



Idaho National Laboratory Wildlife and Terrestrial Ecosystems CERCLA Long Term Stewardship

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June 12, 2024

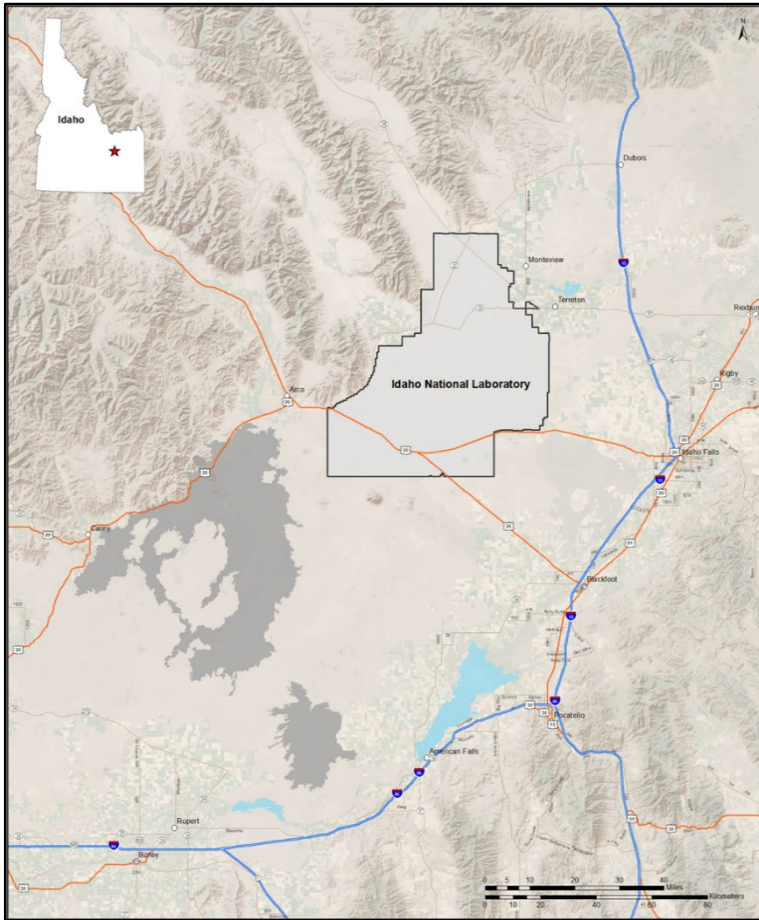


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INL Site Overview



- Occupies 890 square miles (568,000 acres) in the Upper Snake River Plain; average elevation is about 5,000 ft
 - Only about 1% of the area is occupied by INL facilities
- Located in a closed basin bordered by mountain ranges to the west and east and three volcanic buttes to the south
- Climate is semi-arid and is characterized by high seasonal and diurnal temperature fluctuations



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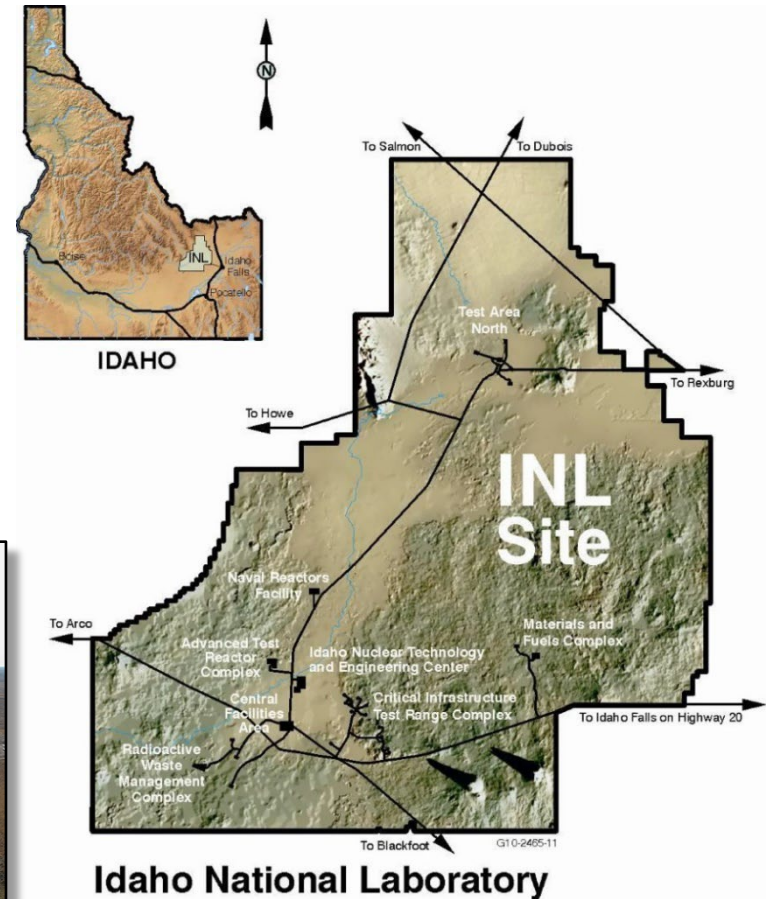
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INL Site Overview

Idaho Nuclear Technology and Engineering Center



Radioactive Waste Management Complex



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INL Site Overview

- Ecosystem is characterized as high or cold desert sagebrush steppe
- Past and current land use:
 - Ancestral lands of the Shoshone and Bannock Tribes
 - Used extensively for livestock grazing during the Westward Expansion
 - Withdrawn from the public domain beginning in the 1940s



Wildlife on the INL Site



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Water Resources

- Big Lost River
- Little Lost River
- Birch Creek
- Eastern Snake River Plain Aquifer



Sagebrush Steppe Ecosystem Reserve

- Approximately 73,000 acres within the INL is designated as the INL Sagebrush Steppe Ecosystem Reserve
- The Sagebrush Steppe Ecosystem is a valuable ecological resource unique to the intermountain west



INL Site Ecological Threats



- Wildfire
 - Loss of sagebrush and other native vegetation
 - Cheatgrass and other invasive annual grasses



Regulatory Framework for Managing Ecological Resources

- Migratory Bird Treaty Act (MBTA) of 1918
 - Executive Order 13186: Responsibilities of Federal Agencies To Protect Migratory Birds (January 2001)
- Bald and Golden Eagle Protection Act of 1940
- Endangered Species Act of 1973
 - Candidate Conservation Agreement for Greater Sage-grouse on the INL
 - Idaho National Laboratory Bat Protection Plan
- National Environmental Policy Act of 1969 (NEPA)
- EO 14008 Tackling the Climate Crisis, Conserving America the Beautiful, CEQ Guidance on Habitat Connectivity and Wildlife Corridors
- EO 13751 Safeguarding the Nation from the Impacts of Invasive Species
- DOE Order 436.1(a) Departmental Sustainability, Conservation Action Plan



Bat Protection Plan 2018

- INL Site provides suitable habitat for bats
- 14 species occur in Idaho, 12 documented on the Site, 1 has been petitioned for ESA listing
- Recent increased importance due to white-nose syndrome (WNS)
- Routine bat monitoring and mitigating actions initiated since 2011 (DOE-ID & NR partnership):
 - Restricted cave access
 - Cave surveys (“hibernacula”) – Jan - Mar
 - Passive & active acoustical monitoring – Apr – Oct
 - Cave biota & soil sampling
 - Carcass recovery & assessment

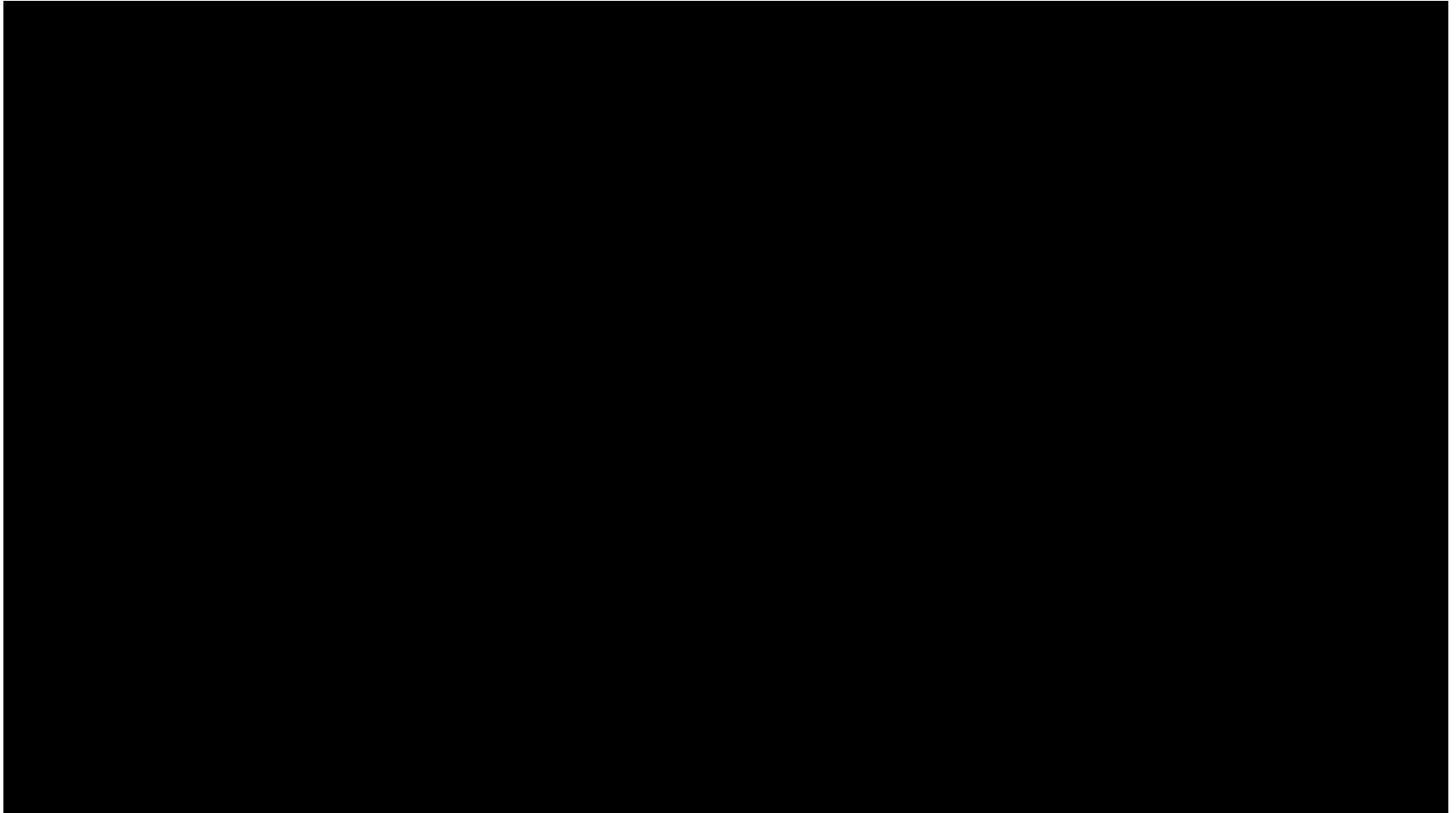


Candidate Conservation Agreement for Sage-Grouse

- Candidate Species
- Voluntary Agreement with U.S. Fish and Wildlife Service signed in 2014
- Protects Sage-grouse and their habitat
- Allows flexibility to meet mission needs
- DOE agrees to implement conservation measures
- Requires sage-grouse population, habitat, and threat monitoring



Greater Sage-Grouse on INL



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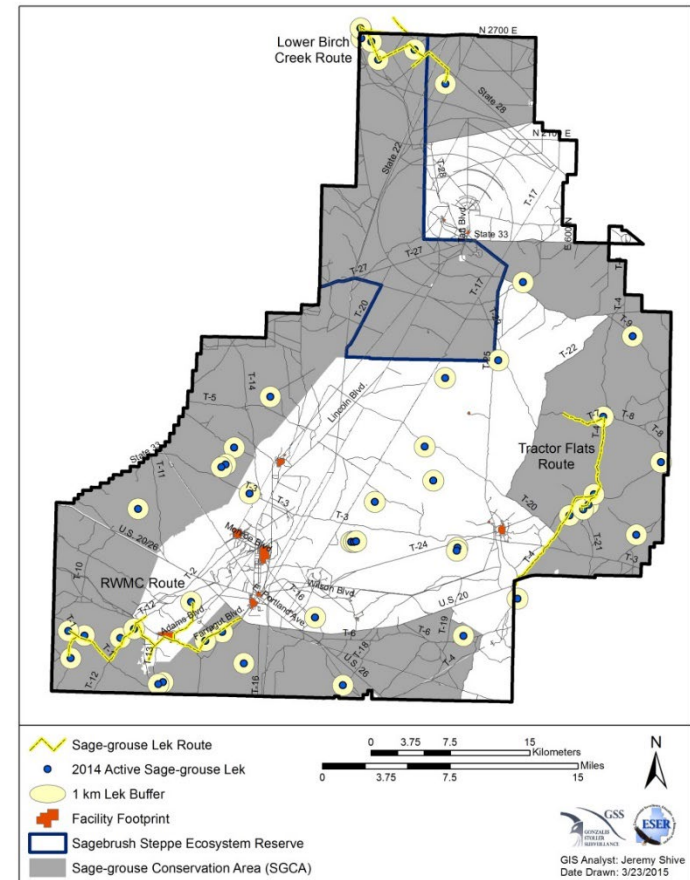
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CCA Annual Wildlife Monitoring

- Conducted March-May; reported annually to USFWS
- Lek Surveys
 - # of males on active, historical, and new leks
- Raven Nest Surveys
 - # of active nests on human structures (e.g. power poles)

Active lek: 2 or more male sage-grouse have attended in 2 or more of the previous 5 years.

Active nest: At least 1 raven was present and exhibiting behaviors typical of a nest occupant (e.g. incubating, carrying sticks to the nest).



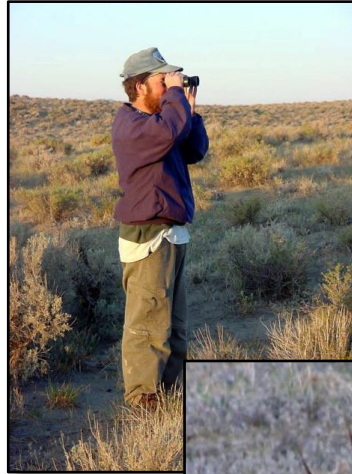
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Ecological Monitoring Efforts

- Bald Eagles & Other Raptors
- Breeding Birds
- Bats
- Sage-grouse
- Raven Nests
- Long-term vegetation transects
- Habitat monitoring



Monitoring Reporting

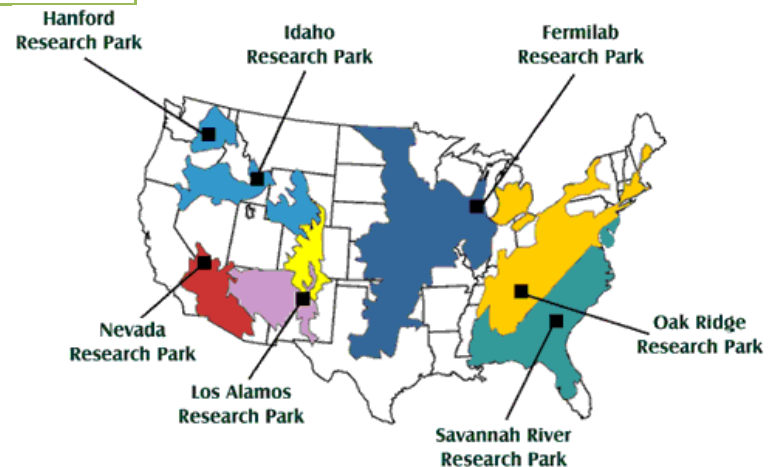
- Data are shared with state and federal agencies
- Major Reports
 - Annual Site Environmental Report
 - Long-Term Vegetation Transects Survey Report
 - Candidate Conservation Agreement Monitoring Report



DOE National Environmental Research Parks (NERP)

DOE's National Environmental Research Parks More than 2 million acres (3200 square miles)			
Site	Year Designated	Acres	EcoRegion
Savannah River	1972	198,000	Southeastern Mixed Forest
Idaho	1975	568,000	Shrub-steppe
Los Alamos	1976	25,600	Juniper-Pinyon and Grassland
Hanford	1976	366,000	Shrub-steppe and riverine
Oak Ridge	1980	21,500	Eastern Deciduous Forest
Fermi Lab	1989	6,800	Tallgrass Prairie
Nevada	1992	865,000	Desert Shrub

More Info:
<http://www.nerp.ornl.gov/>
<http://www.gsseser.com/NERP.htm>



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NERP Projects on INL Site

- Since 2001, the Idaho Research Park has hosted 39 studies involving 22 graduate students, 35 university faculty and 25 DOE-ID contractor scientists
- 10 graduate student thesis have been completed. Funding for these projects has come from 30 different agencies or organizations
- Recent NERP projects include:
 - Studies of Ants and Ant Guests – Dr. Bill Clark, Orma J. Smith Museum of Natural History, The College of Idaho
 - Rattlesnake Reproductive Behavior – Dr. Vincent Cobb, Department of Biology, Middle Tennessee State University
 - Ecohydrology Studies of the Sagebrush Stepp – Dr. Matthew Germino, Supervisory Research Ecologist, U.S. Geological Survey, Forest and Rangeland Ecosystem Science Center
 - Sagebrush Chemotypes and Sage-grouse Foraging Behavior – Dr. Jennifer Forbey, Department of Biological Sciences, Boise State University



Ecological Restoration on INL Site



- Revegetation strategies include
 - Hand broadcast seed
 - Seedbed preparation
 - Soil augmentation
 - Drill seeding
 - Planting nursery stock (seedlings)
- Sagebrush Seed Collection
 - 2023 goal 1,000 lbs. PLS
 - 2023 actual collection approximately 2,000 lbs PLS
 - 2024 and 2025 planned collection efforts collaboration with USFWS
- Sagebrush Seed and Seedling Planting
 - 2023 planted approximately 75,000 sagebrush seedlings
 - 2024 and 2025 planned planting effort collaboration with USFWS



Ecological Restoration on INL Site

- Invasive and Noxious Weed Control
 - INL weed program
 - Seed areas post disturbance to avoid invasive intrusion
 - Native seed collected on INL site used for seeding disturbed areas
- Soil Stabilization
 - Revegetating sites to stabilize soils
 - Birch Creek restoration effort



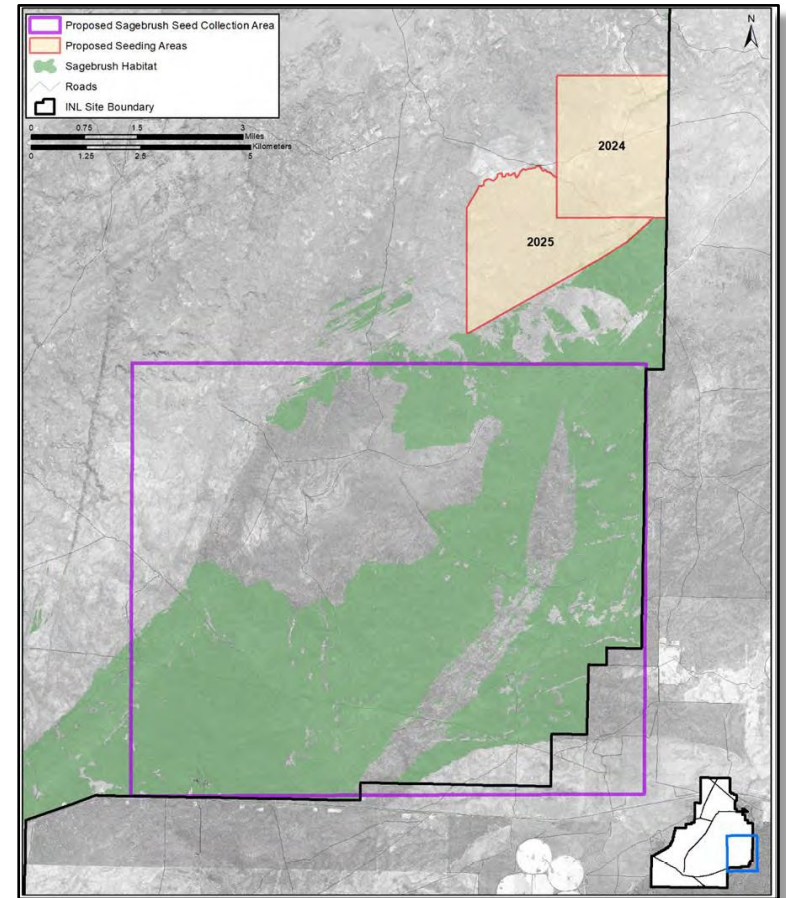
Post-Fire Restoration

- Example Post-Fire Natural Resource Recovery Objectives
 - Soil stabilization for erosion and weed control immediately post-fire
 - Cheatgrass and noxious weed control across burned area
 - Native herbaceous recovery
 - Sagebrush habitat restoration



Continued Restoration Efforts

- Planned Restoration Efforts
 - Bipartisan Infrastructure Law Funded Project
 - Collaborative project with USFWS and BLM
 - Tractor Flats area of INL adjacent to BLM land
 - 2010 Jefferson Fire scar
- Planned NEPA Efforts
 - INL Wildland Fire Management Program Environmental Assessment
 - INL Wildland Fire Recovery Framework Plan



Long-Term Stewardship

Long-Term Stewardship (LTS) is defined by DOE as the physical controls, institutional controls, and other mechanisms needed to ensure protection of people and the environment at sites where DOE has completed or plans to complete cleanup (e.g., landfill closures, remedial actions, removal actions, and facility stabilization). This concept includes land-use controls, monitoring, maintenance, and information management.

- DOE Office of Legacy Management



Components of a Long-Term Stewardship Program

Institutional Controls

- Government Controls
- Information Management and Dissemination
- Proprietary Controls
- Oversight and Enforcement

Long Term Monitoring and Maintenance

- Groundwater monitoring
- Maintenance of completed sites

Periodic re-evaluation to ensure protectiveness

- Annual inspections
- 5 Year Reviews



Institutional Control Categories

Governmental Controls

- Site Disturbance Requirements
- Well Drilling/Water Use Restrictions
- Signage/Fencing Requirements
- Physical Security Requirements
- Marker/Monument Requirements

Proprietary Controls

- Property Transfer Requirements
- Property Lease Requirements
- Facility Information Management System (FIMS)
- Tracking

Information Devices

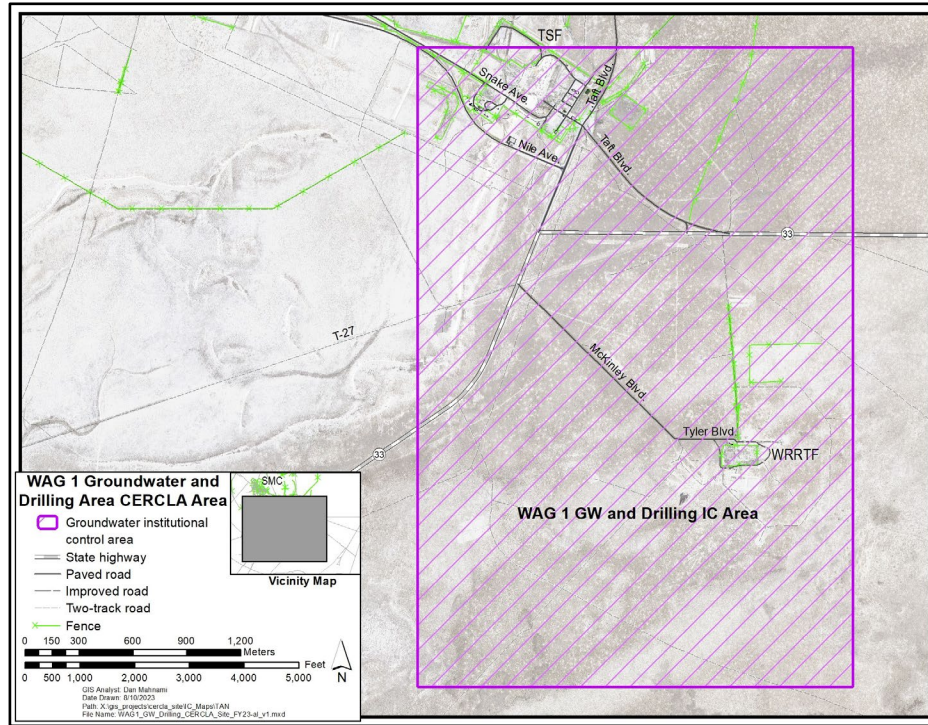
- Long-term Stewardship Tracking System
- Administrative Record/Information Repository

Enforcement Tools

- Federal Facility Agreement and Consent Order (FFA/CO)
- Reporting and Documentation Requirements



Examples of Institutional Controls



TAN Plume Institutional Control Area



Sign, fence, and rip rap barrier at CERCLA Site ARA-II SL-1



Monument, fence, and rip rap barrier at CERCLA Site BORAX-02



Sign and fence at CERCLA Site CFA-03 CFA Landfill III



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Long-Term Maintenance of Completed Remedial Actions

- 112 CERCLA IC Sites
 - 22 sites with O&M requirements
 - Vegetative cover/Invasive species
 - Subsidence and erosion
 - Animal Intrusions
 - Radiological and topographic surveys
 - ~280 signs inspected and maintained
 - 14 monuments, 12 concrete markers
 - 9 fenced IC Sites
- 50+ well inspections per year
- 200+ database changes/service requests per year



Maintenance personnel performing a pump replacement at a monitoring well



Subsidence repair at CERCLA Site CFA-02 (CFA Landfill II)



LTS personnel performing O&M inspection at CERCLA Site CFA-02 (CFA Landfill)



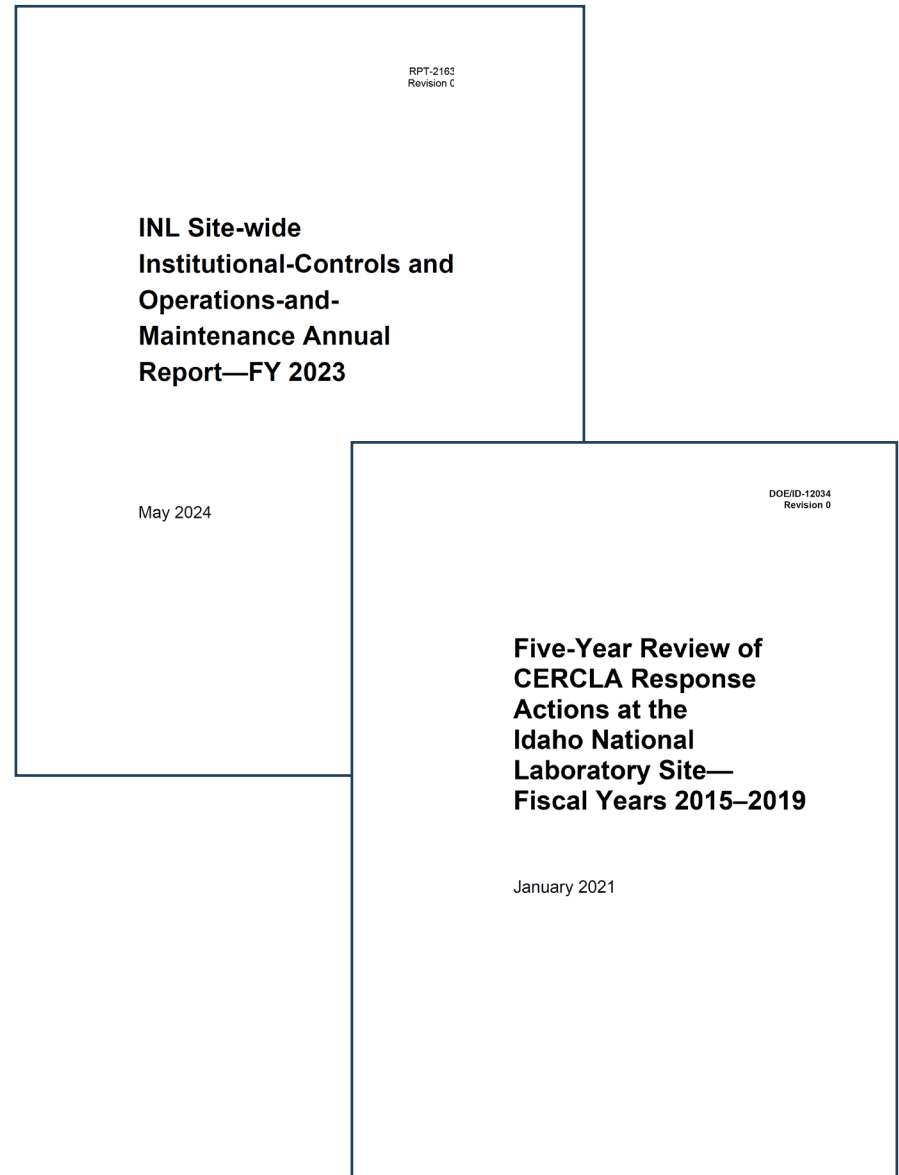
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Periodic Re-Evaluation of Protectiveness

- Annual IC/O&M Inspections
- CERCLA Five Year Reviews
 - Evaluate the implementation and performance of a CERCLA remedy in order to determine if it is, or will be, protective of human health and the environment
 - Five-Year Reviews must be conducted no less than every 5 years
 - Identifies issues and recommends actions to improve performance where necessary



Stakeholder & Tribal Involvement

- Goal of a lasting LTS program is to partner with those who will outlast you
- CERCLA Record of Decisions (RODs) and Post ROD changes subject to stakeholder comment
- DOE IC/O&M Plan requires Tribal consultation for future markers & monuments
- DOE ICP provides funding to the Shoshone-Bannock Tribes to develop and implement a Tribal Co-Sampling Program and a Tribal Long-Term Stewardship Program on the INL
 - Provide the Tribes assistance and training
 - Perform independent groundwater monitoring
 - Future assistance with managing completed CERCLA remedial actions on the INL



Conclusion



Burrowing Owls

