Chapter 1: Introduction

1. INTRODUCTION

This annual report is prepared in compliance with the following United States (U.S.) Department of Energy (DOE) orders:

- DOE O 231.1B, "Environment, Safety, and Health Reporting"
- DOE O 436.1, "Departmental Sustainability"
- DOE O 458.1, "Radiation Protection of the Public and the Environment."

The purpose of the report, as outlined in DOE O 231.1B, is to present summary environmental data to accomplish the following:

- Characterize site environmental performance
- Summarize environmental occurrences and responses during the calendar year
- Confirm compliance with environmental standards and requirements
- Highlight significant facility programs and efforts
- Property clearance activities.

This report is the principal document that demonstrates compliance with DOE O 458.1 requirements, and therefore, describes the DOE Idaho National Laboratory (INL) Site impact on the public and the environment with an emphasis on radioactive contaminants.

1.1 Site Location

The INL Site encompasses about 2,305 square kilometers (km^2) (890 square miles [mi^2]) of the upper Snake River Plain in southeastern Idaho (Figure 1-1). Over 50% of the INL Site is located in Butte County, and the rest is distributed across Bingham, Bonneville, Clark, and Jefferson counties. The INL Site extends 63 km (39 mi) from north to south and is approximately 61 km (38 mi) at its broadest east-west portion. By highway, the southeast entrance is approximately 40 km (25 mi) west of Idaho Falls. Other towns surrounding the INL Site include Arco, Atomic City, Blackfoot, Rigby, Rexburg, Terreton, and Howe. Pocatello is 85 km (53 mi) to the southeast.

Federal lands surround much of the INL Site, including U.S. Bureau of Land Management lands and Craters of the Moon National Monument and Preserve to the southwest, Salmon-Challis National Forest to the west, and Targhee National Forest to the north. Mud Lake Wildlife Management Area, Camas National Wildlife Refuge, and Market Lake Wildlife Management Area are within 80 km (50 mi) of the INL Site. The Fort Hall Reservation is located approximately 60 km (37 mi) to the southeast.

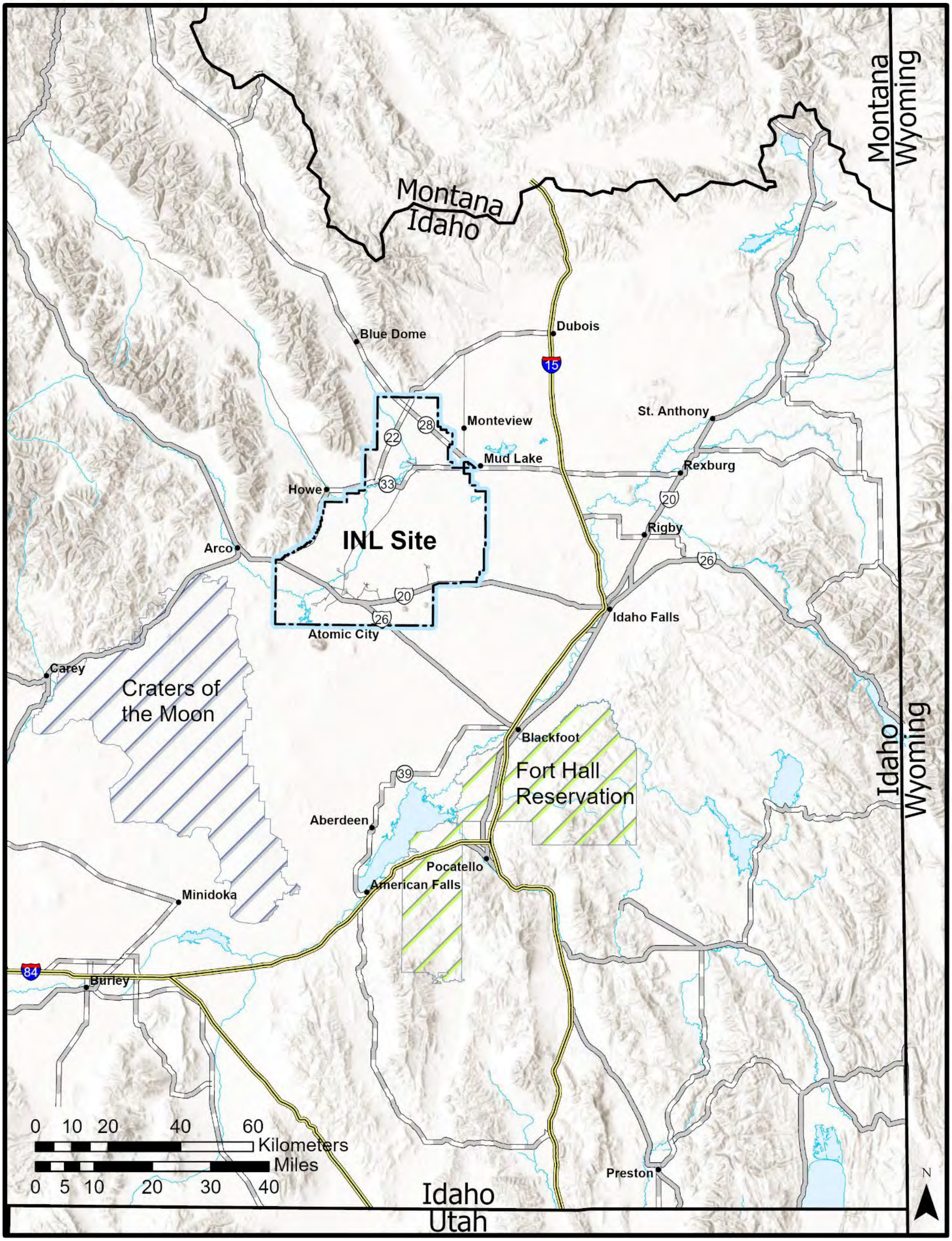

Figure 1-1. Location of the INL Site.

1.2 Environmental Setting

The INL Site is located in a large, relatively undisturbed expanse of sagebrush steppe. Approximately 94% of the land on the INL Site is open and undeveloped. The INL Site has an average elevation of 1,500 m (4,900 ft) above sea level and is bordered on the north and west by mountain ranges and on the south by volcanic buttes and open plain. Lands immediately adjacent to the INL Site are open sagebrush steppe, foothills, or agricultural fields. Agriculture is concentrated in areas northeast of the INL Site.

About 60% of the INL Site is open to livestock grazing. Controlled hunting is permitted but is restricted to a very small portion of the northern half of the INL Site (see Figure 1-2).

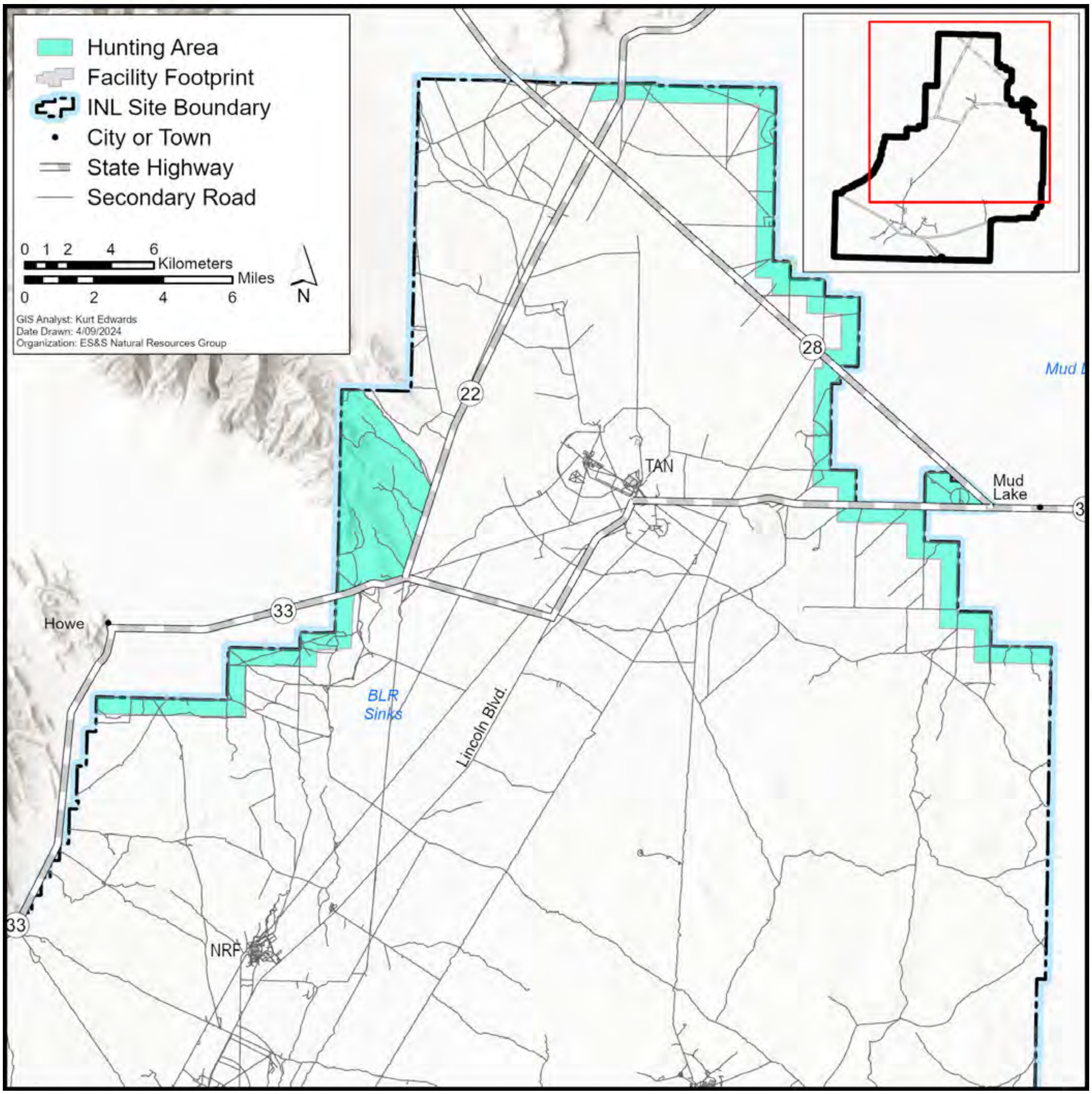

Figure 1-2. Designated elk and pronghorn hunting boundary on the INL Site.

The climate of the high desert environment of the INL Site is characterized by sparse precipitation (about 21.4 cm/yr [8.43 in./yr]), warm summers (with a normal daily temperature of 18.8°C [65.8°F]), and cold winters (with a normal daily temperature of -7.3°C [18.9°F]), based on observations at Central Facilities Area (CFA) from 1991 through 2020 (NOAA 2024). The altitude, intermountain setting, and latitude of the INL Site combine to produce a semi-arid climate. Prevailing weather patterns are from the southwest, moving up the Snake River Plain. Air masses, which gather moisture over the Pacific Ocean, traverse several hundred miles of mountainous terrain before reaching southeastern Idaho. Frequently, the result is dry air and little cloud-cover. Solar heating can be intense, with extreme day-to-night temperature fluctuations.

Basalt flows cover most of the Snake River Plain, producing rolling topography. Over 400 different kinds (taxa) of plants have been recorded on the INL Site (Anderson et al. 1996). Vegetation is dominated by big sagebrush (*Artemisia tridentata*) with grasses and wildflowers beneath that have adapted to the harsh climate.

The INL Site is also home to many kinds of animals. Vertebrate animals found on the INL Site include small burrowing mammals, snakes, birds, and several large mammals. Published species records include six types of fish, one amphibian, nine reptiles, 164 birds, and 39 mammals (Reynolds et al. 1986).

The Big Lost River on the INL Site is diverted, flowing northeast, ending in a playa area on the northwestern portion of the INL Site called the Big Lost River Sinks. Here, the river evaporates or infiltrates to the subsurface, with no surface water moving off the INL Site. The Big Lost River is diverted at the INL Diversion to avoid the potential for flooding on the INL Site. Normally, the riverbed is dry because of upstream irrigation and rapid infiltration into desert soil and underlying basalt (Figure 1-3). The Big Lost River rarely flows onto the INL Site due in part to upstream water demands. However, temporary construction at Mackay Dam resulted in increased surface water outflow from the reservoir system during 2023. Big Lost River flow was recorded from May to July 2023 at three U.S. Geological Survey surface water sites, reaching the northern gage near the Big Lost River Sinks. Additionally, surface water was recorded from October to December 2023 at the southern gage, located just below the INL Diversion.

Fractured volcanic rocks under the INL Site form a portion of the eastern Snake River Plain Aquifer (Figure 1-4), which stretches 320 km (199 mi) from Island Park to King Hill, which is 9.7 km (6 mi) northeast of Glenns Ferry, and stores one of the most bountiful supplies of groundwater in the nation. An estimated 247–370 billion m^3 (200–300 million acre-ft) of water is stored in the aquifer's upper portions. The aquifer is primarily recharged from Henry's Fork and the south fork of the Snake River, and to a lesser extent, the aquifer is recharged from the Big Lost River, Little Lost River, Birch Creek, and irrigation. Beneath the INL Site, the aquifer moves laterally southwest at a rate of 1.5–6 m/day (5–20 ft/day) (Lindholm 1996). The eastern Snake River Plain Aquifer emerges in springs along the Snake River between Milner and Bliss, Idaho. Crop irrigation is the primary use of both surface water and groundwater on the Snake River Plain.

1.3 History of the INL Site

The geologic events that have shaped the modern Snake River Plain took place during the last two million years (Lindholm 1996; ESRF 1996). This plain, which arcs across southern Idaho to Yellowstone National Park, marks the passage of the earth's crust over a plume of melted mantle material.

The volcanic history of the Yellowstone-Snake River Plain volcanic field is based on the time-progressive volcanic origin of the region, characterized by several large calderas in the eastern Snake River Plain, with dimensions similar to those of Yellowstone's three giant Pleistocene calderas. These volcanic centers are located within the topographic depression that encompasses the Snake River drainage. Over the last 16 million years, a series of giant, caldera-forming eruptions occurred, with the most recent occurrence at Yellowstone National Park 630,000 years ago. The youngest silicic volcanic centers correspond to the Yellowstone volcanic field that are less than 2 million years old and are followed by a sequence of silicic centers that occurred about 6 million years ago southwest of Yellowstone. A third group of centers, which occurred approximately 10 million years old, is centered near Pocatello, Idaho. The oldest mapped silicic rocks of the Snake River Plain are approximately 16 million years old and are distributed across a 150-km-wide (93-mi-wide) zone from southwestern Idaho to northern Nevada; they are the suspected origin of the Yellowstone-Snake River Plain (Smith and Siegel 2000).

Figure 1-3. Big Lost River. *Dry riverbed in 2016 (upper). Flowing river in May 2023 (lower).*

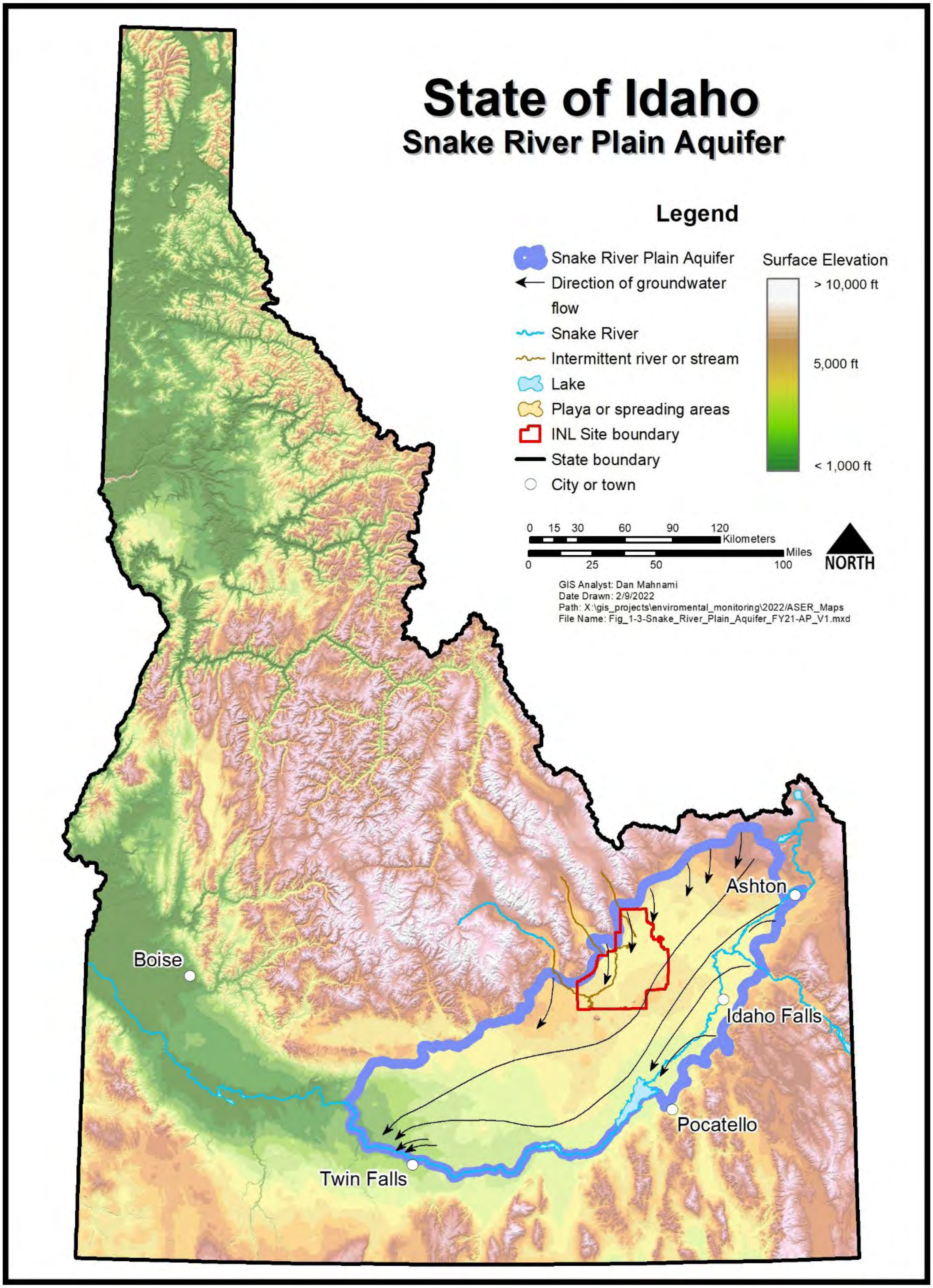

Figure 1-4. INL Site relation to the eastern Snake River Plain Aquifer.

The earliest human occupants of the eastern Snake River Plain were the Shoshone and Bannock people, the ancestors of the present-day Shoshone-Bannock Tribes. Their presence dates back 13,000 years. Tools recovered from this period indicate these occupants were hunters of large game. Plants, animals, geological features, water, and other resources on the INL Site were important to the Shoshone and Bannock people and continue to hold significance to the present-day Shoshone-Bannock Tribes.

People of European descent began exploring the Snake River Plain between 1810 and 1840; these explorers were trappers and fur traders seeking new supplies of beaver pelts.

Between 1840 and 1857, an estimated 240,000 immigrants passed through southern Idaho on the Oregon Trail. The Shoshone and Bannock people entered into peace treaties in 1863 and 1868, known today as the Fort Bridger Treaty. The Fort Hall Reservation was reserved for the various tribes under the treaty agreement. During the 1870s, miners entered the surrounding mountain ranges, followed by ranchers grazing cattle and sheep in the valleys.

In 1901, a railroad was opened between Blackfoot and Arco, Idaho. By this time, a series of acts (e.g., the Homestead Act of 1862, the Desert Claim Act of 1877, the Carey Act of 1894, the Reclamation Act of 1902) provided sufficient incentive for homesteaders to build diversionary canals to claim the desert. Most of these efforts failed because of the extreme porosity of the gravelly soils and underlying basalts.

During World War II, large guns from U.S. Navy warships were retooled at the U.S. Naval Ordnance Plant in Pocatello, Idaho. These guns needed to be tested, and the nearby uninhabited plain was used as a gunnery range, known then as the Arco Naval Proving Ground.

The U.S. Army Air Corps also trained bomber crews out of the Pocatello Airbase and used the area as a bombing range.

After the war ended, the nation turned to peaceful uses of atomic power. DOE's predecessor, the U.S. Atomic Energy Commission (AEC), needed an isolated location with an ample groundwater supply on which to build and test nuclear power reactors. In 1949, the Arco Naval Proving Ground became the National Reactor Testing Station. To learn more about the history of the INL Site, visit https://inl.gov/history/.

In 1951, the Experimental Breeder Reactor-I (EBR-I) became the first reactor to produce useful electricity. In 1955, the Boiling-Water Reactor Experiments-III reactor provided electricity to Arco, Idaho, which was the first time a nuclear reactor powered an entire community in the U.S. The laboratory also developed prototype nuclear propulsion plants for Navy submarines and aircraft carriers. Over time, the Site evolved into an assembly of 52 reactors, associated research centers, and waste handling areas as shown in Figure 1-5.

The National Reactor Testing Station was renamed the Idaho National Engineering Laboratory in 1974 and was changed to Idaho National Engineering and Environmental Laboratory (INEEL) in 1997 to reflect the Site's leadership role in environmental management. The AEC was renamed the U.S. Energy Research and Development Administration in 1975 and reorganized to the present-day DOE in 1977.

With renewed interest in nuclear power, DOE announced in 2003 that Argonne National Laboratory-West (ANL-W) and INEEL would be the lead laboratories in developing the next generation of power reactors. On February 1, 2005, Battelle Energy Alliance, LLC (BEA), took over operation of the laboratory and merged with ANL-W. The facility name was changed to Idaho National Laboratory (INL). At this time, the INL Site's cleanup activities were moved to a separate contract, the Idaho Cleanup Project (ICP), which is currently managed by the Idaho Environmental Coalition, LLC (IEC). Research activities, which include projects other than nuclear research such as National and Homeland Security (NHS) projects, were consolidated in the newly named INL.

1.4 Human Populations Near the INL Site

The population of the region within 80 km (50 mi) of the INL Site is estimated to be 353,789, based on the 2020 census and projected growth. Over half of this estimated population (196,421) resides in the census divisions of Idaho Falls (119,605) and northern Pocatello (76,815). Another 40,064 are projected to live in the Rexburg census division. Approximately 22,070 are estimated to reside in the Rigby census division and 15,408 in the Blackfoot census division. The remaining population resides in small towns and rural communities throughout southeastern Idaho.

Figure 1-5. INL timeline.

1.5 INL Site Primary Program Missions and Facilities

The INL Site mission is to operate a multi-program national research and development laboratory and to complete environmental cleanup activities stemming from past operations. The U.S. Department of Energy, Idaho Operations Office (DOE-ID) receives implementing direction and guidance primarily from two DOE Headquarters offices—the Office of Nuclear Energy (DOE-NE) and the Office of Environmental Management (DOE-EM). DOE-NE is the Lead Program Secretarial Office for all DOE-ID-managed operations on the INL Site.

DOE-EM provides direction and guidance to DOE-ID for environmental cleanup on the INL Site and functions in the capacity of Cognizant Secretarial Office. Naval Reactors operations on the INL Site report to the Pittsburgh Naval Reactors Office. These operations fall outside the purview of DOE-ID and therefore are not included in this report.

1.5.1 Idaho National Laboratory

The INL mission is to discover, demonstrate, and secure innovative nuclear energy solutions, other clean energy options, and critical infrastructure. Its vision is to change the world's energy future and secure our nation's critical infrastructure. To fulfill its assigned duties during the next decade, INL will work to transform itself into a laboratory leader in nuclear energy and homeland security research, development, and demonstration. This transformation will develop nuclear energy and NHS leadership highlighted by achievements such as the demonstration of Generation IV reactor technologies; the creation of national user facilities, including the Advanced Test Reactor (ATR) National Scientific User Facility, Wireless National User Facility, and Biomass Feedstock National User Facility; the Critical Infrastructure Test Range Complex (CITRC); piloting advanced fuel cycle technology; the rise to prominence of the Center for Advanced Energy Studies; and recognition as a regional clean energy resource and world leader in safe operations.

On February 22, 2021, an addendum to the 2019 memorandum of understanding between DOE and the U.S. Nuclear Regulatory Commission (NRC) formalized the coordination between these two federal agencies in regard to National Reactor Innovation Center (NRIC) projects. This addendum specifically focuses on research, development, and demonstration projects, and it solidifies a partnership to deliver successful nuclear reactor demonstrations. The NRIC is a national DOE program led by INL allowing collaborators to harness the world-class capabilities of the U.S. National Laboratory System. The center is charged with and committed to demonstrating advanced reactors by the end of 2025.

BEA is responsible for the management and operation of INL.

1.5.2 Idaho Cleanup Project

The ICP involves the safe environmental cleanup of the INL Site, which was contaminated with waste generated during World War II-era conventional weapons testing, government-owned research and defense reactor operations, laboratory research, fuel reprocessing, and defense missions at other DOE sites. The project focuses on meeting the Idaho Settlement Agreement (DOE 1995) and environmental cleanup milestones while reducing risks to workers. Protection of the Snake River Plain Aquifer, the sole drinking water source for more than 350,000 residents of eastern Idaho, was the principal concern addressed in the Settlement Agreement. IEC is responsible for the ICP.

Most of the cleanup work under the contract is driven by regulatory compliance agreements. The two foundational agreements are (1) the 1991 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)-based Federal Facility Agreement and Consent Order (DOE 1991), which governs the cleanup of contaminant releases to the environment, and (2) the 1995 Idaho Settlement Agreement (DOE 1995), which governs the removal of transuranic waste, spent nuclear fuel (SNF), and high-level radioactive waste from the state of Idaho. Other regulatory drivers include the Federal Facility Compliance Act-Based Site Treatment Plan (treatment of hazardous wastes) and other environmental permits, closure plans, federal and state regulations, Records of Decision, and other implementing documents.

The ICP involves treating nearly one million gallons of sodium-bearing liquid waste; removing targeted transuranic waste from the Subsurface Disposal Area (SDA); placing SNF in dry storage; treating high-level waste calcine; treating both remote- and contact-handled transuranic waste for disposal at the Waste Isolation Pilot Plant (WIPP) in New Mexico; and demolishing and disposing of more than 200 contaminated structures, including reactors, SNF storage basins, and laboratories used for radioactive experiments.

1.5.3 Primary INL Site Facilities

Most INL Site buildings and structures are located within developed areas that are typically less than a few square miles in size and are separated from each other by miles of undeveloped land. DOE controls all the land within the INL Site boundary (Figure 1-6). In addition to the INL Site, DOE owns or leases laboratories and administrative offices in Idaho Falls, about 40 km (25 mi) east of the INL Site.

Advanced Test Reactor (ATR) Complex – The ATR Complex was established in the early 1950s and has been the primary operations site for three major test reactors: (1) the Materials Test Reactor (1952–1970), (2) the Engineering Test Reactor (1957–1982), and (3) the ATR (1967–present). The current primary mission at the ATR Complex is the operation of the ATR, the world's premier test reactor used to study the effects of radiation on materials. This reactor also produces rare and valuable medical and industrial isotopes. The ATR is a Nuclear Scientific User Facility. The ATR Complex also features the ATR Critical Facility, the Test Train Assembly Facility, the Radiation Measurements Laboratory, the Radiochemistry Laboratory, and the Safety and Tritium Applied Research Facility, which is a National Scientific User Facility. The ATR Complex is operated by the INL contractor.

Central Facilities Area (CFA) – CFA is the main service and support center for the INL Site's desert facilities. Activities at CFA support transportation, maintenance, medical, construction, radiological monitoring, security, fire protection, warehouses, and instrument calibration activities. It is operated by the INL contractor.

Critical Infrastructure Test Range Complex (CITRC) – CITRC encompasses a collection of specialized test beds and training complexes that create a centralized location where government agencies, utility companies, and military customers can work together to find solutions for many of the nation's most pressing security issues. CITRC provides open landscape, technical employees, and specialized facilities for performing work in three main areas: (1) physical security, (2) contraband detection, and (3) infrastructure testing. It is operated by the INL contractor.

Idaho Nuclear Technology and Engineering Center (INTEC) – The Idaho Chemical Processing Plant was established in the 1950s to recover usable uranium from SNF used in DOE and U.S. Department of Defense (DOD) reactors. Over the years, the facility recovered more than $1 billion worth of highly enriched uranium that was returned to the government fuel cycle. In addition, an innovative high-level liquid waste treatment process, known as calcining, was developed at the plant. Calcining reduced the volume of liquid radioactive waste generated during reprocessing and placed it in a more stable granular solid form. In the 1980s, the facility underwent a modernization, and safer, cleaner, and more efficient structures replaced most major facilities. SNF reprocessing was discontinued in 1992. In 1998, the plant was renamed INTEC. Current operations include the startup and operation of the Integrated Waste Treatment Unit, designed to treat approximately 3,406,871 L (900,000 gal) of sodium-bearing liquid waste; and the closure of the remaining liquid waste storage tanks, SNF storage, environmental remediation, and disposal of excess facilities; and the management of the Idaho CERCLA Disposal Facility. The Idaho CERCLA Disposal Facility is the consolidation point for CERCLA-generated wastes within the INL Site boundaries. INTEC is operated by IEC, the ICP contractor.

Materials and Fuels Complex (MFC) – MFC is the foundation for nuclear research, development, and demonstration testing of advanced reactors. This complex is the nexus of research and development for new reactor fuels and related materials. As such, it will contribute to increasingly efficient reactor fuels and the important work of nonproliferation—harnessing more energy with less risk. Certain facilities at MFC also support the manufacturing and assembling of components for use in space applications. It is operated by the INL contractor.

Transient Reactor Test Facility (TREAT), a Nuclear Scientific User Facility, provides transient testing of nuclear fuels. It is an air-cooled, thermal spectrum test facility specifically designed to evaluate the response of reactor fuels and structural materials to accident conditions ranging from mild upsets to severe accidents. TREAT is used to study fuel melting behavior, interactions between fuel and coolant, and the potential for propagation of failure to adjacent fuel pins. TREAT has an open core design that allows for ease of experiment instrumentation and real-time imaging of fuel motion during irradiation, which also makes TREAT an ideal platform for understanding the irradiation response of materials and fuels on a fundamental level.

Naval Reactors Facility (NRF) – NRF is operated by Fluor Marine Propulsion, LLC. As established in Executive Order 12344 (1982), the Naval Nuclear Propulsion Program is exempt from the requirements of DOE O 436.1, DOE O 458.1,

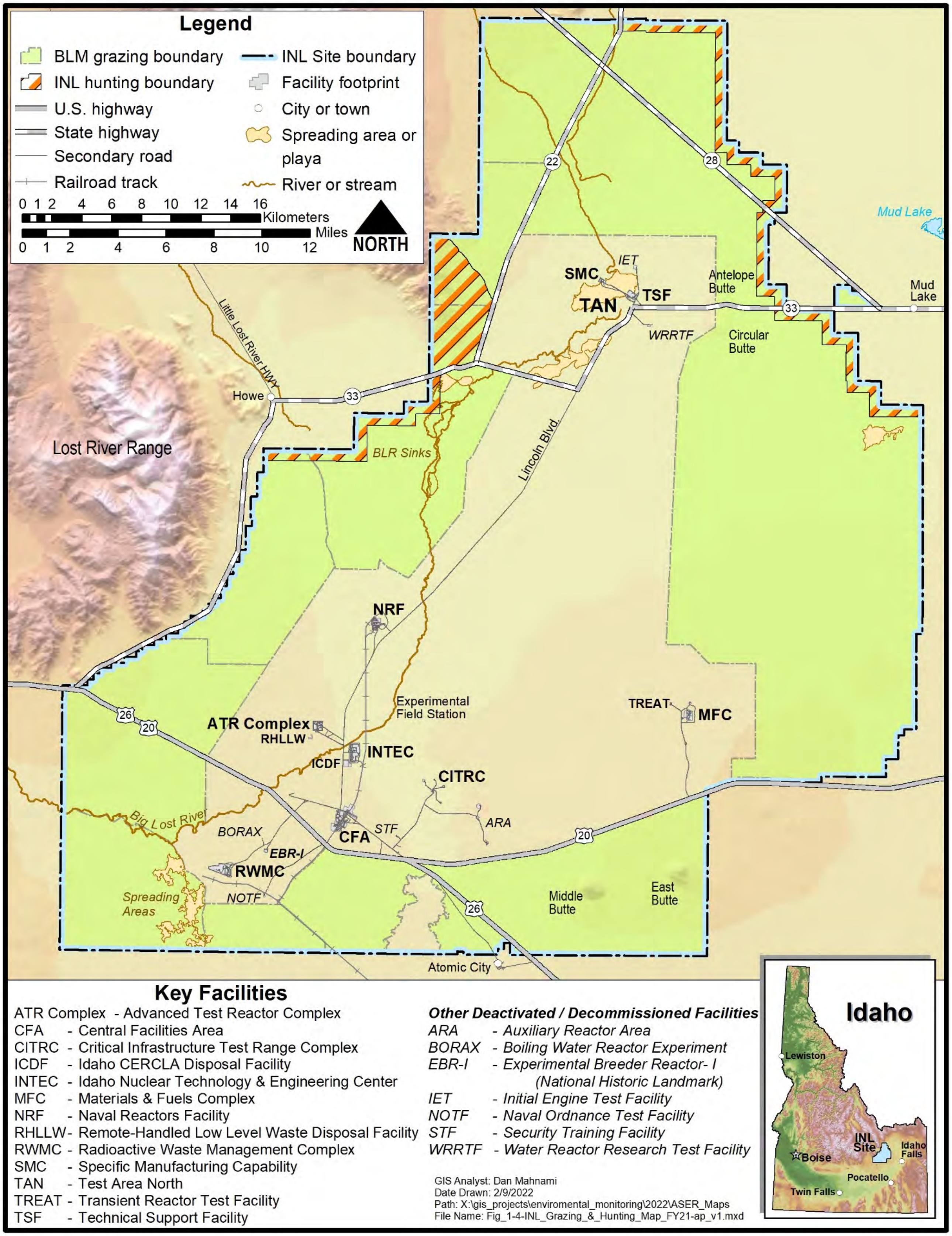

Figure 1-6. Location of the INL Site, showing key facilities.

and DOE O 414.1D. Therefore, NRF is excluded from this report. The director of the Naval Nuclear Propulsion Program establishes reporting requirements and methods implemented within the program, including those necessary to comply with appropriate environmental laws. The NRF program is documented in the NRF Environmental Monitoring Report (FMP 2024).

Radioactive Waste Management Complex (RWMC) – Since the 1950s, DOE has used the RWMC to manage, store, and dispose of waste contaminated with radioactive elements generated in national defense and research programs. RWMC provides treatment, temporary storage, and transportation of transuranic waste destined for WIPP.

The SDA is a 39-ha (96-acre) radioactive waste landfill that was used for more than 50 years. Approximately 14 of the 39 ha (35 of 96 acres) contain waste, including radioactive elements, organic solvents, acids, nitrates, and metals from historical operations such as reactor research at the INL Site and weapons production at other DOE facilities. A CERCLA Record of Decision (OU-7-13/14) was signed in 2008 (DOE-ID 2008) and includes exhumation and offsite disposition of targeted waste. Cleanup of RWMC is managed by the ICP contractor.

Remote-Handled Low-Level Waste Disposal Facility – The Remote-Handled Low-Level Waste Disposal Facility is a Hazard Category 2 nuclear facility providing a below-grade, permanent radioactive waste disposal capability critical for INL nuclear research and Naval Reactors missions at the INL Site. Remote-handled low-level waste is generated from nuclear programs conducted at INL Site facilities, including the NRF, the ATR Complex, and MFC. The facility began operations in 2018 and will support an anticipated 20 years of waste disposal operations with an expansion capability for up to 50 years. The facility comprises an administration building, a maintenance building, and a 175,000-ft^2 vault yard that includes monitoring wells, a robust drainage system, and 446 below-grade concrete waste disposal vaults sized to accommodate 939 stainless steel waste canisters of various configurations depending on the waste type and waste generator facility.

Research and Education Campus (REC) – The REC, operated by the INL contractor, is the collective name for INL's administrative, technical support, and computer facilities in Idaho Falls, Idaho, and the in-town laboratories where researchers work on a wide variety of advanced scientific research and development projects. REC also hosts the Biomass Feedstock National User Facility. As the name implies, the REC uses both basic science research and engineering to apply new knowledge to products and processes that improve the quality of life. This reflects the emphasis INL is placing on strengthening its science base and increasing the commercial success of its products and processes. Two new laboratory facilities—the Energy Systems Laboratory and Energy Innovation Laboratory—were constructed in 2013 and 2014. In 2019, the Idaho Board of Education and INL completed the construction of two new research facilities: the (1) Cybercore Integration Center and the (2) Collaborative Computing Center. The Cybercore Integration Center leads national efforts to secure critical infrastructure control systems from cybersecurity threats, while the Collaborative Computing Center will advance the computational science needs of INL and provide academia and industry with unprecedented access to high-performance computing. These and other facilities are integral to transforming INL into a world-renowned research laboratory.

The DOE Radiological and Environmental Sciences Laboratory (RESL) is located within the REC and provides a technical component to DOE oversight of contractor operations at DOE facilities and sites. As a reference laboratory, RESL conducts cost-effective measurement quality assurance programs that help ensure key DOE missions are completed in a safe and environmentally responsible manner. By ensuring the quality and stability of key laboratory measurement systems throughout DOE and by providing expert technical assistance to improve those systems and programs, RESL ensures the reliability of data on which decisions are based. RESL's core scientific capabilities are in analytical chemistry and radiation calibrations and measurements. In 2015, RESL expanded its presence in the REC with the addition of a new building for the DOE Laboratory Accreditation Program. The new DOE Laboratory Accreditation Program facility adjoins the RESL facility and provides irradiation instruments for the testing and accreditation of dosimetry programs across the DOE Complex.

Test Area North (TAN) – TAN was established in the 1950s to support the government's Aircraft Nuclear Propulsion program and its goal to build and fly a nuclear-powered airplane. When President John F. Kennedy cancelled the nuclear propulsion program in 1961, TAN began to host a variety of other activities. The Loss-of-Fluid Test (LOFT) reactor became part of the new mission. The LOFT reactor, constructed between 1965 and 1975, was a scaled-down version of a commercial pressurized water reactor. Its design allowed engineers, scientists, and operators to create or recreate loss-of-fluid accidents (e.g., reactor fuel meltdowns) under very controlled conditions. The LOFT dome provided containment for a relatively small, mobile test reactor that was moved in and out of the facility on a railroad car. The NRC incorporated data received from these accident tests into commercial reactor operating codes. Before closure, the LOFT facility conducted 38 experiments, including several small loss-of-coolant experiments designed to simulate the type of accident that occurred in 1979 at Three Mile Island (TMI) in the state of Pennsylvania. In October 2006, the LOFT reactor and facilities were decontaminated, decommissioned, and demolished.

Additionally, TAN housed the TMI-2 Core Offsite Examination Program that obtained and studied the technical data necessary for understanding the events leading to the TMI-2 reactor accident. Shipment of TMI-2 Core samples to the INL Site began in 1985, and the program ended in 1990. INL Site scientists used the core samples to develop a database that predicts how nuclear fuel will behave when a reactor core degrades.

In July 2008, the TAN Cleanup Project was completed. The TAN Cleanup Project demolished 44 excess facilities, the TAN Hot Shop, and the LOFT reactor. Environmental monitoring continues at TAN. See Waste Area Group 1 (WAG-1) status in Table 2-2.

The Specific Manufacturing Capability Project is located at TAN. This project is operated for the DOD by the INL contractor and manufactures protective armor for the Army M1-A1 and M1-A2 Abrams tanks.

1.5.4 Independent Oversight and Public Involvement and Outreach

DOE encourages information exchange and public involvement in discussions and decision-making processes regarding INL Site activities. Active participants include the public; Native American tribes; local, state, and federal government agencies; advisory boards; and other entities in the public and private sectors.

The roles and involvement of selected organizations are described in the following sections.

1.5.5 Citizens Advisory Board

The Citizens Advisory Board is a federally appointed citizen panel formed in 1994 that provides advice and recommendations on ICP activities to DOE-ID. The Citizens Advisory Board consists of 12 to 15 members who represent a wide variety of key perspectives on issues of relevance to Idaho citizens. Board members comprise a variety of backgrounds and viewpoints, including environmentalists, natural resource users, previous INL Site workers, Shoshone-Bannock Tribes, representatives of local government, health care, higher education, business, and the general public. These diverse backgrounds assist the ICP Environmental Management program in making decisions and having a greater sense of how cleanup efforts are perceived by the public. Members are appointed by the DOE Environmental Management Assistant Secretary and serve voluntarily without compensation. Three additional nonvoting liaisons include representatives from DOE-ID, Environmental Protection Agency Region 10, and the Idaho Department of Environmental Quality (DEQ). These liaisons provide information to the Citizens Advisory Board on their respective agencies' policies and views.

The Citizens Advisory Board is chartered by DOE through the Federal Advisory Committee Act. The Citizens Advisory Board's charter is to provide input and recommendations to DOE on topics such as cleanup standards and environmental restoration, waste management and disposition, stabilization and disposition of non-stockpile nuclear materials, excess facilities, future land use and long-term stewardship, risk assessment and management, and cleanup science and technology activities. More information about the Citizens Advisory Board's recommendations, membership, and meeting dates and topics can be found at https://www.energy.gov/em/icpcab.

1.5.6 Sitewide Monitoring Committees

Sitewide monitoring committees include the INL Site Monitoring and Surveillance Committee and the INL Site Water Committee. The INL Site Monitoring and Surveillance Committee was formed in March 1997 and meets at least quarterly, or as often as needed, to coordinate activities among groups involved in environmental monitoring on and off the INL Site. This standing committee includes representatives of DOE-ID, INL Site contractors, Shoshone-Bannock Tribes, the State of Idaho DEQ-INL Oversight Program, the National Oceanic and Atmospheric Administration, NRF, and the U.S.

Geological Survey. The INL Site Monitoring and Surveillance Committee has served as a valuable forum to review monitoring, analytical, and quality assurance methodologies; coordinate efforts; and avoid unnecessary duplication.

The INL Site Water Committee was established in 1994 to coordinate drinking-water-related activities across the INL Site and to provide a forum for exchanging information related to drinking water systems. In 2007, the INL Site Water Committee expanded to include all Sitewide water programs—drinking water, wastewater, storm water, and groundwater. The committee includes monitoring personnel, operators, scientists, engineers, management, data entry, and validation representatives of DOE-ID, INL Site contractors, the U.S. Geological Survey, and NRF. The committee serves as a forum for coordinating water-related activities across the INL Site and exchanging technical information, expertise, regulatory issues, data, and training.

The INL Site Water Committee interacts on occasion with other committees that focus on water-related topics or programs, such as the INL Site Monitoring and Surveillance Committee.

1.5.7 Environmental Oversight and Monitoring Agreement

A new five-year Environmental Oversight and Monitoring Agreement (DOE-ID 2021) among DOE-ID, the Naval Reactors Laboratory Field Office/Idaho Branch Office, and the Idaho DEQ was signed in March 2021. The 2021 version is the latest in a succession of agreements that was first implemented in 1990. The new Environmental Oversight and Monitoring Agreement governs the activities of the DEQ-INL Oversight Program and DOE-ID's cooperation in providing access to facilities and information for non-regulatory, independent oversight of INL Site impact to public health and the environment. The first agreement established in 1990 created the State of Idaho INL Oversight Program.

The DEQ-INL Oversight Program's main activities include environmental surveillance, emergency response, and public information. More information can be found on the DEQ-INL Oversight Program website at www.deq.idaho.gov.

1.5.8 Environmental Education Outreach

During 2023, the INL contractor environmental outreach and K-12 science, technology, engineering, and mathematics (STEM) programs continued to focus on reaching rural and remote schools that often have large disadvantaged and minority student populations. A total of 92 environmentally based natural science-related programs were presented to over 1,500 elementary and middle school students. These programs not only reached underserved rural populations, but also Native American students and their families on the Fort Hall Reservation. The K-12 STEM program was also involved in three Hispanic Youth Conferences (Figure 1-7) located in Pocatello, Twin Falls, and Boise, Idaho.

Figure 1-7. Hispanic students building robotic arms.

School programs range from discussions of the geology and hydrology of the Snake River Plain to a wide variety of ecologically based discussions of animal adaptations to their environment and human impact. Given the season, spring and summer programs on plants and insects are popular. These programs focus not just on the biology of the species but the adaptations that make them unique and the role humans play in impacting their populations.

In addition to these programs, ICP also supports STEM education in local communities through the weSTEAM program. weSTEAM is comprised entirely of volunteers in support of educating K-12 students on careers in science, technology, engineering, and math. These volunteers use a range of hands-on demonstrations and activities that also help students understand the vital role art plays in each of these areas, specifically in the areas of innovation and design.

The following provides a summary of education outreach for the INL Site contractors in 2023:

- ***Bring Idaho Alive*.** In collaboration with Museum of Idaho, the Bring Idaho Alive program was offered to statewide educators as a semester-long course. One-hundred-and-fifty teachers participated with the potential to receive two continuing education credits. Archaeology, biology, geology, history, technology, and more were discussed in monthly lectures. Hands-on activity kits were provided to the educators as valuable resources for their classrooms.

- ***Rocky Mountain Adventures summer workshops*****.** Sponsored by Museum of Idaho and the INL contractor, these multi-day workshops took place in the classroom and in the field. Educators could earn a continuing education credit. Certain workshops incorporate curriculum from Project WET and Project WILD. Field segments include field trips to the Snake River, Island Park, and Yellowstone and Grand Teton National Parks. Approximately 75 teachers participated in these workshops.
- ***Museum Summer Camps*****.** Museum of Idaho and the INL contractor environmental program led summer camp programs that reached 150 students from first through eighth grades. Students participated in programs highlighting environmental and natural science components, as well as integration of STEM concepts.
- ***My Amazing Future*****.** The annual "My Amazing Future" event was sponsored by the INL contractor. The event provided an opportunity for eighth-grade young women to explore careers in STEM. Students participated in a full-day of hands-on sessions designed to be educational and engaging. The sessions illustrated how a STEM education translates into exciting career options.
- ***East Idaho Science Bowl*****.** The INL contractor sponsored a math and science quiz-bowl tournament for southeastern Idaho high school and middle school students. Participants were tested on their math and science knowledge (Figure 1-8). ICP contractor employees supported the event as scorekeepers and other key volunteer roles.

Figure 1-8. Science Bowl competition.

- ***Energy Days.*** The ICP contractor, alongside the INL contractor, produced a day-long conference for community members and local high school and college students. The conference highlighted various projects performed at the INL Site that are helping clean up the environment and produce clean energy in the future. Over 100 community members and students attended.
- ***weSTEAM Classroom Visits.*** The ICP contractor encourages employees to volunteer to support classroom visits to schools in Southeastern Idaho to teach students how STEM careers at the INL Site support the continued protection of the Snake River Plain Aquifer.
- ***Roaring Youth Jam.*** In conjunction with the Idaho Falls Arts Council, the ICP contractor sponsored a 3-day art festival in which community members learned about and created art, all at no charge to participants. Hundreds of community members participated in 10 different art projects and were exposed to dozens of art performances designed to enhance art education. Art is an important component of the contractor's weSTEAM educational program.

The following include several community outreach efforts the INL Site contractors education program participated in during 2023:

- ***Idaho Falls Water Festival Day*****.** Over 650 students participated in a hands-on project demonstrating water filtration and had the opportunity to learn about other related environmental topics.
- ***Earth Day*****.** In collaboration with the Idaho Falls Zoo, the INL contractor explained the importance of habitat and the critical role pollinators play at the Earth Day celebration. Thousands of participants created habitats for important pollinators by planting seeds. The ICP contractor also participated in this year's event by leading activities that educated students on groundwater and how different types of soil, rocks, and water support the protection of the Snake River Plain Aquifer.
- ***Science, Technology, Engineering, Arts, and Mathematics (STEAM) Day at the Zoo*****.** In collaboration with the Idaho Falls Zoo, the INL contractor presented science, engineering, art, and innovation in an amazing hands-on experience of interactive STEAM-themed stations throughout the zoo to over 300 elementary students from the

region. The ICP contractor provided a lesson on stored energy. Students built rubber band helicopters to help demonstrate how stored energy supports equipment used in our environmental protection efforts.

- ***Bat Night at the Zoo*.** Four bat night events were held at the Idaho Falls Zoo. INL contractor biologists and education programs, along with faculty from BYU-Idaho presented to over 400 participants why bats are important, and how the Idaho Falls Zoo is helping to protect their natural habitat. Participants can view and hear bats in the first known permanent chiroptarium in the world at the Idaho Falls Zoo.
- ***Family Nuclear Night.*** Families were able to meet scientists and engineers, engage in hands-on activities and demonstrations, and learn more about the science happening at INL.
- ***Night at the Museum.*** Engineers with the ICP contractor led students in an activity to build flashlights using popsicle sticks. The principles used to energize these flashlights can also be applied to technologies used in the environmental cleanup work at the INL Site.

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