at the West Valley Demonstration Project and Western New York Nuclear Service Center EIS.*

1.2.2 WVDP Waste Management EIS

In March 2001, DOE published its strategy for completing the 1996 Completion and Closure Draft EIS and an NOI to prepare a Decontamination and Waste Management EIS (66 Fed. Reg. 16447 (2001)). This EIS was originally scoped as a revision of the 1996 Completion and Closure Draft EIS (DOE 1996a).

In the NOI, DOE published for comment its position that its decisionmaking process would be facilitated by preparing and issuing for public comment a Revised Draft EIS that focused on DOE's actions to decontaminate the Project Facilities and manage WVDP wastes controlled by DOE under the West Valley Demonstration Project Act. As part of its strategy to address the full scope of the 1996 Completion and Closure Draft EIS, DOE also stated in the NOI its intention to prepare an EIS with NYSERDA subsequent to this one in order to address the decommissioning and/or long-term stewardship of the WVDP and the Western New York Nuclear Service Center. An Advance NOI was issued on November 6, 2001 (66 Fed. Reg. 56090 (2001)), formalizing DOE's commitment to begin work on the Decommissioning and/or Long-term Stewardship EIS. An NOI was published on March 13, 2003 (68 Fed. Reg. 12044 (2003)).

During scoping for the Decontamination and Waste Management EIS, commentors noted that applicable NEPA regulations require an agency to consider connected actions together in the same EIS (40 CFR 1508.25(a)), and they argued that the decontamination and waste management actions proposed in the NOI were "connected" to the decommissioning and/or long-term stewardship actions that would be addressed in the second EIS. After reconsideration, DOE has limited the scope of this EIS to onsite and offsite waste management actions, and only those decontamination actions previously addressed under NEPA (DOE 1982).

The waste management actions proposed in this EIS would not prejudge the range of alternatives to be considered or the decisions to be made for eventual decommissioning and/or long-term stewardship of the WVDP. Rather, these actions would allow DOE to make progress in meeting its obligations under the West Valley Demonstration Project Act that pertain to waste management (see Appendix A), and they are consistent with programmatic decisions DOE has made (see Sections 1.7.1.2 and 1.7.1.4) regarding the waste types addressed in this EIS. Those decisions and their respective EISs, as they apply to the WVDP, provide for shipping wastes from the West Valley site to other regional or centralized DOE sites for treatment, storage, and disposal, as appropriate. Additionally, there would be no irreversible or irretrievable commitments of resources that would prejudice decommissioning decisions. The Decommissioning and/or Long-Term Stewardship at the West Valley Demonstration Project and Western New York Nuclear Service Center EIS will be the continuation of the Completion and Closure Draft EIS begun in 1988 and issued in draft form in 1996.

1.2.3 Decommissioning and/or Long-Term Stewardship EIS

As a result of the change in scope and title of this WVDP Waste Management EIS, the *Decommissioning and/or Long-Term Stewardship at the West Valley Demonstration Project and Western New York Nuclear Service Center EIS* will be the continuation of the *Draft Environmental Impact Statement for Completion of the West Valley Demonstration Project and Closure or Long-Term Management of Facilities at the Western New York Nuclear Service Center* (DOE 1996a), and will be reissued in draft as DOE/EIS 0226-R. This revised strategy is not reflected in the Advance NOI issued on November 6, 2001 (66 Fed. Reg. 56090 (2001)), for the Decommissioning and/or Long-Term Stewardship EIS, but has been included in the NOI.

1.3 PURPOSE AND NEED FOR AGENCY ACTION

In accordance with the directives in the West Valley Demonstration Project Act, DOE is responsible for the facilities used in connection with the WVDP HLW vitrification effort and for disposal of the LLW, mixed LLW, HLW, and TRU waste produced by the WVDP HLW solidification program. To fulfill its responsibilities under the West Valley Demonstration Project Act, DOE needs to identify a disposal path for the wastes that are currently stored onsite and that will be generated in the future and to determine a management strategy for the existing waste storage tanks. This EIS focuses on DOE's responsibilities to dispose of wastes and continue to safely manage the waste storage tanks. Decommissioning and/or long-term stewardship decisions will be made under the Decommissioning and/or Long-Term Stewardship EIS.

1.4 ALTERNATIVES

DOE's Proposed Action (that is, preferred alternative) in this EIS is to (1) continue onsite management of Project-generated waste controlled by DOE under the West Valley Demonstration Project Act until they can be sent to offsite disposal, (2) ship, over the next 10 years, all wastes with acceptable offsite disposal destinations, and (3) manage the emptied, ventilated HLW tanks until future decommissioning decisions are made.

This EIS analyzes continued onsite waste management and shipment of wastes to offsite disposal. To address the full range of reasonable alternatives, this EIS evaluates three alternatives:

- No Action Alternative – Continuation of Ongoing Waste Management Activities;
- Alternative A (Preferred Alternative) – Offsite Shipment of HLW, LLW, Mixed LLW, and TRU Wastes to Disposal and Ongoing Management of the Waste Storage Tanks; and
- Alternative B – Offsite Shipment of LLW and Mixed LLW to Disposal, Shipment of HLW and TRU Waste to Interim Storage, and Interim Stabilization of the Waste Storage Tanks.

These alternatives are described more fully in Chapter 2, Description of Alternatives; an overview of each is provided below.

Ongoing Operations

Under all alternatives, it is assumed that current levels of maintenance, surveillance, heating, ventilation, and other routine operations would continue to be required while the actions proposed under each alternative were performed. For this EIS, these actions are called *ongoing operations*. Although the impacts of these ongoing actions have been assessed in several previous NEPA documents and are characterized in the Annual Site Environmental Reports, the impacts on worker and public health of these ongoing operations have been included in this EIS using actual operational data from 1995 through 1999. Because ongoing operations would not vary among the proposed alternatives, the impacts from these actions would be the same across all alternatives.

Under the **No Action Alternative**, **Continuation of Ongoing Waste Management Activities,** waste management would include limited shipments of Class A LLW to offsite disposal and continued storage of the remaining Class A LLW, existing Class B and Class C LLW, mixed LLW, TRU waste, and HLW. These ongoing actions have been previously assessed in other NEPA documentation discussed in Section 1.7. Upon completion of ongoing efforts to eliminate all remaining liquids, the waste storage tanks and their surrounding vaults would continue to be ventilated to manage moisture levels as a corrosion prevention measure until decommissioning and/or long-term stewardship decisions are made based in part on the impact assessment provided by the WVDP Decommissioning and/or Long-Term Stewardship EIS.

Under **Alternative A, Offsite Shipment of HLW, LLW, Mixed LLW, and TRU Wastes to Disposal and Ongoing Management of the Waste Storage Tanks (Preferred Alternative)**, DOE would ship Class A, B and C LLW and mixed LLW to one of two DOE potential disposal sites (in Washington or Nevada) or to a commercial disposal site (such as the Envirocare facility in Utah), ship TRU waste to WIPP in New Mexico, and ship HLW to the proposed Yucca Mountain HLW repository. LLW and mixed LLW would be shipped over the next 10 years. TRU waste shipments to WIPP could occur within the next 10 years if the TRU waste is determined to meet all the requirements for disposal in this repository; however, if some or all of WVDP's TRU waste does not meet these requirements, the Department would need to explore other alternatives for disposal of this waste.

Under DOE's current programmatic decisionmaking, offsite disposal of HLW would occur at the proposed Yucca Mountain HLW Repository sometime after 2025 assuming a license to operate is granted by the NRC. Although this period would extend well beyond the 10 years required for all other proposed actions under this alternative, the impacts of transporting the HLW have been included in this EIS to fully inform the decisionmakers should an earlier opportunity to ship HLW present itself. The waste storage tanks would continue to be managed as described under the No Action Alternative.

Under **Alternative B, Offsite Shipment of LLW and Mixed LLW to Disposal, Shipment of HLW and TRU Waste to Interim Storage, and Interim Stabilization of the Waste Storage Tanks**, LLW and mixed LLW would be shipped offsite for disposal at the same locations as Alternative A. TRU wastes would be shipped for interim storage at one of five DOE sites: Hanford Site in Washington; Idaho National Engineering and Environmental Laboratory (INEEL); Oak Ridge National Laboratory (ORNL) in Tennessee; Savannah River Site (SRS) in South Carolina; or WIPP. TRU wastes would subsequently be shipped to WIPP (or would remain at WIPP). HLW would be shipped to SRS or Hanford for interim storage, with subsequent shipment to Yucca Mountain for disposal.

It is assumed that the shipment of LLW and mixed LLW to disposal would occur within the next 10 years, and that TRU waste and HLW would be shipped to interim storage during that same 10 years. Ultimate disposal of TRU wastes and HLW wastes would be subject to the same constraints described under Alternative A; however, the impacts of transporting these wastes to their ultimate disposal sites have been included in the impact analyses for this alternative. The waste storage tanks and their surrounding vaults would be partially filled with a retrievable grout to provide for interim stabilization of the tanks should decisionmaking on decommissioning and/or long-term stewardship be delayed.

Figure 1-3 shows the locations of the waste disposal and/or interim storage sites under consideration in this EIS.

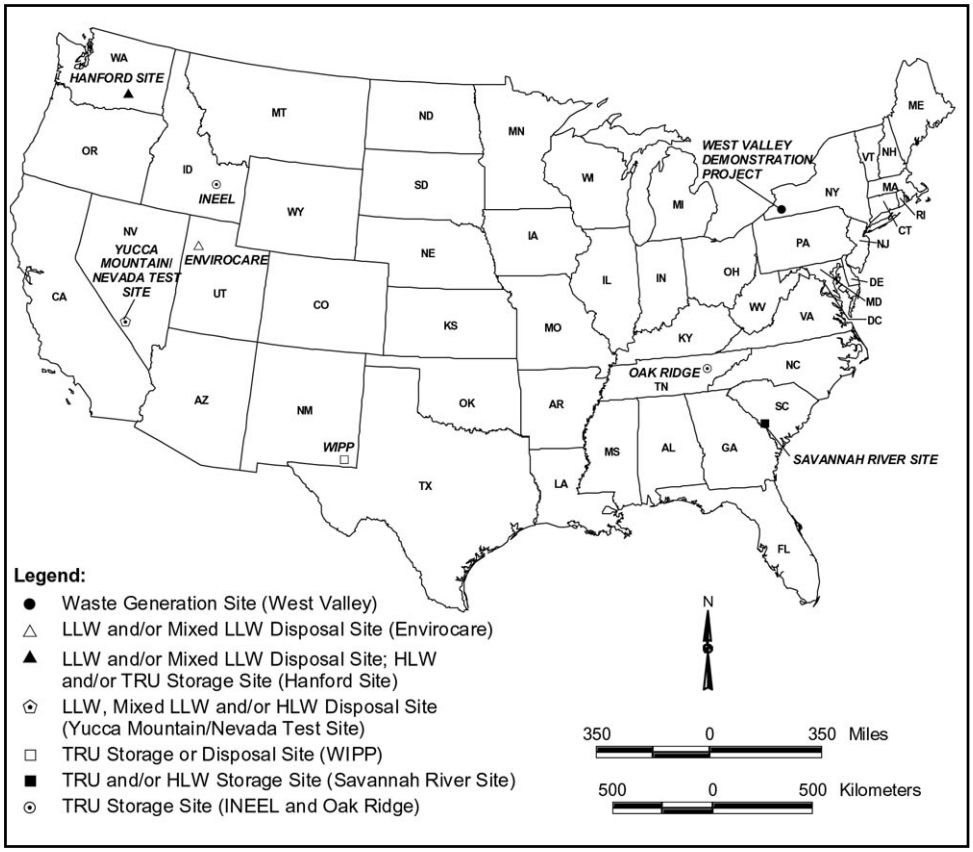

Figure 1-3. WVDP Waste Disposal and/or Interim Storage Sites

1.5 WVDP WASTES AND REGULATORY DEFINITIONS

DOE regulates radioactive wastes that are managed or disposed of at DOE facilities, or are otherwise the responsibility of DOE under the Atomic Energy Act. The NRC regulates commercial LLW disposal facilities such as Envirocare. Table 1-1 summarizes the DOE and NRC regulatory definitions of the major categories of wastes managed under the West Valley Demonstration Project Act.

1.6 OFFSITE ACTIVITIES

In addition to activities that would occur at WVDP, DOE's proposed action and alternatives would involve activities at offsite locations as a result of the need for interim storage or disposal. At interim storage sites, activities would include unloading and inspecting the WVDP waste containers and moving the containers to the storage area. Interim storage could require the siting, construction, and operation of additional storage capacity for the volume of WVDP wastes to be stored, depending on site storage capacity at the time. Activities at disposal sites would include unloading trucks or railcars, inspecting the waste containers, and moving the waste to the disposal areas for shallow land burial or deep geologic disposal, depending on the waste type. Offsite activities involving interim storage or disposal have been addressed in previous NEPA documents (see Section 1.7, Relationship with Other NEPA Documents) or would be the subject of subsequent NEPA review, as needed.

Table 1-1. Definitions Used in this EIS for Wastes Present at WVDP

Waste Category	Regulatory Definition(s)
HLW (Canisters of Vitrified HLW)	HLW is defined in the West Valley Demonstration Project Act as the waste that was produced by the reprocessing of spent nuclear fuel at the Center. The term includes both liquid wastes that are produced directly in reprocessing dry solid material derived from such liquid waste and such other material as the NRC designates as high-level radioactive waste for purposes of protecting health and safety. Unless demonstrated otherwise, all HLW is considered mixed waste (containing both radioactive and hazardous components) and is subject to the requirements of both the Atomic Energy Act and Resource Conservation and Recovery Act (RCRA) (DOE 1999).
TRU Waste	TRU waste is currently defined by NRC and DOE as waste containing more than 100 nanocuries of alpha-emitting isotopes, with half-lives greater than 20 years, per gram of waste. However, the West Valley Demonstration Project Act defined TRU waste as "material contaminated with radioactive elements that have an atomic number greater than 92, including neptunium, plutonium, americium, and curium, and that are in concentrations greater than *10* (emphasis added) nanocuries per gram, or in such other concentrations as the [NRC] may prescribe to protect the public health and safety." [In the event wastes are disposed of offsite, the applicable definitions at the disposal site will be used.] TRU waste is classified, for handling purposes, as contact-handled (CH) TRU waste or remote-handled (RH) TRU waste, depending on the radiation dose rate at the surface of the waste container. CH-TRU waste has radioactivity levels that are low enough to permit workers to directly handle the containers in which the waste is kept. This level of radioactivity is specified as a dose rate of no more than 200 millirem per hour at the outside surface of the container. RH-TRU waste has a surface dose rate greater than 200 millirem per hour, so workers use remote manipulators to handle containers of RH-TRU waste.
LLW	LLW is defined as radioactive material that (a) is not HLW, spent nuclear fuel, TRU waste, or by-product material as defined in the Atomic Energy Act; and (b) the NRC classifies as LLW. Additional definitions of specific types of LLW appear below.
Class B LLW	Class B waste refers to waste that must meet more rigorous requirements on waste form to ensure stability after disposal. The physical form and characteristics of Class B waste must meet both the minimum and stability requirements set forth in 10 CFR 61.56.
Class C LLW	Class C waste refers to waste that not only must meet more rigorous requirements on waste form to ensure stability but also requires additional measures at the disposal facility to protect against inadvertent intrusion. The physical form and characteristics of Class C waste must meet both the minimum and stability requirements set forth in 10 CFR 61.56.
Mixed Waste	Mixed waste contains hazardous components regulated under RCRA and radioactive components regulated under the Atomic Energy Act. Some LLW is mixed, as is some TRU waste and HLW. At WVDP, if necessary to meet waste acceptance criteria for disposal, mixed LLW is shipped off the site for treatment. For the purpose of analysis in this EIS, mixed LLW is assumed to be shipped directly to disposal after treatment.

1.7 RELATIONSHIP WITH OTHER NEPA DOCUMENTS

Some of the actions proposed under the alternatives assessed in this EIS have been analyzed, at least in part, in the NEPA documents identified in this section. The NEPA analyses, as they relate to the actions proposed in this EIS, are briefly summarized in this section. Information from these earlier NEPA documents has been either extracted for use in this EIS or incorporated by reference.

1.7.1 Environmental Impact Statements

1.7.1.1 Final Environmental Impact Statement, Long-Term Management of Liquid High-Level Radioactive Wastes Stored at the Western New York Nuclear Service Center, West Valley (DOE/EIS-0081) (DOE 1982)

This EIS evaluated alternatives for long-term management of liquid HLW stored in underground tanks. The DOE Record of Decision (ROD) (45 Fed. Reg. 20694 (1982)) was issued to construct and operate facilities at the Center to solidify the liquid HLW into a form suitable for transportation and disposal in the federal geologic repository in accordance with the West Valley Demonstration Project Act. Related decisions, such as selection of a terminal waste form and final decontamination and decommissioning, were to be addressed in subsequent environmental analyses under NEPA. A supplement analysis to this EIS, completed in 1993 (DOE 1993), evaluated the impacts of modifications in the design, process, and operations since the 1982 EIS ROD. This supplement analysis did not address transportation, TRU waste, Class B and C LLW, waste disposal, or final decontamination and decommissioning of facilities. A second supplement analysis, completed in 1998 (DOE 1998), addressed HLW solidification, management and interim storage of wastes, disposal of wastes, transport of wastes, general site operations, facility decontamination, and spent nuclear fuel storage. Though the second supplemental analysis discussed a "deactivation" process to substantially remove all waste from facilities in preparation for custodial care, the environmental impacts of this approach were not specifically evaluated. Current actions evaluated by the 1982 EIS and its supplemental analyses include Process Building head-end cell decontamination, construction of a load-in and load-out facility to support shipment of vitrified HLW, construction of a remote-handled waste facility, decontamination of the fuel receiving and storage area, and draining the water from the fuel storage pool.

The alternatives proposed in this EIS include some activities analyzed in the 1982 EIS and supplement analyses.

1.7.1.2 Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste (DOE/EIS-0200) (DOE 1997a)

This EIS studied the potential nationwide impacts of managing LLW, mixed LLW, TRU waste, HLW, and non-wastewater hazardous waste generated by defense and research activities at 54 sites around the United States, including the WVDP. DOE analyzed decentralized alternatives (managing waste at sites where it currently exists), regionalized alternatives (managing waste at several treatment, storage, or disposal sites), and centralized alternatives (managing waste at one or two sites), in addition to the no action alternative for each waste type. Inventories of LLW, mixed LLW, TRU waste, and HLW at the WVDP were all considered in the *Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* (WM PEIS) (DOE 1997a).

DOE issued separate RODs for all of the waste types analyzed in the WM PEIS. For LLW, DOE decided to perform minimal treatment at all sites and continue onsite disposal of LLW at INEEL, Los Alamos National Laboratory, Oak Ridge Reservation (ORR), and SRS (65 Fed. Reg. 10061 (2000)). In addition, DOE decided to make the Hanford Site and Nevada Test Site (NTS) available to all DOE sites for LLW disposal. For mixed LLW, DOE decided to treat the waste at the Hanford Site, INEEL, ORR, and SRS, and to dispose of mixed LLW at Hanford and NTS (65 Fed. Reg. 10061 (2000)).

With respect to TRU waste, DOE decided that each site that has generated or would generate TRU waste would store it onsite prior to shipment to WIPP for disposal (63 Fed. Reg. 3629 (1998)). However, the

Department may decide to ship TRU waste from sites where it may be impractical to prepare it for disposal to sites where DOE has or will have the necessary capability. The sites that could receive TRU waste from other sites are INEEL, ORR, SRS, and the Hanford Site.

DOE decided to store immobilized HLW at the sites where it was generated (that is, Hanford Site, INEEL, SRS, and WVDP) until it is accepted for disposal at a geologic repository (64 Fed. Reg. 46661 (1999)).

The analyses in the WM PEIS and the resulting RODs are relevant to actions proposed under all alternatives assessed in this Waste Management EIS.

1.7.1.3 Final Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada (DOE/EIS-0250) (DOE 2002a)

The proposed action in this EIS is to construct, operate and monitor, and eventually close a geologic repository at Yucca Mountain in southern Nevada. The repository would be used for the disposal of spent nuclear fuel and HLW currently in storage at 72 commercial and 5 DOE sites. The EIS analyses include the HLW from West Valley. The EIS evaluates the potential short-term and long-term impacts associated with repository disposal of spent nuclear fuel and HLW, and the transportation of these materials, including the HLW at West Valley, to the proposed Yucca Mountain Repository. The EIS also analyzes the potential impacts of a no action alternative in which DOE would not build a repository at Yucca Mountain, and the spent fuel and HLW would instead remain at the commercial and DOE sites. The final Yucca Mountain EIS was issued on February 9, 2002. This document is incorporated by reference.

1.7.1.4 Waste Isolation Pilot Plant Disposal Phase Final Supplemental Environmental Impact Statement (DOE/EIS-0026-S-2) (DOE 1997b)

In October 1980, DOE issued the *Final Environmental Impact Statement for the Waste Isolation Pilot Plant* (DOE 1980a) on the proposed development of WIPP. The subsequent ROD (January 1981) established a phased development of WIPP, beginning with construction of the WIPP facility. DOE then issued the *Final Supplement Environmental Impact Statement for the Waste Isolation Pilot Plant* (DOE 1990) that considered previously unavailable information. Based on the Supplemental EIS, DOE decided to continue phased development of WIPP by implementing test-phase activities. On October 30, 1992, the WIPP Land Withdrawal Act transferred the WIPP site from the U.S. Department of Interior to DOE. The 1997 Defense Authorization Act (September 23, 1996) amended the WIPP Land Withdrawal Act to make the Resource Conservation and Recovery Act (RCRA) hazardous waste land disposal prohibitions inapplicable to WIPP. DOE prepared the *Waste Isolation Pilot Plant Disposal Phase Final Supplemental Environmental Impact Statement* (DOE 1997b) that updated information contained in the 1980 and 1990 EISs, incorporated the analysis of various treatment alternatives for TRU waste contained in the WM PEIS (DOE 1997a), and examined changes in environmental impacts due to new information or changed circumstances. In a ROD issued in January 1998 (63 Fed. Reg. 3624 (1998)), DOE decided to open WIPP for the disposal of TRU waste.

Under Alternatives A and B of this WVDP Waste Management EIS, TRU waste would be shipped to WIPP in accordance with the analyses in the 1997 EIS, if it was determined that the TRU waste met all the requirements for disposal in this repository.

1.7.1.5 Final Environmental Impact Statement for the Nevada Test Site and Off-site Locations (DOE/EIS-0243) **(DOE 1996b)**

This EIS evaluated the potential impacts that could result from mission activities at the NTS, including LLW and mixed LLW disposal. The NTS EIS evaluated waste management and environmental restoration activities and other mission activities for a 10-year period, including receipt of LLW and mixed LLW from other sites such as West Valley. Under Alternatives A and B of this WVDP Waste Management EIS, DOE would dispose of newly generated and existing LLW and mixed LLW at one of three sites, including NTS (pending issuance of an operating permit for mixed waste disposal under RCRA).

1.7.1.6 Draft Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement (DOE/EIS-0286D) **(DOE 2002b*)***

This EIS evaluates waste management alternatives that may be implemented at the Hanford Site as a result of DOE decisions under the WM PEIS for LLW, mixed LLW, and post-1970 TRU waste. The LLW and mixed LLW waste inventories analyzed (that is, waste volumes and characteristics) for management at Hanford would include waste potentially received from other DOE sites, including the WVDP. Under Alternatives A and B of this EIS, DOE would dispose of LLW and mixed LLW at one of three sites, including Hanford.

1.7.1.7 Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement (DOE/EIS-0203-F) **(DOE 1995a)**

This EIS evaluated, among other things, the environmental impacts of receipt, storage, and treatment of TRU waste from offsite locations at the Idaho National Engineering Laboratory (now INEEL). Under Alternative D (Maximum Treatment, Storage, and Disposal) of the waste management alternatives for TRU waste, DOE assumed that up to 20,000 cubic meters (71,400 cubic feet) of TRU waste would be accepted from offsite generators on a case-by-case basis. Implementation of this alternative would require building additional storage

1.7.1.8 Savannah River Site Waste Management Final Environmental Impact Statement (DOE/EIS-0217-F) **(DOE 1995b)**

This EIS evaluated alternative strategies for managing radioactive and hazardous wastes at SRS that would protect human health, comply with environmental regulations, minimize waste generation, utilize effective and commercially available technologies for near-term management needs, and be cost effective. Under all alternatives, DOE considered the treatment and storage of TRU waste. For purposes of analysis of the maximum waste forecast, DOE assumed that waste from offsite locations would be shipped to SRS for treatment, storage, or disposal in accordance with the alternatives being considered in the draft Waste Management Programmatic EIS then in preparation and subsequently issued in September 1995.

1.7.1.9 Final Environmental Impact Statement for Treating Transuranic (TRU)/Alpha Low Level Waste at the Oak Ridge National Laboratory, Oak Ridge, Tennessee (DOE/EIS-0305-F) **(DOE 2000)**

In this EIS, DOE evaluated the proposed construction, operation, and decontamination and decommissioning of a waste treatment facility for the treatment of legacy ORNL TRU waste, alpha low-level waste, and newly generated TRU waste. DOE also considered interim storage of up to 7,768 cubic meters (274,324 cubic feet) of treated TRU waste at ORNL (Treatment and Storage Alternative,

Cementation Treatment). The waste volume analyzed did not include waste generated at offsite locations and shipped to ORNL.

1.7.2 Environmental Assessments

The *Environmental Assessment and FONSI for the Treatment of Class A Low-Level Radioactive Waste and Mixed Low-Level Waste Generated by the West Valley Demonstration Project* (DOE 1995c) evaluated treatment activities conducted at West Valley and at commercial facilities in Tennessee, Utah, and Texas. The proposed action consisted of sorting, repackaging, and loading waste at the WVDP; transporting the waste for commercial treatment; treating the waste at the commercial facilities; and returning the residual waste to the WVDP for interim storage. Based on this EA, DOE determined that the proposed action was not a major federal action significantly affecting the quality of the human environment, within the meaning of NEPA, and that preparation of an EIS was not required.

1.7.3 Categorical Exclusions

Categorical exclusion refers to a category of actions that an agency has determined by regulation normally do not, individually or cumulatively, have a significant effect on the human environment. Such actions do not require an EA or an EIS. DOE has issued categorical exclusions for some ongoing decontamination and waste management actions at the WVDP that would occur under the alternatives described in this EIS. These include routine maintenance activities, offsite shipment of a total of 235 cubic meters (8,300 cubic feet) of mixed LLW for treatment and disposal, and offsite shipment of a total of 6,900 cubic meters (245,000 cubic feet) of Class A LLW for commercial disposal (10 CFR Part 1021, Subpart D, Appendix B).

1.8 PUBLIC INVOLVEMENT

DOE issued its NOI to proceed with a rescoped Decontamination and Waste Management EIS on March 26, 2001 (66 Fed. Reg. 16447), and a public meeting was held at West Valley on April 10, 2001, to explain the revised strategy to the public. Comments were received from the State of New York Office of the Attorney General, the Coalition on West Valley Nuclear Wastes, the Concerned Citizens of Cattaraugus County, the Nuclear Information and Resource Service and the Public Citizen/Critical Mass Energy and Environment Program (joint submittal), the West Valley Citizens Task Force, the League of Women Voters of Buffalo/Niagara, and three private citizens. Most commentors questioned DOE's need to revise its EIS strategy and rescope the 1996 Completion and Closure Draft EIS. As noted in Section 1.2, after further evaluation and as a result of public comments, DOE has limited the scope of this EIS to onsite and offsite waste management actions, and only those decontamination actions previously addressed under NEPA (DOE 1982). DOE's responses to comments received during scoping are included in Appendix B.

1.9 CONTENTS OF EIS

This EIS consists of ten chapters and four appendices, as follows:

- *Chapter 1, Introduction:* This chapter provides background information regarding the proposed project and its purpose and need, the scope of the EIS, and NEPA-related issues.

- *Chapter 2, Description of Alternatives:* This chapter describes the alternatives proposed in this EIS and those that were considered but are not analyzed in detail. It also includes a summary of the potential impacts associated with each of the alternatives.

- *Chapter 3*, *Affected Environment:* This chapter describes the affected environment at the Project Premises and surrounding areas.

- *Chapter 4, Environmental Consequences:* This chapter describes the potential environmental impacts at the Project Premises and surrounding areas that could occur as the result of each of the proposed alternatives. An analysis of the environmental justice impacts associated with the proposed alternatives is also presented.

- *Chapter 5, Cumulative Impacts:* This chapter describes the cumulative impacts to the Project Premises and surrounding areas that would result from the proposed activities.

- *Chapter 6, Unavoidable Impacts, Short-term Uses and Long-term Productivity, and Irreversible and Irretrievable Commitments of Resources*: This chapter describes some of the additional considerations that must be analyzed as part of the NEPA EIS process.

- *Chapter 7, List of Preparers and Disclosure Statement:* This chapter includes a list of the individuals who prepared the EIS and their credentials. It also provides the certification by the contractor that assisted DOE in the preparation of this EIS that they have no financial or other interest in the outcome of the project as required by the Council on Environmental Quality (40 CFR 1506.5(c)) and DOE (10 CFR 1021).

- *Chapter 8, List of Agencies, Organizations, and Individuals Receiving Copies of This EIS:* This chapter includes a list of the federal, state, local, or tribal government agencies, various organizations, and members of the public who will receive copies of the draft EIS.

- *Chapter 9, Glossary:* This chapter includes definitions for many of the technical terms used in this EIS.

- *Chapter 10, Index:* This chapter indexes key terms used in this EIS.

- *Appendix A, Specific Legal Requirements That Apply To West Valley Waste Management Activities:* This appendix provides the legislative and judicial language governing DOE's actions at the site.

- *Appendix B, Responses to Scoping Comments:* This appendix provides DOE's responses to comments received from the public and agencies during scoping.

- *Appendix C, Human Health Impacts*: This appendix describes the methodology used to analyze human health impacts.

- *Appendix D, Transportation*: This appendix describes the methodology used for the transportation analysis, including representative routes.

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