

Summary

1.0 Purpose and Need for Agency Action

1.1 Purpose and Need

From 1952 to 1991, the U.S. Department of Energy (DOE) and its predecessor agencies reprocessed spent nuclear reactor fuel at the Idaho Chemical Processing Plant, located on the Snake River Plain in the desert of southeast Idaho (Figure S-1). This facility, now known as the Idaho Nuclear Technology and Engineering Center (INTEC), is part of the Idaho National Engineering and Environmental Laboratory (INEEL), a nuclear research complex that has served the nation through both peaceful and defense-related missions.

Reprocessing operations at INTEC used solvent extraction systems to remove *primarily* uranium-235 from spent nuclear reactor fuel and, in the process, generated high-level waste (HLW) *as well as*

Idaho Nuclear Technology and Engineering Center

INTEC occupies approximately 250 acres and consists of more than 150 buildings. Primary facilities include storage, treatment, and laboratory facilities for spent nuclear fuel, mixed HLW, and mixed transuranic waste/SBW.

other wastes. The first extraction cycle of the reprocessing operation generated mixed HLW. Subsequent extraction cycles, treatment processes, and follow-up decontamination activities generated *liquid mixed transuranic waste/sodium-bearing waste, referred to as mixed transuranic waste/SBW.* *Newly generated liquid waste results from a variety of sources not associated with spent fuel reprocessing at INTEC.* At INTEC these wastes are stored in *ten of the* eleven 300,000-gallon capacity below grade storage tanks (*the eleventh tank is a spare*), known as the “Tank Farm.”

Since 1963, much of the liquid waste was fed to a treatment facility and converted to a dry granular substance called calcine. The calcine, which is stored in *large bin sets*, is a more stable waste form that poses less environmental risk than storing liquid radioactive waste in *below grade* tanks. *All the calcine currently in the bin sets is mixed HLW.* *Presently*, the calcine does not meet *expected waste acceptance criteria for the proposed repository at Yucca Mountain.* Further treatment *may* be necessary to convert the mixed HLW *calcine* into a waste form acceptable for disposal in *the* repository.

Spent nuclear fuel reprocessing was discontinued at INTEC in 1991, so liquid *mixed* HLW ceased to be generated. However, since that time, mixed transuranic waste/SBW has continued to accumulate in the tanks from calcine operations, decontamination, and other activities. In 1995, DOE and the State of Idaho reached an agreement, called the Idaho Settlement Agreement/Consent Order, as to when the liquid waste would be *calcined* and set a target date of **December 31, 2035** for all of the mixed HLW and mixed transuranic waste/SBW

Regional Setting

The INEEL occupies approximately 890 square miles (570,000 acres) of high desert sagebrush steppe in Bingham, Bonneville, Butte, Clark, and Jefferson counties in southeastern Idaho. Approximately 2 percent of this land (11,400 acres) has been developed to support INEEL facility and program operations associated with energy research, defense missions, and waste management activities.

Smaller communities and towns near the INEEL include Mud Lake and Terreton to the east; Arco, Butte City, and Howe to the west; and Atomic City to the south. Larger communities and towns near the INEEL include Idaho Falls, Rexburg, Rigby, Blackfoot, Pocatello and the Fort Hall Indian Reservation to the east and southeast.

Summary

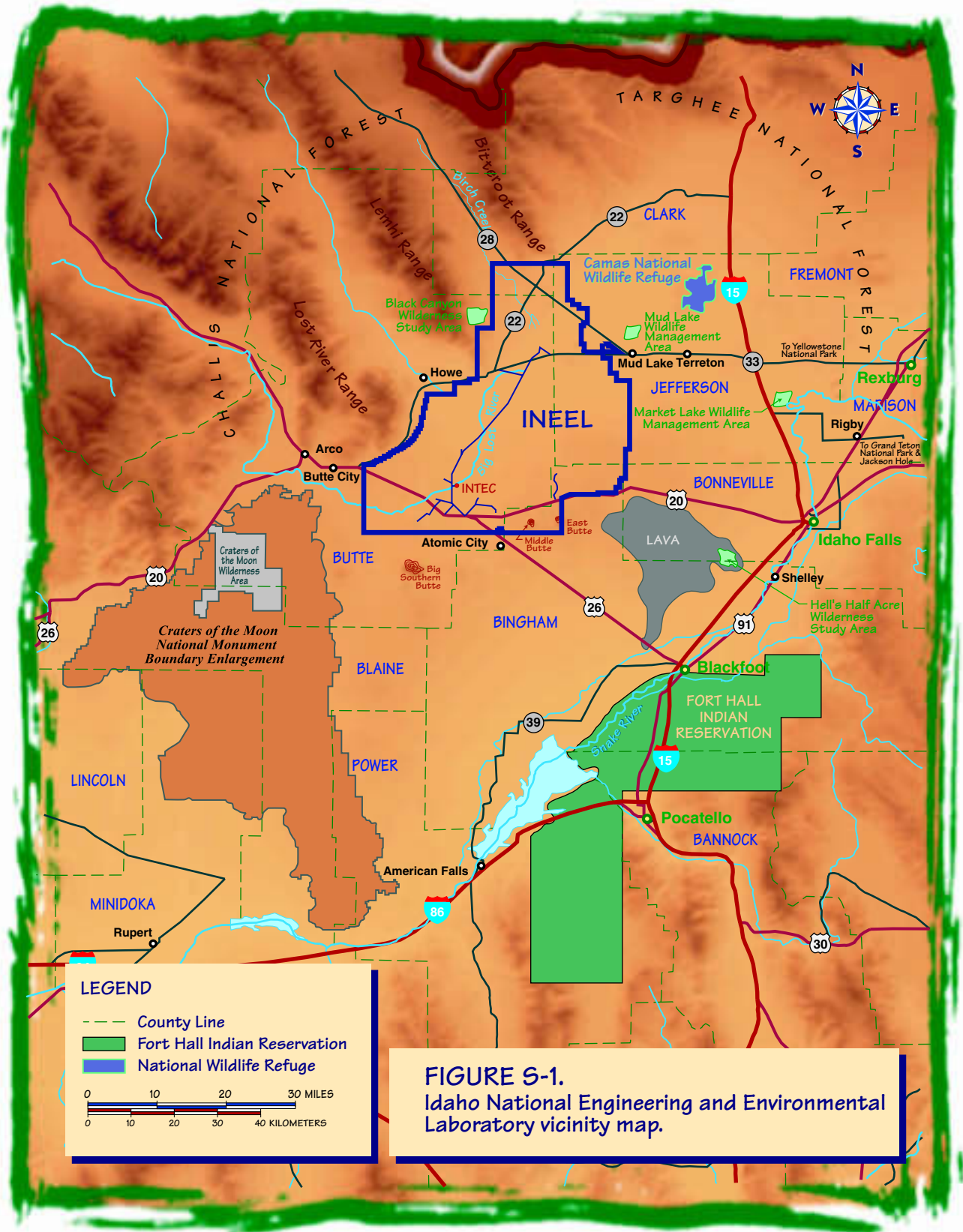


FIGURE S-1.
Idaho National Engineering and Environmental Laboratory vicinity map.

to have been treated and made road-ready for shipment out of Idaho.

Consistent with this agreement, DOE completed calcining all of the liquid mixed HLW in 1998. At present, approximately **4,400** cubic meters of mixed HLW calcine remain stored in bin sets, and **1** million gallons of mixed transuranic waste/SBW remain in the **below grade** tanks. **DOE now has to decide how to treat and dispose of the mixed transuranic waste/SBW, how to place the mixed HLW calcine in a form suitable for disposal in the proposed national geologic repository, and how to disposition facilities at INTEC involved in HLW treatment. DOE has prepared this EIS to inform agency officials and the public of the environmental impacts of alternatives, including the no-action alternative, available for consideration in the decision making process.**

1.2 Role of this EIS in the Decision-making Process

This EIS describes the environmental impacts of the range of reasonable alternatives for meeting DOE's purpose and need for action. In finalizing this EIS, DOE considered public comments received on the Draft EIS and other relevant factors and information received after the Draft EIS was published. DOE will consider the information in this EIS and other relevant information before making a decision on the proposed action.

If on the basis of this EIS, DOE proposes modifications to the Settlement Agreement/Consent Order, the information in this document and the cooperative process used to ensure its adequacy will benefit related discussions between the State of Idaho and DOE.

1.3 Proposed Action

To meet the purpose and need for agency action, DOE proposes to:

- ***Select appropriate technologies and construct facilities necessary to prepare INTEC mixed transuranic waste/SBW for shipment to the Waste Isolation Pilot Plant***

Elements of the 1995 Idaho Settlement Agreement/Consent Order Pertaining to HLW Management

- ***Complete calcination of liquid mixed HLW by June 30, 1998 (completed February 1998).***
- ***Begin calcination of liquid mixed transuranic waste/SBW by June 2001 (begun February 1998).***
- ***Complete calcination of liquid mixed transuranic waste/SBW by December 2012.***
- ***Start negotiations with the State of Idaho regarding a plan and schedule for treatment of calcined waste by December 31, 1999 (begun September 1999).***
- ***"DOE shall accelerate efforts to evaluate alternatives for the treatment of calcined waste so as to put it into a form suitable for transport to a permanent repository or interim storage facility outside of Idaho."***
- ***"It is presently contemplated by DOE that the plan and schedule shall provide for the completion of the treatment of all calcined waste located at INEL by a target date of December 31, 2035."***

- ***Prepare the mixed HLW calcine so that it will be suitable for disposal in a repository***
- ***Treat and dispose of associated radioactive wastes***
- ***Provide safe storage of HLW destined for a repository***
- ***Disposition INTEC HLW management facilities when their missions are completed***

1.4 Timing and Regulatory Considerations for this EIS

Some INTEC wastes (mixed transuranic waste/SBW) are stored as liquids in 300,000-gallon tanks that do not meet current hazardous waste management standards. ***Five of the eleven tanks currently in use are known as “pillar and panel” tanks.*** DOE's objective is to cease use of ***the five pillar and panel tanks by June 30, 2003 and all remaining tanks by December 31, 2012 in compliance with the 1998 Modification to the Notice of Noncompliance Consent Order.*** Previously, DOE's plan was to cease use of the tanks by calcining all the liquid waste as described in the following documents:

- Record of Decision (ROD) for the *Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs EIS* (SNF and INEL EIS) (***June 1995***)
- Idaho Settlement Agreement/Consent Order (October 1995)
- INEEL Site Treatment Plan/Consent Order (November 1995).

However, ***because of new technologies and changes in regulatory requirements*** DOE is now reconsidering this plan ***by evaluating various waste processing alternatives.*** ***This EIS has been prepared as part of the evaluation and decision making process.***

Other timing considerations important to the issuance of this EIS include the following:

- ***Data are needed on the cumulative impacts associated with cleanup activities at INTEC that are carried out under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).***

CERCLA ***remediation*** projects at INTEC are in progress. These projects involve the cleanup and/or removal of contaminated soils and other environmental media, portions of which are within those areas or projects being evaluated in the various alternatives in this EIS. To avoid the possibility that CERCLA decisions may inappropriately preclude some waste processing or facility disposition alternatives, the CERCLA and National Environmental Policy Act (NEPA) processes at INTEC are being coordinated.

- ***The lead-time required for facility development and funding of alternative technologies means that a DOE ROD on a treatment technology would be needed sooner than previously estimated.***

This EIS is being prepared sooner than required by the Idaho Settlement Agreement/Consent Order in order to accommodate time estimates ***to obtain project approval and funding, and to complete treatment/storage facility design, construction, and operation.*** This should make it possible for DOE to meet the target ***dates of December 31, 2012 for ceasing use of the Tank Farm and December 31, 2035,*** for having the treated waste ready to leave Idaho.