

## 5 MITIGATION MEASURES

### 5.1 Mitigation Measures During Construction and Operation

The types of impacts and potential mitigation measures for the proposed action are summarized in Table 5-1, based on the generic analyses presented in the U.S. Department of Energy (DOE) programmatic environmental impact statement (EIS) (DOE, 1995, Volume 2, Part B, Appendix C). As described in Section 4, most of the impacts from the proposed action are small or negligible. Mitigation measures typically include monitoring and best-management practices, such as using water to control fugitive dust and soil-retention methods to control erosion.

### 5.2 Environmental Measurement and Monitoring Programs Conducted by Other Agencies

Environmental monitoring is a key aspect of mitigating potentially adverse impacts that may result from the proposed action. The proposed Idaho Spent Fuel Facility would be one of many in the Idaho National Engineering and Environmental Laboratory (INEEL). The DOE Idaho Operations Office is the principal INEEL manager, responsible for site services, environmental control and management, and overall safety and emergency planning functions. The day-to-day management and operation of the facility is performed for DOE by Bechtel BWXT Idaho, LLC, a consortium of Bechtel National, Inc.; BWX Technologies Company; and eight regional universities.

In accordance with the organizational structure for the proposed Idaho Spent Fuel Facility, Foster Wheeler Environmental Corporation (FWENC) is responsible for operational monitoring programs within the proposed Idaho Spent Fuel Facility site and relies on the DOE Idaho Operations Office programs outside the boundaries of the proposed Idaho Spent Fuel Facility site (FWENC, 2001a,b). This situation is not uncommon at INEEL. To prevent multiple organizations collecting duplicate data and using varied methodologies, the INEEL Monitoring and Surveillance Committee was formed in 1997. The Committee meets periodically to coordinate activities among organizations with a stake in operations at the INEEL facility, including DOE; Bechtel BWXT Idaho, LLC (the INEEL Management and Operations contractor); Argonne National Laboratory–West; INEEL and DOE contractors; Shoshone–Bannock Tribes; the Idaho Department of Environmental Quality; the National Oceanographic and Atmospheric Administration; the U.S. Geological Survey; and the Environmental Science and Research Foundation. It is expected that FWENC will participate in this committee and share in the exchange of information related to monitoring, analytical methodologies, and quality assurance, to coordinate efforts and avoid unnecessary duplication (FWENC, 2001a,b).

The environmental monitoring programs on the INEEL include

- Effluent Monitoring Program;
- Drinking Water Program;
- Stormwater 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.

## Mitigation Measures

Table 5-1. Summary of Potential Impacts and Potential Mitigation Measures <sup>a</sup>			
	Impact Area	Potential Impact	Potential Mitigation
1	Land Use	Land disturbance and restricted access	Land is previously disturbed and already in restricted access area; no mitigation required
2	Geology and Soil	Disturbance of soil	Fugitive dust control; erosion control; existing INEEL Storm Water Pollution Prevention Plans
3	Water Resources	Water usage and runoff during construction; no liquid effluent during operations	Best management practice; existing INEEL Storm Water Pollution Prevention Plans
4	Ecological Resources	Endangered and threatened species; habitat fragmentation	Preactivity surveys for sensitive and protected species; needed mitigations would be explicitly identified based on survey results and consultation with appropriate federal, state, and tribal agencies
5	Historic, Archaeological, or Cultural Resources	No known resources at proposed Idaho Spent Fuel Facility	Conduct and report survey; prepare mitigation plans in consultations with affected federal, state, and tribal agencies; existing INEEL Cultural Resource Management Plans
6	Air Resources	Radiological operational emissions; toxic air pollutants; fugitive dust	Fugitive dust control, hazardous material control, and air monitoring both onsite and offsite
7	Public and Occupational Health and Safety	Radiological and nonradiological effects from normal operations and off-normal operations	Access control, facility design; safety analysis, emergency planning; NRC inspection and surveillance; NRC annual reporting requirements
8	Transportation	Potential operational exposures from on-site SNF transfers; transport of remaining TRIGA fuel elements to INEEL	Use of approved transport vehicles and containers, transport casks, qualified equipment operators, and shipment manifesting procedures
9	Waste Management	Industrial wastes from construction and operations; low-level radioactive waste from operations	Current waste management programs at INEEL, including waste minimization and recycling
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1 **Table 5-1. Summary of Potential Impacts and Potential Mitigation Measures<sup>a</sup> (continued)**

2 <b>Impact Area</b>	2 <b>Potential Impact</b>	2 <b>Potential Mitigation</b>
3 Socioeconomics 4	3 Up to 250 workers during peak 4 construction; 60 workers during 5 first 4 years of construction	3 Small proportion (less than 4 5 percent) of total INEEL 5 workforce; minimal impacts
5 DOE = U.S. Department of Energy 6 EIS = environmental impact statement 7 INEEL = Idaho National Engineering and Environmental Laboratory 8 NRC = U.S. Nuclear Regulatory Commission 9 SNF = spent nuclear fuel 10 TRIGA = Training, Research, and Isotope Research Reactors built by General Atomic 11 12 <sup>a</sup> DOE. DOE/EIS-0203-F, "Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho 13 National Engineering Laboratory Environmental Restoration and Waste Management Programs Final 14 Environmental Impact Statement." Vol. 2, Part B, Appendix C. Idaho Falls, Idaho: DOE, Idaho Operations 15 Office. 1995.		

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17 The FWENC monitoring program for the proposed Idaho Spent Fuel Facility is discussed in  
18 more detail in Section 6 of this EIS. U.S. Nuclear Regulatory Commission will also prepare a  
19 safety evaluation report to provide a detailed evaluation of compliance of the monitoring  
20 program with the applicable regulations. The environmental programs managed by other  
21 agencies at and around INEEL are described in DOE (2000) and summarized next.

## 22 23 **5.2.1 Effluent Monitoring Program**

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25 This section summarizes the environmental monitoring programs conducted by others for the  
26 DOE Idaho Operations Office at INEEL.

### 27 28 **5.2.1.1 Radiological Effluents**

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30 There are six airborne emission sampling points for continuous monitoring of radionuclides at  
31 INEEL, outside the proposed Idaho Spent Fuel Facility site. Of the six sample locations, two are  
32 at the Idaho Nuclear Technology and Engineering Center (INTEC), adjacent to the proposed  
33 Idaho Spent Fuel Facility site. Data from each airborne sample location are reported monthly to  
34 a centralized database, the Radioactive Waste Management Information System, operated by  
35 Bechtel BWXT Idaho, LLC.

### 36 37 **5.2.1.2 Nonradiological Effluents**

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39 Nonradiological airborne effluents are monitored at the sources, the New Calcining Facility  
40 and at Argonne National Laboratory-West. The results are published in the INEEL  
41 Non-Radiological Waste Management Information System annual reports. Nonradiological  
42 liquid effluents are monitored from discharge points within INEEL and in Idaho Falls.

## 43 44 **5.2.2 Drinking Water Program**

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46 Bechtel BWXT Idaho, LLC, monitors the INEEL production and drinking water wells for  
47 radiological, chemical, and bacteriological contamination at INEEL facilities. The program uses  
48 laboratories certified by the states where the analysis is accomplished (FWENC, 2001a). In the

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1 facilities not operated by Bechtel BWXT Idaho, LLC, and that have a production well, Argonne  
2 National Laboratory–West provides samples to INEEL for analysis. No new production wells  
3 are within the proposed Idaho Spent Fuel Facility site boundaries; therefore, FWENC will not  
4 need to provide samples for analysis.

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6 The production well and distribution water samples are analyzed for alpha- and beta-emitting  
7 radionuclides. Tritium analyses are also performed on drinking water samples. Strontium-90  
8 analyses are performed on samples from drinking water wells in the INTEC area, adjacent to  
9 the proposed Idaho Spent Fuel Facility site. Water samples are also tested for coliform  
10 bacteria, volatile organic compounds, inorganic contaminants (lead and copper), nitrates, and  
11 dissolved solids.

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### 13 **5.2.3 Storm Water Monitoring Program**

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15 As a requirement of the National Pollutant Discharge Elimination System (NPDES) General  
16 Permit, INEEL developed and implemented programs for monitoring snow melt and rain runoff  
17 for construction activities (DOE, 1998) and industrial operations (DOE, 2001). Samples are  
18 collected and analyzed in accordance with NPDES sampling standards. A site-specific storm  
19 water pollution prevention plan would be developed for construction activities at the proposed  
20 Idaho Spent Fuel Facility (FWENC, 2001a, Section 12.1).

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### 22 **5.2.4 Site Environmental Surveillance Program**

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24 The site environmental surveillance program has the overall responsibility for sampling air and  
25 soil as well as measuring environmental radiation at various onsite locations. Some sampling is  
26 also conducted offsite for comparison. Bechtel BWXT Idaho, LLC, maintains the database  
27 containing sampling and analytical information from this program. Sampling includes

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- 29 • Low-volume air samplers;
- 30 • Atmospheric moisture samplers;
- 31 • Nitrogen dioxide/sulfur dioxide monitoring stations; and
- 32 • Environmental dosimeters.

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### 34 **5.2.5 Off-Site Environmental Surveillance Program**

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36 The Environmental Science and Research Foundation conducts independent environmental  
37 monitoring, using off-site laboratories to perform radiological and radiochemical analyses.  
38 Samples are collected from a network of off-site, low-volume air and atmospheric moisture  
39 samplers. The Foundation also analyzes the following samples:

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- 41 • Air samples from stations in Rexburg and Blackfoot to determine concentrations of  
42 fine particulates;
- 43 • Drinking water samples from local communities;
- 44 • Milk samples from regional dairies;
- 45 • Produce samples from private gardens;
- 46 •
- 47 •
- 48 •
- 49 •

- 1 • Wheat samples from regional grain elevators;
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- 3 • Potato samples from storage warehouses;
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- 5 • Tissue samples from sheep grazing on the INEEL and game animals;
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- 7 • Soil samples from boundary locations, and
- 8
- 9 • Radiation readings from regional thermoluminescent dosimeters.

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 11 Bechtel BWXT Idaho, LLC, also does off-site monitoring by collecting periodic precipitation  
 12 samples in Idaho Falls for tritium analysis by liquid scintillation counting. The National Park  
 13 Service manages the Interagency Monitoring of Protected Visual Environments (IMPROVE)  
 14 program, a cooperative measurement effort governed by a steering committee composed of  
 15 representatives from federal and regional–state organizations. The IMPROVE monitoring  
 16 program was established in 1985 to aid in the protection of visibility in Class I areas. Part of the  
 17 program includes measuring fine suspended particles that are the primary cause of visibility  
 18 degradation. The program uses two samplers: one at Craters of the Moon National Monument  
 19 and Preserve and one inside INEEL (DOE, 2000).

### 21 **5.2.6 U.S. Geological Survey Groundwater Monitoring Program**

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 23 Since 1949, the U.S. Geological Survey has monitored INEEL ground and surface water. The  
 24 U.S. Geological Survey maintains aquifer observation wells on or near INEEL. The wells are  
 25 monitored for water levels and radiological and nonradiological substances. The  
 26 U.S. Geological Survey collects water samples from selected onsite production wells and  
 27 groundwater monitoring wells and analyzes the samples for purgeable organic compounds.  
 28 Results of these studies are periodically published in U.S. Geological Survey Water Resources  
 29 Investigations Reports and Open-File Reports.

### 31 **5.2.7 Meteorological Monitoring Program**

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 33 The National Oceanographic and Atmospheric Administration Air Resources Laboratory  
 34 maintains meteorological stations in the vicinity of INEEL, which continuously measure  
 35 parameters including temperature, wind direction and speed, relative humidity, and precipitation.  
 36 A wind-profiling radar system on INEEL also makes continuous measurements. Data from the  
 37 stations are telemetered to the National Oceanographic and Atmospheric Administration Idaho  
 38 Falls facility and archived.

### 40 **5.2.8 Idaho Oversight Program**

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 42 Since 1990, the State of Idaho has operated an environmental surveillance program that  
 43 includes collection and analysis of air, precipitation, atmospheric moisture, water, soil, and milk  
 44 samples taken on and around INEEL. The program also has a network of pressurized ion  
 45 chambers, electric ion chambers, and environmental dosimeters.

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### 5.3 References

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