Operations at the Idaho National Laboratory (INL) Site are subject to numerous federal and state environmental statutes, executive orders, and Department of Energy (DOE) orders. As a requirement of many of these regulations, the status of compliance with the regulations and releases of non-permitted hazardous materials to the environment must be documented. Forty-nine environmental permits have been issued to the INL Site, primarily by the state of Idaho. There were no reportable environmental releases at the INL Site during calendar year 2018. In 2018, DOE Idaho (DOE-ID) operated in compliance with most of the requirements defined in governing documents. Instances of noncompliance were reported to regulatory agencies and resolved. Significant environmental compliance issues/actions in 2018 include:

• DOE-ID worked on three environmental assessments (EAs) in 2018 in compliance with the National Environmental Policy Act. Development continued from previous years on the Environmental Assessment for the Expansion of Capabilities at the National Security Test Range and Radiological Response Training Range at the Idaho National Laboratory. Development of the Environmental Assessment for the Expansion of Capabilities at Idaho National Laboratory Power Grid Test Bed was initiated. DOE-ID started and completed the Environmental Assessment for the Use of DOE-Owned High-Assay Low-Enriched Uranium Stored at Idaho National Laboratory (DOE/EA-2087) resulting in a Finding of No Significant Impact.

• Environmental restoration continued in 2018 at four active Waste Area Groups (WAGs). Six WAGS were previously remediated per the Federal Facility Agreement and Consent Order (FFA/CO) signed by the U.S. Department of Energy, Idaho Operations Office, U.S. Environmental Protection Agency and the State of Idaho in 1991. The FFA/CO outlines how the INL Site will comply with the Comprehensive Environmental Response, Compensation, and Liability Act.

• The FFA/CO requires the preparation of site treatment plans for the treatment of mixed waste stored or generated at DOE facilities. In 2018, two INL Site Treatment Plan (STP) milestones were met – Remote Handled Waste Disposition Project (24 m³ [31.4 yd³]) and Sodium Components Maintenance Shop Backlog (2 m³ [2.6 yd³]).

• During 2018, four INL STP milestones were not met. Due to unplanned events at the Waste Isolation Pilot Plant (WIPP) in 2014 and associated continuing impacts to the Idaho Cleanup Project (ICP) Core’s waste certification authority, the “original volume transuranic contaminated waste” treatment milestone of 4,500 m³ (5,886 yd³) and the treatment of the remaining volume were not achieved in 2018. The original estimated volume of the transuranic waste at the INL Site was 65,000 m³ (85,016 yd³) and the total cumulative volume of transuranic waste shipped out of Idaho, as of December 2018, is 58,718 m³ (76,800 yd³). Additionally, the two treatment milestones for the sodium bearing waste could not be met due to several vital technical issues.

• The Integrated Waste Treatment Unit, designed to process liquid waste stored at the Idaho Nuclear Technology and Engineering Center (INTEC) by the end of 2012, has still delayed startup due to various technical problems.

• The state of Idaho Department of Environmental Quality (DEQ) has authority to implement the Clean Air Act. In 2018 the state conducted three onsite regulatory inspections and concluded that the facilities are operating in compliance with permit conditions and requirements.

• The Idaho DEQ has promulgated Safe Drinking Water Act regulations. Nine active drinking water systems at INL Site facilities were sampled according to these regulations and were well below regulatory limits for drinking water.

• Measurements of radionuclides in environmental media sampled on and around the INL Site in 2018 did not exceed Derived Concentration Standards established in DOE Order 458.1, “Radiation Protection of the Public and the Environment.”
2. ENVIRONMENTAL COMPLIANCE SUMMARY

This chapter reports the compliance status of the U.S. Department of Energy (DOE) Idaho National Laboratory Site (INL Site) with environmental protection requirements. Operations at the INL Site are subject to numerous federal and state environmental protection requirements, such as statutes, acts, agreements, executive orders and DOE orders. These are listed in Appendix A.

2.1 Environmental Restoration and Waste Management

2.1.1 Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) provides the process to assess and remediate areas contaminated by the release of chemically hazardous, radioactive substances, or both. Nuclear research and other operations at the INL Site left behind contaminants that pose a potential risk to human health and the environment. The INL Site was placed on the National Priorities List under CERCLA on November 29, 1989. U.S. Department of Energy, Idaho Operations Office (DOE-ID), the state of Idaho, and U.S. Environmental Protection Agency (EPA) Region 10 signed the Federal Facility Agreement and Consent Order (FFA/CO) in December 1991 (DOE 1991).

Environmental restoration is conducted under the FFA/CO, which outlines how the INL Site will comply with CERCLA. It identifies a process for DOE-ID to work with its regulatory agencies to safely execute cleanup of past release sites.

The INL Site is divided into 10 Waste Area Groups (WAGs) (Figure 2-1) as a result of the FFA/CO, and each WAG is further divided into smaller cleanup areas called operable units. Field investigations are used to evaluate potential release sites within each WAG and operable unit when existing data are insufficient to determine the extent and nature of contamination. After each investigation is completed, a determination is made regarding whether a “No Action” or “No Further Action” listing is possible, or if it is appropriate to proceed with an interim cleanup action, the Operable Unit-10-08 Plug-In Remedy action, or further investigation using a remedial investigation/feasibility study (RI/FS). Results from the RI/FS form the basis for risk assessments and alternative cleanup actions. This information, along with regulatory agencies’ proposed cleanup plan, is presented to the public in a document called a proposed plan. After consideration of public comments, DOE, EPA, and the state of Idaho develop a record of decision (ROD) that selects a cleanup approach from the alternatives evaluated. Cleanup activities can then be designed, implemented, and completed.

Since the FFA/CO was signed in December 1991, the INL Site has cleaned up release sites containing asbestos, petroleum products, acids and bases, radionuclides, unexploded ordnance and explosive residues, polychlorinated biphenyls, heavy metals, and other hazardous materials. All 24 RODs that were scheduled have been signed and are being implemented. Comprehensive RI/FSs have been completed for WAGs 1–5, 7–9, and 6/10 (6 is combined with 10). Active remediation is completed at WAGs 1 (excluding Operable Unit 1-07B), 2, 4, 5, 6, 8, and 9. Institutional controls and operations and maintenance activities at these sites are ongoing and will continue to be monitored under the Site-wide Institutional Controls and Operations and Maintenance Plan (DOE-ID 2017). The status of ongoing

• DOE employs the environmental management system (EMS) modeled by the International Organization for Standardization (ISO) Standard 14001 to help establish policy, objectives, and targets at the INL Site to reduce environmental impacts and increase operating efficiency through a continuing cycle of planning, implementing, evaluating, and improving processes. The two main contractors have established EMSs for their respective operations.

• The INL Site Sustainability program implements sustainability strategies and practices that will meet key DOE sustainability goals, including: reduce greenhouse gas (GHG) emissions; reduce energy and potable water intensity; reduce fleet petroleum consumption; divert nonhazardous solid waste and construction and demolition debris; and use energy from renewable sources. Doe Idaho Operations Office reported performance to sustainability related requirements and goals in the 2018 INL Site Sustainability Plan.

• In 2018, 29 cultural resource reviews were completed for INL Site projects with potential to cause impacts to archaeological resources. Cultural resource reviews of projects that had the potential to impact INL historic architectural properties were also completed for 56 proposed activities.
Figure 2-1. Map of INL Site Showing Facilities and Corresponding WAGs.
active remediation activities at WAGs 1, 3, 7, and 10 is described in Table 2-1.

Documentation associated with the FFA/CO is publicly available in the CERCLA Administrative Record and can be accessed at https://ar.icp.doe.gov.

### 2.1.2 Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) established regulatory standards for generation, transportation, storage, treatment, and disposal of hazardous waste. The Idaho Department of Environmental Quality (DEQ) is authorized by EPA to regulate hazardous waste and the hazardous components of mixed waste at the INL Site. Mixed waste contains both radioactive and hazardous materials. The Atomic Energy Act, as administered through DOE orders, regulates radioactive wastes and the radioactive part of mixed wastes. A RCRA hazardous waste permit application contains two parts: Part A and Part B. Part A of the RCRA hazardous waste permit application consists of EPA Form 8700-23, along with maps, drawings and photographs, as required by 40 Code of Federal Regulations (CFR) 270.13. Part B of the RCRA hazardous waste permit application contains detailed, site-specific information as described in applicable sections of 40 CFR 262 through 270.27. The INL Site currently has two RCRA Part A permit volumes and seven Part B permit volumes. Parts A and B are considered a single RCRA permit that comprises several volumes.

**RCRA Reports.** As required by the state of Idaho, the INL Site submitted the 2018 Idaho Hazardous Waste Generator Annual Report on the types and quantities of hazardous wastes generated, shipped for treatment and disposal, and remaining in storage.

**RCRA Closure Plan.** There were no closure activities completed in 2018.

**RCRA Inspection.** For Fiscal Year (FY) 2018, there were no DEQ RCRA inspections of the INL Site.

**RCRA Consent Order.** On January 6, 2017, due to DOE’s inability to meet commitments to initiate waste treatment in the Integrated Waste Treatment Unit (IWTU) and cease use of the INTEC tanks, DEQ assessed a penalty to DOE pursuant to the provisions under Section VII of the Fifth Modification to the Notice of Noncompliance-Consent Order, in the amount $2,190,000 for the period of noncompliance from March 30, 2017, to March 31, 2018. Supplemental Environmental Projects were utilized in lieu of the payment.

### 2.1.3 National Environmental Policy Act

The National Environmental Policy Act (NEPA) requires federal agencies to consider and analyze potential environmental impacts of proposed actions and explore appropriate alternatives to mitigate those impacts, including no action alternative. Agencies are required to inform the public of the proposed actions, impacts, and alternatives and consider public feedback in selecting an alternative. DOE implements NEPA according to procedures in the CFR (40 CFR 1500 - 1508; 10 CFR 1021) and assigns authorities and responsibilities according to DOE Policy 451.1, “National Environmental Policy Act Compliance Program.” Processes specific to DOE-ID are set forth in its Idaho Operations Office Management System. In 2018, DOE-ID worked on the preparation of three environmental assessments. Development continued from the previous year on the Environmental Assessment for the Expansion of Capabilities at the National Security Test Range and Radiological Response Training Range at the Idaho National Laboratory, and development was started on the Environmental Assessment for the Expansion of Capabilities at Idaho National Laboratory Power Grid Test Bed with completion expected in 2019. DOE-ID started and completed the Environmental Assessment for the Use of DOE-Owned High-Assay Low-Enriched Uranium Stored at Idaho National Laboratory (DOE/EA-2087) resulting in a Finding of No Significant Impact.

### 2.1.4 Toxic Substances Control Act

The Toxic Substances Control Act (TSCA), which is administered by EPA, requires regulation of production, use, or disposal of chemicals. TSCA supplements sections of the Clean Air Act (CAA), the Clean Water Act (CWA), and the Occupational Safety and Health Act. Because the INL Site does not produce chemicals, compliance with the TSCA is primarily directed toward use and management of certain chemicals, particularly polychlorinated biphenyls. For example, polychlorinated biphenyls-containing light ballasts are being removed at buildings undergoing demolition. The ballasts are disposed of off the INL Site at a TSCA-approved disposal facility.

### 2.1.5 INL Site Agreements

The FFA/CO requires the preparation of site treatment plans for the treatment of mixed waste stored or generated at DOE facilities. Mixed waste contains both hazardous and radioactive components. The FFA/CO and Site Treatment Plan was signed by the state of Idaho on November
Table 2-1. 2018 Status of Active WAGs Cleanup.

<table>
<thead>
<tr>
<th>Waste Area Group</th>
<th>Facility</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Test Area North</td>
<td>Groundwater cleanup of trichloroethene for Operable Unit 1-07B continued through 2018. The New Pump and Treat Facility generally operated four days per week, except for downtime due to maintenance, to maintain trichloroethene concentrations in the medial zone below specified targets. The in-situ bioremediation transitioned into a rebound test in 2012 to determine the effectiveness of the remedy to date. The revised test plan was finalized in early 2017, to establish how the groundwater cleanup at Test Area North will continue. During 2015, two wells were constructed and further in-situ bioremediation continues in a specific area where previous efforts had not achieved the desired reduction in contaminant levels. During 2017, a new well was constructed to better monitor the plume at its distal edge. All institutional controls (IC) and operations and maintenance (O&amp;M) requirements were maintained during 2018.</td>
</tr>
<tr>
<td>3</td>
<td>Idaho Nuclear Technology and Engineering Center</td>
<td>The Idaho CERCLA Disposal Facility (ICDF) disposes of contaminated soils and debris from CERCLA remediation operations to reduce risk to the public and the environment. The facility continues to receive small amounts of liquid and solid waste periodically for disposal in the ICDF evaporation ponds and disposal cells, respectively. The ICDF evaporation ponds are sampled annually in accordance with the ICDF Complex Operational and Monitoring Sampling and Analysis Plan, and results are sent to the EPA and the state of Idaho DEQ. Remedial actions required by the WAG 3, Operable Unit 3-14 ROD, implemented in 2013, included the reduction of approximately nine million gallons of anthropogenic recharge to the northern perched water zones. Remedial actions were taken at the Tank Farm Facility to reduce water infiltration that potentially could transport contaminants from the perched water to the underlying aquifer. Perched and groundwater monitoring under and near the facility will continue until the risk posed by contamination left in place is below target levels. All ICs and O&amp;M requirements were maintained in 2018. An interim low-permeability asphalt barrier was placed over the western two-thirds of the Tank Farm during 2017, to further reduce infiltration of precipitation water until a final cover is constructed after Idaho Nuclear Technology and Engineering Center (INTEC) closure.</td>
</tr>
<tr>
<td>7</td>
<td>Radioactive Waste Management Complex</td>
<td>WAG 7 includes the Subsurface Disposal Area (SDA), a 39-hectare (97-acre) radioactive waste landfill that is the major focus of remedial response actions at the Radioactive Waste Management Complex (Figure 2-2). Waste is buried in approximately 14 of the 39 hectares (35 of the 96 acres) within 21 unlined pits, 58 trenches, 21 soil vault rows, and, on Pad A, an above ground disposal area. Disposal requirements have changed in accordance with laws and practices</td>
</tr>
</tbody>
</table>
current at the time of disposal. Initial operations were limited to shallow, landfill disposal of waste generated at the INL Site. Beginning in 1954, the DOE Rocky Flats Plant near Boulder, Colorado, was authorized to send waste to the Radioactive Waste Management Complex for disposal. The Rocky Flats Plant was a nuclear weapons production facility with peak operations during the Cold War era. Various types of radioactive waste streams were disposed of, including process waste (e.g., sludge, graphite molds and fines, roaster oxides, and evaporator salts), equipment, and other waste incidental to production (e.g., contaminated gloves, paper, clothing, and other industrial trash). Much of the Rocky Flats Plant waste was contaminated with transuranic isotopes and solvents (e.g., carbon tetrachloride). In 1970, burial of transuranic waste was prohibited. In 1984, disposal practices were modified to eliminate disposal of mixed waste. Since 1984, only low-level waste was disposed of in the SDA. Disposal of waste from offsite generators was discontinued in the early 1990s, and disposal of contact handled waste was discontinued at the end of FY 2008. Currently, only remote-handled, low-level waste is being disposed of in the SDA.

The Operable Unit 7-13/14 ROD (DOE/ID-11359, [DOE-ID 2008]) was signed in 2008. The ROD is consistent with DOE’s obligations for removal of transuranic waste under the Agreement to Implement U.S. District Court Order Dated May 25, 2006, between the state of Idaho and DOE, effective July 3, 2008 (U.S. District Court 2008). The ROD calls for exhuming and packaging a minimum of 6,238 m³ (8,159 yd³)—measured as 7,485 m³ (9,790 yd³) packaged—of targeted waste from a minimum combined area of 2.3 hectares (5.69 acres). Targeted waste for retrieval contains transuranic elements (e.g., plutonium), uranium, and collocated organic solvents (e.g., carbon tetrachloride). Targeted waste retrievals in specific areas of the SDA commenced in 2005. The retrieved targeted waste is packaged, certified, and shipped out of Idaho. As of December 2018, 8,821 m³ (11,538 yd³) of targeted waste has been retrieved and packaged from a combined area of 2.0 hectares (4.94 acres).

In addition to targeted waste retrieval, the ROD addresses remaining contamination in the SDA through a combination of continued vapor-vacuum extraction and treatment of solvent vapors from the subsurface, in-situ grouting of specified waste forms containing mobile contaminants (completed 2010), constructing an evapotranspiration surface barrier over the entire landfill, and long-term management and control following construction. Construction will be complete by 2028.

<table>
<thead>
<tr>
<th>Waste Area Group</th>
<th>Facility</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-04 INL Site-wide Miscellaneous Sites and Comprehensive</td>
<td>Operable Unit 10-04 addresses long-term stewardship functions—ICs and O&amp;M for sites that do not qualify for Unlimited Use/Unrestricted Exposure—and explosive hazards associated with historical military operations on the INL Site. All ICs and O&amp;M requirements were maintained in 2018, under the Site-wide ICO&amp;M Plan. A CERCLA</td>
<td></td>
</tr>
</tbody>
</table>
The Site Treatment Plan and the ISA require DOE to process and ship all waste, respectively, stored as transuranic waste on the INL Site in 1995, when the agreements were signed, out of Idaho by December 31, 2018. The estimated volume of that waste was 65,000 m$^3$ (85,016 yd$^3$).

During 2018, the shipment of transuranic waste was curtailed due to the suspension of the WIPP operations in Carlsbad, New Mexico. In April of 2017, shipments resumed to WIPP. In 2018, 208 shipments of the transuranic waste were shipped to WIPP, for a total of 488 m$^3$ (638 yd$^3$). The ISA includes a requirement to ship an annual three-year running average of 2,000 m$^3$ (2,616 yd$^3$) of that waste out of the state. The annual three-year running average of ISA transuranic waste shipped out of Idaho over the past three years was 2,050 m$^3$ (2,681 yd$^3$). Through December 2018, the cumulative volume of the transuranic waste shipped out of Idaho is 58,718 m$^3$ (76,800 yd$^3$).

The ICP Core manages and operates a number of projects to facilitate the disposition of radioactive waste as required by the ISA and Site Treatment Plan. The Advanced Mixed Waste Treatment Project (AMWTP) performs retrieval, characterization, treatment, packaging, and shipment of transuranic waste currently stored at the INL Site. The vast majority of the waste processed at AMWTP Project resulted from the manufacture of nuclear components at DOE’s Rocky Flats Plant in Colorado. This waste is contaminated with transuranic radioactive elements (primarily plutonium).
The DOE and ICP Core contractor, Fluor Idaho, LLC, continue a four-phased approach to startup of the IWTU, designed to process the remaining 3,407,000 L (900,000 gal) of liquid waste stored at the INTEC. These wastes are stored in three stainless steel, underground tanks and a fourth is always kept empty as a spare. All four will be closed in compliance with hazardous waste regulations. A total of 11 other liquid storage tanks have been emptied, cleaned, and closed. The waste was originally scheduled to be processed by the end of 2012, but a number of technical problems have delayed startup of IWTU.

Fluor Idaho assembled a team of nationwide experts on fluidized bed technology to resolve issues with the IWTU identified during startup testing. The four-phased approach includes: implementing design and mechanical modifications; testing and verifying the changes; eventually operating the facility; and completing processing of the remaining liquid waste.

2.1.6 Low-Level and Mixed Radioactive Waste

In 2018, approximately 2,115 m$^3$ (2,766 yd$^3$) of mixed low-level waste and 1,205 m$^3$ (1,576 yd$^3$) of low-level waste was shipped off the INL Site for treatment, disposal, or both. Approximately 53.23 m$^3$ (69.62 yd$^3$) of newly generated, low-level waste was disposed of at the SDA in 2018 (Figure 2-2).

2.1.7 Spent Nuclear Fuel

Spent Nuclear Fuel (SNF) is nuclear fuel that has been withdrawn from a nuclear reactor following irradiation and the constituent elements have not been separated. SNF contains unreacted uranium and radioactive fission products. Because of its radioactivity (primarily from gamma rays), it must be properly shielded. DOE’s SNF is from development of nuclear energy technology (including foreign and domestic research reactors), national defense, and other programmatic missions. At the INL Site, SNF is managed by Fluor Idaho, the ICP

Figure 2-2. Radioactive Waste Management Complex Subsurface Disposal Area (2017).
Core contractor at INTEC, the Naval Nuclear Propulsion Program at the Naval Reactors Facility, and the INL contractor at the Advanced Test Reactor (ATR) Complex and Materials and Fuels Complex (MFC).

The 1995 Idaho Settlement Agreement (DOE 1995) put into place milestones for the management of SNF at the INL Site:

- DOE shall complete the transfer of spent fuel from wet storage facilities by December 31, 2023 (Paragraph E.8)
- DOE shall remove all spent fuel, including naval spent fuel and Three Mile Island spent fuel, from Idaho by January 1, 2035 (Paragraph C.1).

Meeting these remaining milestones comprise the major objectives of the SNF program.

2.2 Air Quality and Protection

2.2.1 Clean Air Act

The Clean Air Act (CAA) is the basis for national air pollution control. Congress passed the original CAA in 1963, and several amendments containing key pieces of legislation have been passed with the latest in 1990, which resulted in the current CAA law. The CAA provides the EPA with broad authority to implement and enforce regulations to reduce air pollutant emissions with emphasis on cost-effective methods. In addition to EPA, states, tribes and local governments play a key role in the implementation of the CAA. The state of Idaho has been delegated authority to implement the CAA through the development of an EPA-approved state implementation plan.

During Calendar Year 2018, DEQ conducted three onsite regulatory inspections, which covered compliance for facility-specific Permits to Construct and the Tier I Operating Permit. The inspections concluded that the facilities were operating in compliance with permit conditions and requirements. The INL Site submitted a permit application to DEQ for a synthetic minor permit with a facility emission cap, which would change the INL Site’s designation from a major source to an area source and replace the Tier I Operating Permit (Table 2-2). The permit was issued January 11, 2018.

<table>
<thead>
<tr>
<th>Permit Type</th>
<th>Active Permits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air Emissions:</strong></td>
<td></td>
</tr>
<tr>
<td>Permit to Construct</td>
<td>13</td>
</tr>
<tr>
<td>Title I Operating Permit</td>
<td>1</td>
</tr>
<tr>
<td><strong>Groundwater:</strong></td>
<td></td>
</tr>
<tr>
<td>Injection Well</td>
<td>3</td>
</tr>
<tr>
<td>Well construction</td>
<td>14</td>
</tr>
<tr>
<td><strong>Surface Water:</strong></td>
<td></td>
</tr>
<tr>
<td>Wastewater Reuse Permits</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Wastewater Acceptance</td>
<td>1</td>
</tr>
<tr>
<td><strong>Resource Conservation and Recovery Act:</strong></td>
<td></td>
</tr>
<tr>
<td>Part A</td>
<td>2a</td>
</tr>
<tr>
<td>Part B</td>
<td>7a</td>
</tr>
<tr>
<td><strong>Ecological:</strong></td>
<td></td>
</tr>
<tr>
<td>Migratory Bird Treaty Act Special Purpose Permit</td>
<td>2</td>
</tr>
<tr>
<td>Wildlife Collection/Banding/Possession Permit</td>
<td>3</td>
</tr>
</tbody>
</table>

a. Part A and B are considered a single RCRA Permit that comprises several volumes.
2.3 Water Quality and Protection

2.3.1 Clean Water Act

The Clean Water Act (CWA) passed in 1972, established goals to control pollutants discharged to United States surface waters. Among the main elements of the CWA are effluent limitations for specific industry categories set by EPA as well as regulating water quality standards for surface water. The CWA also provided for the National Pollutant Discharge Elimination System (NPDES) permit program, requiring permits for discharges into regulated surface waters. The Idaho DEQ has been authorized by the EPA to assume permitting authority over the NPDES program. The DEQ program, called the Idaho Pollutant Discharge Elimination System (IPDES) is being implemented in a phased approach. DEQ assumed responsibility over Publicly-Owned Treatment Works (POTWs) and the EPA pretreatment program on July 1, 2018.

The INL Site complies with an Industrial Wastewater Acceptance permit for discharges to the city of Idaho Falls’ publicly owned treatment works. The city of Idaho Falls is required by the NPDES permit program to set pretreatment standards for nondomestic discharges to POTWs. This program is set out in Title 8, Chapter 1 of the Municipal Code of the city of Idaho Falls. The INL Research Center is the only INL Site facility that is required to have an Industrial Wastewater Acceptance permit. The Industrial Wastewater Acceptance permit contains special conditions and compliance schedules, prohibited discharge standards, reporting requirements, monitoring requirements and effluent concentration limits for specific parameters. All discharges in 2018 were within compliance levels established in the INL Research Center Wastewater Acceptance permit.

2.3.2 Safe Drinking Water Act

The Safe Drinking Water Act establishes rules governing the quality and safety of drinking water. The Idaho DEQ promulgated the Safe Drinking Water Act regulations according to the Idaho Administrative Procedures Act (IDAPA) 58.01.08, “Idaho Rules for Public Drinking Water Systems.”

The eastern Snake River Plain aquifer is the source for the 12 active public water systems at all the facilities on the INL Site. All INL Site public water systems sample their drinking water as required by the state of Idaho. Chapter 5 contains details on drinking water monitoring.

2.3.3 State of Idaho Wastewater Reuse Permits

Wastewater consists of spent or used water from a home, community, farm, or industry that contains dissolved or suspended matter that may contribute to water pollution. Methods of reusing treated wastewater include irrigation, commercial toilet flushing, dust control, and fire suppression. Land application is one method of reusing treated wastewater. It is a natural way of recycling water that provides moisture and nutrients to vegetation, and it provides recharge to groundwater.

To protect health and prevent pollution of surface and groundwaters, the state of Idaho requires anyone wishing to land apply wastewater to obtain a wastewater reuse permit. The Idaho DEQ issues the reuse permits in accordance with IDAPA 58.01.17 “Recycled Water Rules,” IDAPA 58.01.16 “Wastewater Rules,” and IDAPA 58.01.11 “Ground Water Quality Rule.” All wastewater reuse permits consider site-specific conditions and incorporate water quality standards for groundwater protection. The following facilities have wastewater reuse permits at the INL Site to land apply wastewater:

- ATR Complex Cold Waste Ponds
- INTEC New Percolation Ponds
- MFC Industrial Waste Ditch and Industrial Waste Pond.

Chapter 4 contains details on wastewater reuse monitoring.

2.4 DOE Order 436.1 Departmental Sustainability

An Environmental Management System (EMS) provides a framework of elements following a plan-do-check-act cycle that when established, implemented, and maintained, will foster improved environmental performance. An EMS focuses on three core concepts: pollution prevention, environmental compliance, and continuous improvement. The primary system components are 1) environmental policy, 2) planning, 3) implementation and operation, 4) checking and corrective action, and 5) management review.

The framework DOE has chosen to employ for EMSs and sustainable practices is the International Organization for Standardization (ISO) Standard 14001 (Environmental Management Systems). The ISO 14001 model uses a system of policy development, planning, implementation and operation, checking, corrective ac-
tation, and management review; ultimately, ISO 14001 aims to improve performance as the cycle repeats. The EMS must also meet the requirements of DOE O 436.1, “Departmental Sustainability,” which requires DOE sites to use their EMS as a platform for Site Sustainability Plan implementation. Sites must maintain their EMS as being certified or conforming to the ISO 14001 standard in accordance with the accredited registrar provisions or self-declaration instructions. In 2015, ISO released a new standard, ISO 14001:2015, which replaced the ISO 14001:2004 standard with implementation of the new standard by October 2018.

The two main INL Site contractors have established EMSs for their respective operations. The INL Site management and operating contractor, Battelle Energy Alliance (BEA), underwent a recertification audit in 2017 by an accredited registrar. In 2018, BEA had two surveillance audits. The May surveillance audit resulted in no nonconformities, one opportunity for improvement, and six system strengths; while the November surveillance audit resulted in no nonconformities, one opportunity for improvement, and nine system strengths. Both surveillance audits found the INL EMS in conformance with ISO 14001:2015 and recommended continued certification. The INL Environmental Policy can be found at: https://www.inl.gov/wp-content/uploads/2017/11/16-50070-R4_ENV_Policy_WEB-1.pdf.

The ICP Core contractor, Fluor Idaho, LLC, underwent a certification audit in 2017 by an accredited registrar. In 2018, Fluor Idaho had a surveillance audit in May that resulted in no nonconformities, two opportunities for improvement, and five system strengths. The surveillance audit found the Fluor Idaho EMS in conformance with ISO 14001:2015 and recommended continued certification. The Idaho Cleanup Project Core Environmental Policy can be found at: https://fluor-idaho.com/Content/documents/Community/Environmental_POL201.pdf.

Through implementation of each EMS, the INL Site contractors have identified the aspects of their operations that can impact the environment and determine which of those aspects are significant. Aspects that have been identified as significant include: air emissions; discharging to surface, storm or groundwater; disturbing cultural or biological resources; generating and managing waste; releasing contaminants; and using, reusing, recycling, and conserving resources.

Both INL Site contractors had generally effective EMS performance in 2018. BEA completed 96% of EMS objectives in FY 2018. Fluor Idaho completed 45% of EMS objectives in FY 2018, although several additional objectives were completed shortly after the fiscal year. Both INL Site contractors’ EMS performance metrics reported at FedCenter scored either A or B (on an A to D scale), and both contractors received a FedCenter site score of green (the best) which focuses on sustainability goals.

### 2.4.1 Sustainability

Executive Order (EO) 13834, “Efficient Federal Operations,” was signed on May 17, 2018, which revoked EO 13693, “Planning for Federal Sustainability in the Next Decade,” and directed agencies to meet statutory requirements related to energy and environmental performance in a manner that increases efficiency, optimizes performance, eliminates unnecessary use of resources, and protects the environment. DOE O 436.1, “Departmental Sustainability,” defines requirements and responsibilities for managing sustainability at DOE to ensure that the department carries out its missions in a sustainable manner.

DOE-ID reported performance to sustainability related requirements and goals in the FY 2019 INL Site Sustainability Plan (Table 2-3). The performance status listed in Table 2-3 relates to the goals as stated in EO 13693, with the understanding that pending Office of Management and Budget guidance implementing EO 13834 may change the sustainability requirements and goals.

Overall, the INL performance for 2018 met statutory requirements with the exception of energy intensity reduction, currently down 15% to the 2003 baseline, with a requirement of 30% that was to be achieved by 2015. Progress was made in FY 2018 on energy efficiency upgrades, but many identified energy-saving projects require significant investment and have not been deemed cost-effective considering low electric rates. INL will continue to implement cost-effective improvements when identified.

Energy and water evaluations required by Energy Independence and Security Act Section 432 are on track for completion during the current four-year cycle.

The INL did not retrofit additional buildings to meet the Guiding Principles (GP) in 2018. To date, the INL has achieved the GP at 18 of the 26 buildings needed to meet the goal by 2025. INL completed a significant building metering project, which will assist with docu-
### Table 2-3. Summary Table of DOE-ID Sustainability Goals.

<table>
<thead>
<tr>
<th>Prior DOE-ID Goal</th>
<th>Current Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Multiple Categories</strong></td>
<td>Current performance pending data</td>
</tr>
<tr>
<td>50% Scope 1 and 2 greenhouse gas emissions reduction by FY 2025 from a FY 2008 baseline.</td>
<td></td>
</tr>
<tr>
<td><strong>Energy Management</strong></td>
<td>INL energy intensity is 153,995 Btu/ft², a decrease of 15.8% from FY 2003</td>
</tr>
<tr>
<td>25% energy intensity (Btu per gross square foot) reduction in goal subject buildings by FY 2025 from a FY 2015 baseline.</td>
<td></td>
</tr>
<tr>
<td>Energy Independence and Security Act Section 432 continuous (four-year cycle) energy and water evaluations.</td>
<td>INL completed energy and water evaluations in 28 buildings in FY 2018. For the second four-year audit cycle (June 1, 2016, through May 31, 2020) 63 audits have been completed.</td>
</tr>
<tr>
<td>Meter all individual buildings for electricity, natural gas, steam, and water, where cost-effective and appropriate.</td>
<td>INL meters 100% of its natural gas and 68.3% of its electric usage at the building level.</td>
</tr>
<tr>
<td><strong>Water Management</strong></td>
<td>INL water intensity is 134.7, a decrease of 22.5 from FY 2007</td>
</tr>
<tr>
<td>36% potable water intensity (gal per gross square foot) reduction by FY 2025 from a FY 2007 baseline.</td>
<td></td>
</tr>
<tr>
<td><strong>Waste Management</strong></td>
<td>INL diverted 51.6% of its non-hazardous solid waste in FY 2018 by recycling 1,511,490 lb (685.6 MT) of materials.</td>
</tr>
<tr>
<td>Divert at least 50% of non-hazardous solid waste, excluding construction and demolition debris.</td>
<td></td>
</tr>
<tr>
<td>Divert at least 50% of construction and demolition materials and debris.</td>
<td>INL diverted 66.1% (44,296,828 lb. or 20,902.7 MT) of its construction and demolition waste in FY 2018.</td>
</tr>
<tr>
<td><strong>Fleet Management</strong></td>
<td>INL petroleum consumption was 587,007 gal, a reduction of 37% relative to FY 2005.</td>
</tr>
<tr>
<td>20% reduction in annual petroleum consumption by FY 2015 relative to a FY 2005 baseline; maintain 20% reduction thereafter.</td>
<td></td>
</tr>
<tr>
<td>10% increase in annual alternative fuel consumption by FY 2015 relative to a FY 2005 baseline; maintain 10% increase thereafter.</td>
<td>INL alternative fuel consumption was 282,470 gal in FY 2018, an increase of 270% over FY 2005.</td>
</tr>
<tr>
<td><strong>Clean and Renewable Energy</strong></td>
<td>INL procured 18,737 MWh of renewable energy credits (RECs) from Idaho Falls Power at a total cost of $31,852. This purchase of new RECs, in addition to the 182 MWh of onsite generation (onsite generation from the solar walls, micro-grid, and small photovoltaic systems) totals 18,918 MWh (8.7%) of renewable energy for FY 2018.</td>
</tr>
<tr>
<td>“Renewable Electric Energy” requires that renewable electric energy account for not less than 30% of a total agency electric consumption by FY 2025 and each year thereafter.</td>
<td></td>
</tr>
<tr>
<td><strong>Green Buildings</strong></td>
<td>At the end of FY 2018, 18 DOE-owned buildings</td>
</tr>
<tr>
<td>At least 17% (by building count) of existing</td>
<td></td>
</tr>
</tbody>
</table>
### Environmental Compliance Summary

**Table 2-3. Summary Table of DOE-ID Sustainability Goals. (cont.)**

<table>
<thead>
<tr>
<th>Prior DOE-ID Goal</th>
<th>Current Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>buildings greater than 5,000 gross square feet to be compliant with the revised Guiding Principles for High Performance and Sustainable Buildings by FY 2025, with progress to 100% thereafter.</td>
<td>were compliant with the Guiding Principles, which represents 12% of INL buildings meeting the Guiding Principles.</td>
</tr>
</tbody>
</table>

**Acquisition and Procurement**

Promote sustainable acquisition and procurement to the maximum extent practicable, ensuring bioPreferred and biobased provisions and clauses are included in 95% of applicable contracts.

INL reports indicate 97.7% of the contracts in FY 2018 contained applicable clauses. INL made improvements when incorporating requirements through effective implementation of procedures, clauses, policies, and enhanced work processes that increase the visibility, availability, and use of sustainable products.

**Measures, Funding and Training**

Annual targets for performance contracting to be implemented in FY 2017 and annually thereafter as part of the planning of section 14 of EO 13693.

No additional Energy Savings Performance Contract projects were developed in FY 2018.

**Electronic Stewardship**

Purchases – 95% of eligible acquisitions each year are Electronic Project Environmental Assessment Tool -registered products.

INL achieved 91.2% of eligible electronics acquisitions meeting Electronic Project Environmental Assessment Tool standards in FY 2018

Power management – 100% of eligible personal computers (PCs), laptops, and monitors have power management enabled.

Power management controls are in place on all eligible computer systems. At INL, 100% of eligible PCs, laptops, and monitors have power management controls.

Automatic duplexing – 100% of eligible computers and imaging equipment have automatic duplexing enabled.

At the end of FY 2018, 100% of managed INL equipment has duplex printing enabled, where possible.

End of Life – 100% of used electronics are reused or recycled using environmentally sound disposition options each year.

At the end of FY 2018, 100% of managed INL equipment has duplex printing enabled, where possible.

Data Center Efficiency. Establish a power usage effectiveness target in the range of 1.2-1.4 for new data centers and less than 1.5 for existing data centers.

The Engineering Research Office Building High-Performance Computing core data center had a power usage efficiency of 1.39 in FY 2018.

**Organizational Resilience**

Discuss overall integration of organizational resilience in emergency response, workforce, and operations procedures and protocols.

INL emergency plans and emergency plan implementing procedures were reviewed and revised as necessary. Operating policies and procedures were evaluated to determine whether they should be modified to consider organizational risks.
menting the GPs in 13 targeted buildings by FY 2024. Overall, INL’s established plan to meet the FY 2025 goal is on track.

2.5 Other Environmental Statutes

2.5.1 Endangered Species Act

The Endangered Species Act (ESA):

• Provides a means whereby the ecosystems endangered and threatened species depend on may be conserved
• Provides a program to support the conservation of such endangered and threatened species and their habitat
• Takes steps, as appropriate, to achieve the purposes of the international treaties and conventions on threatened and endangered species.

The act requires that all federal departments and agencies seek to conserve endangered and threatened species and use their authorities to further the purposes of this act.

Personnel in the Environmental Surveillance, Education, and Research Program conduct ecological research, field surveys, and NEPA evaluations regarding ecological resources on the INL Site (see Chapter 8). Particular emphasis is given to threatened and endangered species and species of special concern identified by the U.S. Fish and Wildlife Service (FWS) and Idaho Department of Fish and Game.

One species that may occur on the INL Site has been categorized under the ESA. On October 3, 2014, the FWS determined threatened status for the Western Distinct Population Segment of the Yellow-billed Cuckoo (Coccyzus americanus) (https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=3911). The rare species is known to breed in river valleys in southern Idaho, but has only been observed once near the INL Site at Atomic City.

Several species have been removed from the list based on the limited likelihood they would occur on the INL Site. On August 13, 2014, the FWS withdrew a proposal to list the North American Wolverine (Gulo gulo luscus) in the contiguous United States as a threatened species under the ESA. The wolverine has not been documented at the INL Site, but may pass through it.

FWS conducted a status review and, in September 2015, announced that the greater sage-grouse does not warrant protection under the ESA. FWS made this determination based upon reduction in threats, which caused the Service to initially designate the bird “warranted but precluded” in 2010. Federal, state, and private land-use conservation efforts were major factors in accomplishing threat reduction, such as the Candidate Conservation Agreement for Greater Sage-grouse on the INL Site (DOE-ID and USFWS 2014) that DOE and FWS signed in October 2014. The voluntary agreement includes conservation measures that protect sage-grouse and its habitat while allowing DOE flexibility in accomplishing its missions.

Recently, white-nose syndrome (WNS) has been identified as a major threat to many bats that hibernate in caves. This disease is caused by a cold-adapted fungus (Pseudogymnoascus destructans) and has killed at least 5.5 to 6.7 million bats in seven species. Many species of bats could be at risk for significant decline or extinction due to this disease. At least two species of bats that occupy the INL Site could be affected by WNS if this disease arrives in Idaho: the little brown myotis (Myotis lucifugus) and the big brown bat (Eptesicus fuscus). In 2010, the little brown myotis was petitioned for emergency listing under the ESA, and the FWS is collecting information on both species to determine if, in addition to existing threats, this disease may be increasing the extinction risk of these bats. Biologists from the Environmental Surveillance, Education, and Research Program have initiated a monitoring program using acoustical detectors set at hibernacula and important habitat features (caves and facility ponds) used by these mammals on the INL Site. Naval Reactors and DOE-ID have developed a Bat Protection Plan for the INL Site (DOE-ID 2018). The Bat Protection Plan allows the INL Site to proactively position itself to continue its missions if there is an emergency listing of a bat species due to WNS. The Plan is based upon monitoring data and other current knowledge of bat populations on the INL Site. Bat monitoring is discussed further in Chapter 8.

2.5.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act prohibits taking any migratory bird, or any part, nest, or egg of any such bird, without authorization from the U.S. Department of the Interior. Permits may be issued for scientific collecting, banding and marking, falconry, raptor propagation, depredation, import, export, taxidermy, waterfowl sale and disposal, and special purposes. DOE-ID has a Special Purpose Permit for limited nest relocation and destruction and the associated take of migratory birds if
Section 304 – Section 304 requires owners and operators of facilities where hazardous chemicals are produced, used, or stored to report releases of CERCLA hazardous substances or extremely hazardous substances that exceed reportable quantity limits to state and local authorities (i.e., state emergency response commissions and local emergency planning committees). There were no CERCLA-reportable chemicals released at the INL Site during 2018.

Sections 311 and 312 – Sections 311 and 312 require facilities manufacturing, processing, or storing designated hazardous chemicals to make safety data sheets describing the properties and health effects of these chemicals available to state and local officials and local fire departments. Facilities are also required to report inventories of all chemicals that have safety data sheets to state and local officials and local fire departments. The INL Site satisfies the requirements of Section 311 by submitting a quarterly report to state and local officials and fire departments, identifying chemicals that exceed regulatory thresholds. In compliance with Section 312, the annual Emergency and Hazardous Chemical Inventory (Tier II) Report is provided to local emergency planning committees, the state emergency response commission, and local fire departments by the regulatory due date of March 1. This report includes the types, quantities, and locations of hazardous chemicals and extremely hazardous substances stored at the INL Site and Idaho Falls facilities that exceed regulatory thresholds. In Calendar Year 2018, the chemical inventory report included 76 individual chemicals at INL Site facilities and nine at Idaho Falls facilities. Extremely hazardous substances ammonia, cyclohexylamine, lithium hydride, nitric acid, nitrogen dioxide, and sulfuric acid were among the chemicals reported.

Section 313 – Section 313 requires facilities to submit a Toxic Chemical Release Inventory Form annually for regulated chemicals that are manufactured, processed, or otherwise used above applicable threshold amounts.

### 2.5.3 Emergency Planning and Community Right-to-Know Act

The Emergency Planning and Community Right-to-Know Act (EPCRA) is Title III of the 1986 Superfund Amendments and Reauthorization Act to CERCLA. EPCRA is intended to help local emergency response agencies better prepare for potential chemical emergencies and to inform the public of the presence of toxic chemicals in their communities. The INL Site’s compliance with key EPCRA provisions is summarized in the following subsections and in Table 2-4.

### Table 2-4. INL Site EPCRA Reporting Status (2018).

<table>
<thead>
<tr>
<th>EPCRA Section</th>
<th>Description of Reporting</th>
<th>2018 Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 304</td>
<td>Extremely Hazardous Substance Release Notification</td>
<td>Not Required</td>
</tr>
<tr>
<td>Section 311-312</td>
<td>Safety Data Sheet/Chemical Inventory Toxic</td>
<td>Required</td>
</tr>
<tr>
<td>Section 313</td>
<td>Chemical Release Inventory Reporting</td>
<td>Required</td>
</tr>
</tbody>
</table>
quantities. Releases under EPCRA 313 reporting include transfers to waste treatment and disposal facilities off the INL Site, air emissions, recycling, and other activities. The INL Site submitted Toxic Chemical Release Inventory Forms for cumene, ethylbenzene, lead, naphthalene, nickel, nitric acid, nitrate compounds, and polycyclic aromatic compounds to EPA and the state of Idaho by the regulatory due date of July 1.

Reportable Environmental Releases – There were no reportable environmental releases at the INL Site during Calendar Year 2018.

2.5.4 Executive Order 11988 – Floodplain Management

Executive Order 11988 requires each federal agency to issue or amend existing regulations and procedures to ensure that the potential effects of any action it may take in a floodplain are evaluated and that its planning programs and budget requests consider flood hazards and floodplain management. It is the intent of EO 11988 that federal agencies implement floodplain requirements through existing procedures, such as those established to implement NEPA. 10 CFR 1022 contains DOE policy and floodplain environmental review and assessment requirements through the applicable NEPA procedures. In those instances where impacts of actions in floodplains are not significant enough to require the preparation of an Environmental Impact Statement under NEPA, alternative floodplain evaluation requirements are established through the INL Site Environmental Checklist process. For the Big Lost River, DOE-ID has accepted the Big Lost River Flood Hazard Study, Idaho National Laboratory, Idaho (Bureau of Reclamation 2005). This flood hazard report is based on geomorphological models and has undergone peer review. All activities on the INL Site requiring characterization of flows and hazards are expected to use this report. For facilities at Test Area North, the 100-year floodplain has been delineated in a U.S. Geological Survey report (USGS 1997).

2.5.5 Executive Order 11990 – Protection of Wetlands

Executive Order 11990 requires each federal agency to issue or amend existing regulations and procedures to ensure wetlands are protected in decision making. It is the intent of this EO that federal agencies implement wetland requirements through existing procedures, such as those established to implement NEPA. The 10 CFR 1022 regulations contain DOE policy and wetland environmental review and assessment requirements through the applicable NEPA procedures. In instances where impacts of actions in wetlands are not significant enough to require the preparation of an Environmental Impact Statement under NEPA, alternative wetland evaluation requirements are established through the INL Site Environmental Checklist process. Activities in wetlands considered waters of the United States or adjacent to waters of the United States also may be subject to the jurisdiction of Sections 404 and 402 of the CWA.

The only area of the INL Site currently identified as potentially jurisdictional wetlands is the Big Lost River Sinks. The FWS National Wetlands Inventory map is used to identify potential jurisdictional wetlands and non-regulated sites with ecological, environmental, and future development significance. In 2018, no actions took place or impacted potential jurisdictional wetlands on the INL Site.

2.6 Cultural Resources Protection

INL Site cultural resources are numerous and represent at least 13,000 years of human land use in the region. Protection and preservation of cultural resources under the jurisdiction of federal agencies, including DOE-ID, are mandated by a number of federal laws and their implementing regulations. DOE-ID has tasked the implementation of a cultural resource management program for the INL Site to Battelle Energy Alliance’s Cultural Resource Management Office. Appendix B details compliance with cultural resources management requirements.
REFERENCES


Executive Order 13693, 2015, “Planning for Federal Sustainability in the Next Decade.”


Executive Order 11988, 1977, “Floodplain Management.”

Executive Order 11990, 1977, “Protection of Wetlands.”

ICP, 2017, Idaho National Laboratory Site Treatment Plan (INL-STP), Idaho Cleanup Project Core.


Big Southern Butte