

Chapter 1: Overview of the INL Site



1.1 Location and Surrounding Areas

The Idaho National Laboratory (INL) Site encompasses about 2,305 square kilometers (km²) (890 square miles [mi²]) of the upper Snake River Plain in southeastern Idaho. Over 60% of the INL Site is located in Butte County, while the rest is distributed across Bingham, Bonneville, Clark, and Jefferson counties. It extends 63 km (39 mi) from north to south and is approximately 58 km (36 mi) at its broadest east to west portion. By highway, the southeast entrance of the INL Site lies approximately 37 km (23 mi) west of Idaho Falls. Other towns surrounding the boundaries include Arco, Atomic City, Blackfoot, Rigby, Rexburg, Terreton, and Howe. Pocatello is approximately 66 km (41 mi) to the southeast.

The INL Site is surrounded by federal lands and natural areas, including Craters of the Moon National Monument, Salmon-Challis National Forest, and Targhee National Forest. Wildlife refuges such as Mud Lake, Camas, and Market Lake are within 32 km (20 mi), and the Fort Hall Reservation lies about 48 km (30 mi) southeast.

Information about the INL Site history can be found [here](#).

1.2 Environment and Communities

The INL Site is located in a large, relatively undisturbed expanse of sagebrush steppe. Approximately 94% of the land is open and undeveloped. It 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 plains. Lands immediately adjacent to the INL Site are open sagebrush steppe, foothills, or agricultural fields. Agriculture is concentrated in the northeast areas.

About 60% of the INL Site is open to livestock grazing. Controlled hunting is permitted and was expanded in 2025 to areas in the northeast and northwest portions of the INL Site as highlighted in the attached grazing and hunting map.

The climate of the high-desert environment is characterized by sparse precipitation of about 21.4 cm/yr (8.41 in./yr), warm summers with a normal daily temperature of 18.6°C (65.4°F), and cold winters with a normal daily temperature of -7.4°C (18.7°F), based on observations at the Central Facilities Area from 1950 through 2025 ([NOAA 2026](#)). 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 with limited 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 of taxa plants have been recorded within the boundaries of 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 in this area 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).



Figure 1-1. Regional location of the INL Site.

The Big Lost River that runs through the INL Site property is diverted, flowing northeast, ending in a playa area on the northwestern portion, called the Big Lost River Sinks. Here, the river evaporates or infiltrates to the subsurface, with no surface-water moving from the INL Site. The Big Lost River is diverted at the INL Diversion to avoid the potential for flooding. Normally, the riverbed is dry due to upstream irrigation and rapid infiltration into the desert soil and underlying basalt. In 2025, no surface-water flow was measured at three U.S. Geological Survey (USGS) surface-water sites on the INL Site (13132500, 13132520, and 13132535).

Fractured volcanic rocks under the INL Site form a portion of the eastern Snake River Plain Aquifer that 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 m³ (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 to 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.

The population of the region within 80 km (50 mi) of the INL Site is estimated to be 363,157, based on the 2020 U.S. Census and projected growth. Over half of this estimated population (201,187) resides in the census divisions of Idaho Falls (123,583) and northern Pocatello (77,604). Another 42,618 are projected to live in the Rexburg census division. Approximately 23,025 are estimated to reside in the Rigby census division, with 15,519 in the Blackfoot census division. The remaining population resides in small towns and rural communities throughout southeastern Idaho.

1.3 What Happens at the INL Site?

The INL Site serves two primary purposes:

- *Research and Development:* Operating a multiprogram national laboratory focused on energy innovation and national security.
- *Environmental Cleanup:* Addressing legacy waste from past operations to protect Idaho's environment and water resources.

The U.S. Department of Energy, Idaho Operations Office (DOE-ID) oversees these activities at the INL, with guidance from the DOE Office of Nuclear Energy (DOE-NE) and the Office of Environmental Management (DOE-EM). DOE-NE manages research and development programs and issues land lease and land use permits for research conducted at the laboratory. DOE-EM is responsible for directing environmental cleanup activities. Naval Reactors operations at the INL Site are managed independently and are not included in this report.

Most INL Site buildings and structures are located within developed areas that are typically less than a few square miles in size and separated by miles of undeveloped land. DOE controls all land within the INL Site boundary. 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. An overview of the primary INL Site facilities can be found here.

The following subsections provide an overview of the major organizations operating at the INL Site and their respective roles in research, cleanup, monitoring, and environmental stewardship. Each organization contributes distinct capabilities that support DOE's mission and ensure safe, compliant, and scientifically robust operations across the INL Site.

1.3.1 Idaho National Laboratory

The INL Site, managed by Battelle Energy Alliance, is a leading center for nuclear energy research, clean energy innovation, and critical infrastructure protection. INL's 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 strengthen national security.

Key priorities include:

- *Advanced Reactor Development:* Demonstrating next-generation nuclear technologies to support clean energy goals
- *National User Facilities:* Operating specialized facilities such as the Advanced Test Reactor and Wireless Test Facility for research and industry collaboration

- *Critical Infrastructure Protection:* Developing and testing technologies to secure the nation's energy systems and critical assets
- *Fuel Cycle Innovation:* Advancing technologies for safer, more efficient nuclear fuel use and recycling
- *Clean Energy Integration:* Supporting renewable energy and grid modernization initiatives.

INL also leads the National Reactor Innovation Center, which partners with industry to accelerate the demonstration of advanced reactors.

The INL contractor's contributions to this report are included in Chapters 2–6, based on monitoring performed to ensure compliance with permits and DOE Orders.

1.3.2 Idaho Cleanup Project

The Idaho Cleanup Project, managed by Idaho Environmental Coalition, LLC, is focused on environmental cleanup, waste management, and safe deactivation and demolition of outdated facilities. These efforts reduce environmental risks and support INL's ongoing research mission.

Key priorities include:

- *Waste Treatment and Disposal:* Safely treating radioactive liquid waste and preparing waste for shipment to approved disposal facilities
- *Environmental Protection:* Removing legacy contamination to protect the Snake River Plain Aquifer, a critical drinking water source for eastern Idaho
- *Facility Decommissioning:* Demolishing legacy nuclear facilities, including work at the Naval Reactors Facility
- *Safety and Compliance:* Ensuring all actions align with the 1995 Idaho Settlement Agreement, Site Treatment Plan, and the Federal Facility Agreement and Consent Order.

The Idaho Cleanup Project contractor's contributions to this report are included in Chapters 2–5, based on monitoring performed to ensure compliance with permits and DOE Orders.

1.3.3 U.S. Geological Survey

The mission of the U.S. Geological Survey (USGS) at the Idaho National Laboratory Project Office is to implement a comprehensive groundwater monitoring and hydrogeologic studies program. This program focuses on evaluating the availability and movement of water within the eastern Snake River Plain aquifer, in alignment with the Department of Energy's (DOE) strategic goal of environmental protection and sustainability. Since 1949, USGS hydrologists and geologists have studied the hydrology and geology of the eastern Snake River Plain and the eastern Snake River Plain aquifer.

Key priorities include:

- *Monitoring Networks:* Maintaining groundwater and surface-water monitoring networks to sample wells, track water quality, and observe changes in groundwater levels and aquifer conditions.
- *Research Wells:* Drilling new wells, collecting geophysical data, and characterizing drill core to better understand subsurface geology, and aquifer dynamics.
- *Data Collection:* Collecting and publishing hydrologic and geologic data to support environmental protection and public transparency.

USGS contributions to this report are included in Chapter 4, based on monitoring activities that help track and understand groundwater conditions. Additional reports from these studies are available through the [bibliography website](#).

1.3.4 National Oceanic and Atmospheric Administration

In partnership with the DOE-ID, the Special Operations and Research Division of the Air Resources Laboratory operates a network of 35 meteorological towers in southeastern Idaho. This meteorological monitoring network supports activities at the INL and is known as the NOAA/INL Mesonet. Each tower collects observations of winds, temperature, humidity, and other variables which are relayed in near real time back to Special Operations and Research Division by a radio link. In

addition to supporting the INL, the Mesonet data are also widely used by the National Weather Service, local news organizations, and agricultural entities as a source of valuable meteorological data. A summary of the INL's climate conditions for 2025 is provided in Subsection 1.2. and the supplemental "[Meteorological Monitoring](#)" report (NOAA 2026).

1.4 References

- Anderson, J. E., K. T. Ruppel, J. M. Glennon, K. E. Holte, and R. C. Rope. 1996. "Plant Communities, Ethnoecology, and Flora of the Idaho National Engineering Laboratory." ESRF-005. Environmental Science and Research Foundation, Idaho Falls, ID.
- Lindholm, G. F. 1996. "Summary of the Snake River Plain Regional Aquifer-System Analysis in Idaho and Eastern Oregon." Professional Paper 1408-A. U.S. Geological Survey, Washington, DC.
- NOAA. 2026. "[Meteorological Monitoring: A Supplement to the INL Site Environmental Report for 2025](#)." National Oceanic and Atmospheric Administration, Air Resources Laboratory, Special Operations and Research Division, Idaho Falls, ID.
- Reynolds, T. D., J. W. Connelly, D. K. Halford, and W. J. Arthur. 1986. "Vertebrate Fauna of the Idaho National Environmental Research Park." Great Basin Naturalist, Vol. 46, No. 3, pp. 513–527.



Native perennial grass.