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Environmental Impact Statement for the Proposed Idaho Spent Nuclear Fuel Facility at the Idaho National Engineering and Environmental Laboratory

Draft Report for Comment

U.S. Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards
Washington, DC 20555-0001

AVAILABILITY NOTICE

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U.S. Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards

ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED IDAHO SPENT NUCLEAR FUEL FACILITY AT THE IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LABORATORY
Draft Report for Comment

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Abstract

This Environmental Impact Statement (EIS) was prepared by the staff of the U.S. Nuclear Regulatory Commission (NRC) and its contractor, the Center for Nuclear Waste Regulatory Analyses (CNWRA) in accordance with the requirements of 10 CFR Part 51 that implement the National Environmental Policy Act (NEPA) of 1969, as amended. The EIS contains an assessment of the potential environmental impacts of the construction and operation of the proposed Idaho Spent Fuel Facility, an independent spent fuel storage installation, to be located adjacent to the Idaho Nuclear Technology and Engineering Center (INTEC) at the Idaho National Engineering and Environmental Laboratory (INEEL). Pursuant to 10 CFR Part 72, NRC is considering whether to issue a license for the proposed facility to the Foster Wheeler Environmental Corporation (FWENC).

A Settlement Agreement dated October 17, 1995, among the U.S. Department of Energy (DOE), the U.S. Navy, and the State of Idaho requires, among other things, the transfer and dry storage of spent nuclear fuel (SNF) until it can be removed from Idaho. As part of its effort to meet the terms of the Settlement Agreement, DOE contracted with FWENC to design, license, construct, and operate the proposed Idaho Spent Fuel Facility for portions of the SNF currently in storage. If approved by NRC, FWENC will hold the license for the proposed Idaho Spent Fuel Facility. DOE leased the site to FWENC for the operating life of the installation. The facility would store SNF and associated radioactive material from the Peach Bottom Unit 1 High-Temperature Gas-Cooled Reactor, the Shippingport Light Water Breeder Reactor, and various training, research, and isotope reactors built by General Atomics (TRIGA). With the exception of about one third of the TRIGA SNF, this SNF is currently being stored within the INTEC. DOE plans to transfer it to the proposed Idaho Spent Fuel Facility when that facility becomes operational. These transfers would occur completely within the boundaries of the INEEL site and would comply with INEEL procedures and DOE requirements; DOE would retain title to the SNF. On arrival at the Idaho Spent Fuel Facility, the SNF would be (i) removed from the containers in which it is currently stored, (ii) visually inspected, (iii) inventoried, (iv) placed into new storage containers, and (v) placed into interim storage.

The NRC and CNWRA staffs have independently reviewed an environmental report, a safety analysis report, and other documents submitted by FWENC to support its license application. In addition, the NRC and CNWRA staffs considered previous DOE NEPA documents, including a 1995 programmatic EIS for SNF management that contains a generic analysis of the proposed action and the 2002 Idaho High-Level Waste and Facilities Disposition final EIS that contains an up-to-date description of the affected environment in the vicinity of INTEC and an evaluation of planned waste management activities at INTEC. The NRC staff conclude that the facility can be constructed and operated with small and acceptable impacts to the public and the existing environment at INEEL.

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ACRONYMS

ALARA	as low as is reasonably achievable
ANS	American Nuclear Society
ANSI	American National Standards Institute
BLM	Bureau of Land Management
CNWRA	Center for Nuclear Waste Regulatory Analyses
DOE	U.S. Department of Energy
EBSLs	Ecologically Based Screening Levels
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
FWENC	Foster Wheeler Environmental Corporation
HEPA	high efficiency particulate air
HLW	high-level waste
HVAC	heating, ventilation, and air conditioning
IMPROVE	Interagency Monitoring of Protected Visual Environments
INEEL	Idaho National Engineering and Environmental Laboratory (formerly INEL)
INTEC	Idaho Nuclear Technology and Engineering Center
ISFSI	independent spent fuel storage installation
LMITCO	Lockheed Martin Idaho Technologies Company
MEI	maximally exposed individual
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
PM	particulate matter
PRGs	U.S. Environmental Protection Agency Preliminary Remediation Goals
PSD	prevention of significant deterioration
PSHA	probabilistic seismic hazard analysis
RCRA	Resource Conservation and Recovery Act
SNF	spent nuclear fuel
SSCs	structures, systems, and components
TRIGA	Training, Research, and Isotope Reactors built by General Atomics

EXECUTIVE SUMMARY

BACKGROUND

The U.S. Nuclear Regulatory Commission (NRC) is considering whether to issue a license, pursuant to 10 CFR Part 72, that would result in construction and operation of an independent spent nuclear fuel storage installation (ISFSI) at the Idaho National Engineering and Environmental Laboratory (INEEL) in southeast Idaho. This action would be taken in response to an application filed with the NRC by the Foster Wheeler Environmental Corporation (FWENC) on November 19, 2001. To support its licensing decision on the proposed Idaho Spent Fuel Facility, NRC determined that an environmental impact statement (EIS) is required by the NRC National Environmental Policy Act (NEPA)-implementing regulations in 10 CFR Part 51.

During the last 40 years, the U.S. Department of Energy (DOE) and its predecessor agencies have generated, transported, received, stored, and reprocessed spent nuclear fuel (SNF) at DOE facilities nationwide. Part of this SNF originated from non-DOE domestic licensed facilities, including training, research, and test reactors at universities; commercial reactors; and government-owned installations, including U.S. Navy reactors for which DOE has contractual obligations to accept SNF. Most of the SNF at INEEL, originally destined for reprocessing, is currently stored in conditions acceptable only for short-term storage. Current storage at INEEL consists of aging above-ground facilities, including wet storage pools, and dry underground storage facilities. The potential for deterioration and leakage of SNF storage facilities is a concern due to their location over the Snake River Plain Aquifer, a major water source for the region.

A Settlement Agreement dated October 17, 1995, among the DOE, the U.S. Navy, and the State of Idaho established schedules for SNF and radioactive waste management activities at INEEL, including, among other things, the transfer and dry storage of SNF until it can be removed from Idaho. As part of the DOE effort to meet terms of this 1995 Settlement Agreement, DOE contracted with FWENC to design, license, construct, and operate the proposed ISFSI at INEEL to provide interim dry storage for portions of the SNF currently in storage. The SNF to be stored at the proposed ISFSI includes SNF resulting from operation of the Peach Bottom Unit 1 nuclear power reactor, which was licensed by the Atomic Energy Commission and operated between 1966 and 1974. SNF from the Shippingport Light Water Breeder Reactor, which ceased operation in 1984, and SNF from training, research, and isotope research reactors built by General Atomic (TRIGA reactors) are also to be stored at the proposed ISFSI.

In 1995, DOE published a record of decision based on NEPA analyses associated with its SNF management program. One project to manage SNF at INEEL is described in the record of decision as a dry fuel storage facility to accommodate receipt and storage of various fuel types currently in inventory at INEEL and the fuels projected to be received. The ISFSI proposed by FWENC is designed to meet these requirements for dry fuel storage. The proposed Idaho Spent Fuel Facility, which this EIS addresses, would be located on the INEEL property adjacent to the Idaho Nuclear Technology and Engineering Center (INTEC) facilities.

THE PROPOSED ACTION

The proposed action considered in this EIS is the construction, operation, and decommissioning of an ISFSI. On November 19, 2001, FWENC filed an application with NRC for a license to receive, package, transfer, and store SNF at an ISFSI at the INEEL in Butte County, Idaho. This new installation, if approved, will be situated on a 3.2-ha [8-acre] site located adjacent to the INTEC facility, approximately 4.8 km [3 mi] north of the INEEL Central Facilities Area. The proposed Idaho Spent Fuel Facility would be designed, constructed, and operated by FWENC per contract to DOE. DOE has leased the site to FWENC for the planned operating life of the installation.

The proposed Idaho Spent Fuel Facility would store spent nuclear fuel (SNF) and associated radioactive material from the Peach Bottom Unit 1 High-Temperature, Gas-Cooled Reactor; the Shippingport Light Water Breeder Reactor; and various TRIGA reactors. All the commercial SNF (Peach Bottom and Shippingport) and slightly more than two-thirds (1,100 of 1,600 elements) the TRIGA SNF is currently stored within INTEC. Potential locations for the remaining TRIGA fuel and potential environmental impacts of its transport to INEEL have previously been evaluated by DOE in earlier NEPA documents and documented in the DOE records of decision.

If NRC approves the FWENC license application, DOE would transfer the SNF to the proposed Idaho Spent Fuel Facility when that facility becomes operational. These transfers would occur completely within the boundaries of the INEEL site and would comply with INEEL procedures and DOE requirements. On arrival at the proposed Idaho Spent Fuel Facility, the SNF would be (i) removed from the containers in which it is currently stored, (ii) visually inspected, (iii) inventoried, (iv) placed into new storage containers, and (v) placed into interim storage. The storage containers are intended to be packaged for transportation and shipped to a repository when it becomes available. The potential environmental impacts of on-site SNF transfers within INEEL have been documented by DOE in earlier NEPA documents, and FWENC has proposed using an environmental checklist to verify whether the actual impacts are within the expected range.

If approved, the proposed Idaho Spent Fuel Facility would receive, repackage, and provide interim dry storage for

- 1,601.5 elements of Peach Bottom reactor SNF;
- 2,971 rods of Shippingport reactor SNF; and
- Approximately 1,600 elements of TRIGA SNF.

The Peach Bottom and Shippingport reactors ceased operations in 1974 and 1983, respectively. Because of the lengthy cooling period since final operation, these fuels produce relatively low decay heat compared to typical commercial SNF. The TRIGA SNF originated from TRIGA reactors worldwide. Although the age of the TRIGA SNF varies, the SNF generates low decay heat because of the design and operational characteristics of the TRIGA reactors.

PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose and need for the proposed Idaho Spent Fuel Facility are to implement, in part, that portion of the DOE SNF management and INEEL record of decision concerning construction of a dry SNF storage facility. This facility also would allow DOE to satisfy, in part, its commitments in

the 1995 Settlement Agreement to procure dry storage facilities to replace wet storage and below-ground facilities, prepare SNF for disposal, and complete removal of all SNF from the state by 2035. These objectives would be accomplished at the proposed Idaho Spent Fuel Facility by

- Receiving SNF generated at the Peach Bottom Unit 1 High-Temperature Gas-Cooled Reactor; the Shippingport Light Water Breeder Reactor, and various TRIGA reactors;
- Transferring SNF from the current DOE storage facilities at INTEC into new storage containers; and
- Placing the storage containers into an ISFSI licensed by NRC per 10 CFR Part 72.

Additionally, DOE specified the canister dimensions in its original request for proposal for the construction of the proposed Idaho Spent Fuel Storage Facility to meet the anticipated criteria of a national high-level waste (HLW) geologic repository and facilitate eventual removal of the SNF from the proposed Idaho Spent Fuel Facility and INEEL.

ALTERNATIVES

The DOE effort to manage the national issue of SNF involved evaluation of many national alternatives: No Action, Decentralization, 1992/1993 Planning Basis, Regionalization, and Centralization. The 1995 DOE programmatic SNF EIS identified Regionalization by Nuclear Fuel Type as the preferred national SNF management alternative. Consistent with these national alternatives, alternatives considered for the INEEL environmental restoration and waste management program included No Action; Ten-Year Plan; Minimum Treatment, Storage, and Disposal; and Maximum Treatment, Storage, and Disposal. In its record of decision, DOE designated Regionalization by Nuclear Fuel Type as the preferred programmatic alternative for management of SNF. The record of decision also announced the DOE decision to implement a modified version of the Ten-Year Plan, including construction of a dry fuel storage facility and other site-specific environmental restoration and waste management actions at INEEL. The proposed Idaho Spent Fuel Facility is considered by DOE to implement the dry fuel storage facility identified in the modified Ten-Year Plan.

In addition to the proposed action to construct the Idaho Spent Fuel Facility, this EIS includes analysis of the no-action alternative. Under the no-action alternative, NRC would not approve the FWENC license application, and the proposed Idaho Spent Fuel Facility would not be built. DOE would continue to store the SNF from the Peach Bottom Unit 1 High-Temperature, Gas-Cooled Reactor, the light water breeder reactor spent fuel from the Shippingport Light Water Breeder Reactor, and the TRIGA reactor SNF at their current locations within INTEC. Remaining TRIGA reactor fuel will continue to be shipped and stored at INEEL as identified in previous DOE records of decision. As necessary, the current storage facilities would be modified to accommodate the extended storage time. Other SNF activities would continue as described in the 1995 DOE programmatic SNF EIS. Other activities at the INTEC facility will continue as described in other DOE NEPA analyses.

Dry fuel storage is the alternative preferred by DOE for SNF consolidation and management at INEEL. In developing design criteria for the proposed dry storage facility at INEEL, DOE specified operational performance characteristics and specific design criteria such as container

dimensions, year-round operation, storage containers that can be transported by truck or rail, personnel and public exposure limits, and minimization of decommissioning activities. In evaluating design approaches, DOE considered both cost and value to the government. Based on these objectives and criteria, DOE selected the FWENC design for the proposed Idaho Spent Fuel Facility. Other alternatives to dry storage considered in previous DOE NEPA analyses either did not meet programmatic objectives or did not meet terms of the 1995 Settlement Agreement. Based on previous DOE and NRC NEPA analyses and comments received during the public scoping period, the proposed action alternative and the no-action alternatives are likely to bound the impacts of dry fuel storage at INEEL, and only these alternatives are evaluated in this EIS.

POTENTIAL ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

Potential environmental impacts of the proposed action and the no-action alternatives are evaluated in this EIS and summarized next. Detailed discussion of the potential impacts is included in Section 4 of this EIS. The environmental impacts from the proposed action are generally small and will be mitigated by methods described in Section 5. Monitoring methods are described in Section 6.

Land Use

Small Impact. Construction activities associated with the proposed Idaho Spent Fuel Facility would occur on a 3.2-ha [8-acre] facility site and an adjoining 4.1-ha [10-acre] laydown area. The 7.3 ha [18 acres] are adjacent to INTEC, a large existing industrial facility at INEEL. The proposed site is currently in use as a laydown area and has been disturbed previously by other construction activities and land uses. Operational impacts include restricted access to the 3.2-ha [8-acre] facility site and the use of the site for SNF receiving, packaging, and storage.

Transportation

Small Impact. Operational impacts are related to transfer of the currently stored SNF at INTEC, a maximum distance of about 700 m [2,300 ft], to the proposed Idaho Spent Fuel Facility. Shipments would be made in DOE-supplied casks loaded on trailers. Movement of the SNF within INEEL and the proposed Idaho Spent Fuel Facility would be conducted in accordance with the DOE procedures and orders for SNF transfers within the INEEL complex.

Geology and Soils

Small Impact. Construction-related impacts to soil would occur on the 3.2-ha [8-acre] site and, to some extent, on the 4.1-ha [10-acre] laydown area. Excavation, earthmoving, and grading would occur on the 3.2-ha [8-acre] site. Preconstruction surveys conducted in 2001 indicate no contamination above regulatory limits at the site. No construction or operational impacts would occur on mineral deposits or unique geological resources.

Water Resources

Small Impact. Construction impacts would be minimal to the quality of both surface water and groundwater. An existing storm water pollution prevention plan is in effect at INEEL to minimize

surface runoff impacts. Water used for construction-phase dust control would evaporate or seep into surface soils. The proposed site is 140 to 146 m [460 to 480 ft] above the Snake River Plain Aquifer. Facility water requirements would be met through the existing water supply at the INTEC facility. There are no planned liquid effluents for the proposed Idaho Spent Fuel Facility, and wastewater treatment requirements would be met via existing INTEC facilities. Because no new groundwater wells or percolation ponds would be developed for the proposed facility, groundwater contamination is unlikely. During the first year of construction, approximately 1.5 million L [396,000 gal] of water would be used for dust suppression, with an additional 1.91 million L [505,000 gal] estimated for concrete production at the site. During the second year of construction, it is estimated that water needs will be reduced by half. Drinking water usage during operation would be about 141,950 L/mo [37,500 gal/mo]. These amounts are a small fraction of the 7.4 billion L [2.0 billion gal] used annually at INEEL and the annual withdrawal of 43 billion L [11.4 billion gal] permitted by the DOE and State of Idaho Water Rights Agreement.

Ecological Resources

Small Impact. Minimal impacts to ecological resources are anticipated from the construction and operation of the facility. There are no wetlands or habitats for threatened or endangered plant or animal species at the 3.2-ha [8-acre] site or the 4.1-ha [10-acre] laydown area. Secondary impacts on wildlife from noise and various human activities are expected to be localized, temporary, and minimal.

Air Quality

Small Impact. Construction-related fugitive dusts and exhaust emissions would be temporary and highly localized. With construction phase watering, the fugitive dusts and particulates would be about 8.2 metric tons [9 tons]; this amount is small in relation to the INEEL emission inventory for particulates. No impacts to radiological air quality are anticipated from construction activities. During operation, there would be no chemical air discharges, and the vehicular exhausts would be small and within limitations. Therefore, no significant impacts to nonradiological air quality are anticipated. Facility operations are not expected to result in the atmospheric discharge of significant amounts of gaseous radioactive effluents. The proposed facility would be fully enclosed and would include a special ventilation system along with high efficiency particulate air filters. Monitoring of stack emissions for particulate radionuclides, iodine-129, and tritium (hydrogen-3) would be used to warn of any minimal releases.

Noise

Small Impact. Construction-phase noise levels would be typical of industrial areas; further, they would be temporary and highly localized. Noise from construction and operational traffic would be minimal in relation to existing traffic noise levels in the INTEC area. Potential noise levels from operations would be less than those from construction. Hearing protection would be required for workers per Occupational Safety and Health Administration regulations. No unique noise receptors are in the vicinity of the proposed Idaho Spent Fuel Facility. Therefore, noise impacts are not expected to be significant.

Historical, Cultural, and Paleontological Resources

Small Impact. There are no known historical, cultural, or paleontological resources within the 3.2-ha [8-acre] site and the 4.1-ha [10-acre] laydown area. Thirty-eight buildings and structures within INTEC are potentially eligible for the National Register of Historic Places, however, only two of these structures are near the area that would be affected by the construction of the proposed facility and the transfer of SNF. The proposed facility would not introduce a built environment in a pristine natural setting. There are potential cumulative effects from withdrawal of access by the Shoshone–Bannock Tribes to the proposed 7.3-ha [18-acre] site, but these lands are already contained within the limited access buffer area around INTEC.

Visual/Scenic Resources

Small Impact. Because of its smaller scale in relation to the adjacent INTEC facilities, construction and operation of the proposed Idaho Spent Fuel Facility would not cause visual impacts to the Bureau of Land Management (BLM) Class IV rating for the INTEC area. Fugitive dusts and exhaust emissions from construction would not impair the BLM Class III rating of lands adjacent to INEEL, nor would the minimal releases of radioactive particulates and gases during operations. No significant visual or scenic impacts are anticipated.

Socioeconomic

Small Impact. Construction of the proposed Idaho Spent Fuel Facility would last about 2 years. This phase would employ a maximum of 250 workers, approximately 3 percent of the current INEEL workforce of 8,100. Because most workers will likely come from the existing INEEL workforce, the construction phase would not have significant socioeconomic effects on population growth, employment levels, housing, and infrastructure. For the first 4 years of operation, when fuel receipt and packaging occurs, nearly 60 employees would be required. Storage operations beyond the first 4 years would likely require fewer workers. Most operations staff will be from the local INEEL workforce. Again, no significant impacts are expected on the various features of the socioeconomic environment.

Environmental Justice

Small Impact. The minority population near INEEL is predominately Hispanic, American Indian, and Asian, with these groups composes approximately 7 percent of the population within an 80-km [50-mi] radius. The low-income population in this same area composes approximately 14 percent of the population. Special concerns related to the Shoshone–Bannock Tribes have been identified via numerous of consultations between Tribal officials and INEEL officials. Two recent programmatic impact studies for INEEL concluded that environmental justice impacts are not significant. Accordingly, because of the small socioeconomic impacts of the proposed Idaho Spent Fuel Facility, in general, and the lack of identified disproportionate impacts in the three recent impact studies, it can be concluded that no disproportionately high and adverse human health or environmental effects will occur on minority and low-income populations.

Public and Occupational Health and Safety

Small Impact. Potential impacts were examined for normal, off-normal, and accident conditions. For normal operating conditions, no chemical discharges are planned, and a health and safety program would be in place for the workers. The primary pathway for off-site radiation exposure to the public is from atmospheric emissions of radioactive particulates, iodine-129, tritium, and a few other radionuclides. Iodine-129 and tritium would contribute nearly 80 percent of the total estimated dose. The estimated annual dose for the maximally exposed individual at the southern boundary of INEEL is 3×10^{-7} mSv [3×10^{-5} mrem] from the proposed Idaho Spent Fuel Facility; from all nearby facility operations, the estimated dose is less than 0.0032 mSv [0.32 mrem]. The regulatory annual dose limit is 0.1 mSv [10 mrem], and the natural background annual radiation is 3.6 mSv [360 mrem] in this general area. Therefore, public radiation impacts during normal operations of the proposed Idaho Spent Fuel Facility would be minimal and insignificant. Estimated occupational radiological doses from construction of the proposed Idaho Spent Fuel Facility are less than 0.0032 mSv [0.32 mrem] annually to construction workers. The NRC annual occupational limit is 50 mSv [5,000 mrem], and the annual natural background radiation dose is 3.6 mSv [360 mrem]. The estimated occupational dose to SNF-handling workers is 9.1 mSv [910 mrem] annually, with the NRC annual occupational limit at 50 mSv [5,000 mrem]. The estimated annual radiation dose to all workers within an 8-km [4.8-mi] radius is 6.68×10^{-5} mSv [6.68×10^{-3} mrem]. Further analyses were also made of the public and occupational health and safety impacts of external events such as flooding, aircraft impact, volcanic hazards, seismic hazards, extreme wind and wind-generated missiles, and wildfires. Design features and operational practices are expected to minimize the public and occupational health and safety impacts of these events and accidents.

Waste Management

Small Impact. Small quantities of gaseous, liquid, and solid low-level radioactive waste will be generated during the SNF receipt and repackaging operations planned for the first 3 years. After the SNF is repackaged and stored, no gaseous releases or liquid or solid radioactive wastes are anticipated on a regular basis. Less than 17,790 L [4,700 gal] of low-level liquid wastes will be generated annually from decontamination activities. The INEEL Radioactive Waste Management Complex has the capacity to handle these small quantities of generated wastes during the storage period for the repackaged SNF.

MITIGATION MEASURES

The types of impacts and potential mitigation measures are summarized in Section 5 of this EIS.

Mitigation Measures During Construction

Mitigation measures during construction of the proposed Idaho Spent Fuel Facility will include monitoring and best-management practices, such as using water to control fugitive dust and soil-retention methods to control erosion.

Mitigation Measures During Operation

Using the organizational structure for the proposed Idaho Spent Fuel Facility, FWENC would be responsible for operational programs within the proposed Idaho Spent Fuel Facility site and rely on the DOE Idaho Operations Office for services, environmental control and management, security, and emergency planning functions outside the boundaries of the proposed facility. As the operator of the proposed Idaho Spent Fuel Facility, FWENC would participate in the INEEL Monitoring and Surveillance Committee to help coordinate activities among organizations with a stake in operations at the INEEL facility and also share in the exchange of information related to monitoring, analytical methodologies, and quality assurance.

The existing environmental monitoring programs on the INEEL include

- Effluent Monitoring Program;
- Drinking Water Program;
- Storm Water Monitoring Program;
- Site Environmental Surveillance Program;
- Off-Site Environmental Surveillance Program;
- U.S. Geological Survey Groundwater Monitoring Program;
- Meteorological Monitoring Program; and
- INEEL Oversight Program.

The FWENC monitoring program for the proposed Idaho Spent Fuel Facility is discussed in more detail in Section 6 of this EIS. Preoperational sampling would be used to establish baselines for both radiological and nonradiological constituents at the proposed site. For radiological constituents, the operational program would measure direct radiation, airborne radionuclide concentrations within the proposed Idaho Spent Fuel Facility site boundaries, and radionuclide concentrations in the soil on the proposed site. The environmental sampling for radionuclides would include thermoluminescent dosimeters at the fence and particulate and gas sampling at the stack. Additional samplings and analyses would be performed if routine outdoor surveys show unexpected anomalies or after any incident involving a radioactive spill. The proposed Idaho Spent Fuel Facility, as part of INEEL, would become a part of the INEEL environmental surveillance program. NRC will prepare a safety evaluation report to provide a detailed evaluation of the compliance of the monitoring program with the applicable regulations.

SUMMARY OF THE COSTS AND BENEFITS OF THE PROPOSED ACTION

Costs and benefits of the proposed Idaho Spent Fuel Facility are estimated based on existing DOE NEPA analyses and cost information provided in the FWENC license application to NRC. Detailed analyses of these costs and benefits are included in Section 7 of this EIS.

Costs Associated with Construction Activities

FWENC would design, construct, and initially operate the proposed Idaho Spent Fuel Facility contract with DOE. FWENC estimates construction costs associated with the proposed Idaho Spent Fuel Facility will be approximately $119.6 million (2001 dollars).

Costs Associated with Operational Activities

After the proposed Idaho Spent Fuel Facility is operational, DOE would make payments to FWENC during the transfer and storage of the first 800 fuel-handling units of SNF. As defined in the contract, one fuel-handling unit is equal to one fuel element for intact SNF. These amortized capital costs total approximately $119.6 million (2001 dollars). In addition to the amortizing payments, DOE would also make payments for transfer and storage of the remaining SNF at specific unit prices for each SNF type. Total payments, inclusive of all fuel types, would be approximately $32.5 million (2001 dollars).

Poststorage operation and maintenance of the facility by FWENC would be at the option of DOE. Pending necessary transfer of the NRC license from FWENC, DOE would have the contractual option to assume responsibility for the facility after the initial fuel-handling, packaging, and storage operations. Should DOE desire that FWENC continue as the licensee during the poststorage operations phase of the project, DOE would pay FWENC about $1.94 million (2001 dollars) per year.

Costs Associated with Decontamination and Decommissioning

DOE would retain ownership of the SNF and remain financially responsible for the eventual decontamination and decommissioning of the proposed Idaho Spent Fuel Facility. As part of its license application to NRC, FWENC provided a proposed decommissioning plan that presents the estimated cost of dismantling, decontaminating, and decommissioning the site in 2018 at $22.6 million (2001 dollars) for radiological decommissioning activities and approximately $13.2 million (2001 dollars) for the nonradiological activities associated with site restoration. The radiological decommissioning cost estimate considers only those costs associated with normal decommissioning activities necessary for release of the site for unrestricted use in accordance with the NRC radiological criteria for license termination in 10 CFR Part 20, Subpart E. The radiological decommissioning cost estimate does not include those costs associated with SNF management or the disposal of nonradioactive structures and materials. Cost estimates for nonradiological decommissioning consider those costs associated with site remediation and demolition and removal of uncontaminated structures.

Impact of the Proposed Idaho Spent Fuel Facility on the Programmatic Costs of SNF Management at INEEL

DOE estimated the programmatic costs of SNF management both with and without the construction and operation of the proposed Idaho Spent Fuel Facility. The current life-cycle cost estimate for sending all SNF managed by DOE at INEEL to a national HLW repository is $2.815 billion (2001 dollars). This life-cycle cost considers the costs for construction and operation of the proposed Idaho Spent Fuel Facility, plus the predicted cost of implementing any future modifications or enhancements to the facility necessary to prepare the SNF for shipment to a national HLW repository.

If the proposed Idaho Spent Fuel Facility is not built, the life-cycle cost estimate for sending all DOE-managed SNF from INEEL to a national HLW repository is estimated to be $3.069 billion (2001 dollars). This estimate assumes alternative facility approaches (essentially making major modifications to extend the life of existing facilities) in lieu of the proposed Idaho Spent

Fuel Facility. Based on these two estimates, the programmatic benefit to the federal government of the proposed Idaho Spent Fuel Facility is, at a minimum, $251 million (2001 dollars.

Benefits Associated with the Proposed Idaho Spent Fuel Facility

Construction and operation of the proposed Idaho Spent Fuel Facility would have a minor positive effect on the regional economy. Socioeconomic benefits include using regional workers for construction and increased sales for regional suppliers for the duration of construction. Because the work force would be small relative to the number of employees at INEEL, the proposed action would not result in a regional growth spurt, and the infrastructure of public services and transportation systems would not be adversely affected.

The proposed action is designed to support the INEEL mission and comply with agreements and commitments negotiated by DOE. Currently, most SNF to be received by the proposed Idaho Spent Fuel Facility is stored at INTEC. The 1995 Settlement Agreement among DOE, the State of Idaho, and the U.S. Navy established specific activities required to remove SNF from Idaho by 2035. Although the current storage configuration has worked well, it does not prepare the SNF for shipment from INEEL to a national HLW repository. The proposed Idaho Spent Fuel Facility would provide the ability to remove the SNF from existing storage locations, place it in specially designed storage containers, then seal and place the loaded containers in interim storage. The new containers would be designed for compatibility with transportation systems and with the eventual permanent disposal systems. After the SNF is placed in the containers, it would not need to be repackaged for shipment to a national HLW repository that becomes available.

COMPARISON OF ALTERNATIVES

For the no-action alternative, NRC would not grant the license, and the proposed facility would not be constructed. In this case, DOE would maintain current storage activities as described in the 1995 DOE programmatic SNF EIS. Under the no-action alternative, SNF stored at INEEL would be transferred and consolidated at existing facilities at INTEC. During a 3-year transition period, naval SNF would continue to be received and stored at INTEC based on terms of the 1995 Settlement Agreement. Existing procedures and site-wide plans such as the INEEL Storm Water Pollution Protection Plan and the INEEL Long-Term Stewardship Strategic Plan would continue to be implemented by DOE and its contractors. In the short term, no major upgrades or new facilities would be installed, and minor fuel conditioning would be necessary to maintain safe operation. Because no new facility would be constructed, short-term impacts to geological resources; land use; water resources; and ecological, visual/scenic, and cultural resources would be unchanged from current operations and SNF management activities. Transportation and storage of the remaining TRIGA reactor fuel would continue per an existing DOE record of decision.

In the short term, differences between the proposed action and the no-action alternative are negligible. In the longer term, however, current storage and fuel-handling facilities at the INTEC would be open and operational longer than planned. Ultimately, existing facilities would need to be modified or facilities similar to those described in the proposed action would need to be built. For example, the current storage location of Shippingport SNF at INTEC Irradiated Spent Fuel Storage Facility would be modified to expand the hot cell and add a load-out facility in lieu of the availability of the proposed Idaho Spent Fuel Facility. Long-term impacts would be similar to the

proposed Idaho Spent Fuel Facility, because the SNF must be repackaged before shipment from INEEL to a national geologic HLW repository can occur.