

**U.S. DEPARTMENT OF ENERGY  
FINDING OF NO SIGNIFICANT IMPACT  
FOR THE ENVIRONMENTAL ASSESSMENT FOR THE REPLACEMENT  
CAPABILITY FOR THE DISPOSAL OF REMOTE-HANDLED LOW-LEVEL  
RADIOACTIVE WASTE GENERATED AT THE DEPARTMENT OF ENERGY'S  
IDAHO SITE**

**Agency:** U. S. Department of Energy (DOE)

**Action:** Finding of No Significant Impact (FONSI)

**Summary:** Operations conducted in support of Idaho National Laboratory (INL) and Naval Reactors Facility (NRF) missions on the Idaho site generate low-level radioactive waste (LLW). DOE classifies some of the LLW generated at the INL as remote-handled LLW because its potential radiation dose is high enough to require additional protection of workers using distance and shielding. Remote-handled wastes are those with radiation levels exceeding 200 millirem per hour at the surface of a container, and includes debris, used materials (i.e., gloves, tools, hardware, and other activated metal components), ion-exchange resins, and filters. Historically, INL has disposed of its LLW onsite. However, the existing disposal area located within the INL Radioactive Waste Management Complex (RWMC) will undergo closure as part of the ongoing Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) cleanup of INL and will not be available after 2017.

DOE prepared an environmental assessment (EA), for the Replacement Capability for the Disposal of Remote-Handled Low-Level Radioactive Waste Generated at the Department of Energy's Idaho Site to evaluate potential environmental impacts related to replacement capability options.

The purpose of the proposed action was to provide disposal capability, beginning in October 2017, to replace the existing RWMC disposal capability, and lasting for upwards of 50 years. The waste disposed of under the proposed action is limited to remote-handled LLW generated from operations at DOE Idaho's site. DOE expects to generate an estimated average volume of 150 cubic meters of remote-handled LLW each year at the INL site. After generation, this waste would be packaged, transported and disposed of in compliance with applicable regulations and standards. The proposed project includes purchase of transport casks as needed to accomplish shipments of waste from the INL site generating facilities to the disposal facility.

Two alternatives and a "No Action" alternative were analyzed in the EA. Six other alternatives were considered but were not analyzed because they did not meet the project's purpose and need criteria.

- **Alternative 1:** The preferred Alternative, Onsite Disposal, involves construction of a new facility specifically designed and operated for the Idaho site's remote-handled LLW. To develop Alternative 1, INL completed a Siting Study to identify, evaluate, and recommend onsite locations for remote-handled LLW disposal. This study identified and analyzed two locations (Candidate Site 1 and Candidate Site 2) that best meet the evaluation criteria; both are included in this EA.

- Alternative 2: Under the Alternative Transport Waste to the Nevada National Security Site (NNSS), DOE would use existing disposal capability at another DOE disposal facility located at NNSS.
- No Action: Under the No Action Alternative, no additional activities would be conducted by DOE to ensure uninterrupted disposal capabilities for remote-handled LLW generated at the INL site. Remote-handled LLW would continue to be disposed of in the current location until it is full or must be closed in preparation for final CERCLA closure. At that time, operational activities that generate the subject waste would cease or be significantly curtailed because of a lack of disposal capability. It is important to note that under the No Action Alternative, DOE analyzed continued off-site shipment of certain remote-handled LLW, specifically the ion-exchange resins, hardware and filters from the Advanced Test Reactor.

The draft EA was released for a 45-day public review and comment period on September 1, 2011, which was extended for 30 days by request. DOE received comments from twelve members of the public or organizations, and responded to about 100 individual comments (Appendix 1). DOE revised portions of the EA in response to the comments received and prepared a final EA document.

The EA was completed in accordance with the Council on Environmental Quality (CEQ) Regulations for implementing the National Environmental Policy Act (NEPA) (40 CFR Parts 1500-1508), and the DOE NEPA Implementing Procedures (10 CFR Part 1021).

**Selected Action:** DOE has selected a combination of Alternative 1 and the No Action Alternative as described in the EA. This will involve construction and operation of a new disposal facility on the INL site as well as the option for continued disposition of Advanced Test Reactor (ATR) resins, hardware and filters at NNSS. Future disposition of ATR resins, hardware and filters at NNSS will continue at DOE's discretion. DOE selected this combination to retain flexibility in responding to future circumstances and needs while meeting the INL site's disposal needs for the required duration of up to 50 years. DOE believes its decision provides dependable and predictable disposal in support of DOE's mission and minimizes exposure to the public from routine shipments and accidents.

Candidate Site 1 is the preferred site location for the new facility because of its slightly higher elevation, greater distance from the Big Lost River, and thicker sediment that provides greater protection of the aquifer as compared to Candidate Site 2. In addition, although neither candidate site presents a potential significant impact to groundwater, the potential for cumulative effects to groundwater from other sources of groundwater contaminants is less at Candidate Site 1 than at Candidate Site 2.

**Analysis:** Based on the analyses in the EA, the selected actions will not have a significant effect on the human environment within the meaning of the National Environmental Policy Act (NEPA).

The term "significantly" and the significance criteria are defined by Council on Environmental Quality Regulations for implementing NEPA at 40 CFR 1508.27. The significance criteria are addressed below and the applicable corresponding analysis in the EA is referenced.

**1) Beneficial and adverse impacts [40 CFR 1508.27 (b)(1)]:** The analysis demonstrates that there will be no significant adverse impacts from implementing the selected alternative. Waste disposal activities are a necessary operation on the INL site. Beneficial impacts from implementing Alternative 1 include reduced fuel consumption and green house gas emissions, because all the waste would not be transported to NNSS for disposal. In addition, DOE commits to implementing enhanced construction and engineering measures, functional attributes and operational controls described in the EA to minimize potential future environmental impact resulting from the selected actions (sections 2.4.2 and Chapter 4).

**2) Public health and safety [40 CFR 1508.27 (b)(2)]:** DOE modeled potential contaminant migration into groundwater at the INL site to determine impacts from disposed waste after the disposal vaults have lost their integrity. The results show that predicted radionuclide concentrations in the groundwater as a result of waste disposal would be insignificant. Levels would be much less than regulatory maximum contaminant levels. The all-pathways dose to a hypothetical maximally exposed individual (residing 100 meters from the INL site disposal facility) peaks at its highest level several thousand years in the future, and is demonstrably insignificant. There is no impact to ground water at NNSS resulting from disposal of ATR resins, hardware and filters.

The doses to the transportation crew and the public from the transportation of ATR resins, hardware and filters from the INL site to the NNSS were analyzed ( No Action Alternative ) and found to be insignificant (section 4.3) There is a possibility that INL and NNSS workers as well as the public could be exposed to radiation through routine shipments or if an accident occurs. There would be no exposure to the public from routine onsite shipments. All activities will be effectively managed to minimize or eliminate any potential airborne contaminants and exposure during both routine operations and upset conditions by applying rigorous administrative and engineering controls (section 4).

**3) Unique characteristics of the geographical area [40 CFR 1508.27 (b)(3)]:** The Eastern Snake River Plain Aquifer underlies the selected disposal facility location at the INL. No releases from the proposed facility are anticipated from operations. The disposal facility will be operated, closed, and maintained post-closure to avoid the potential for migration of contaminants from the facility (section 4.1.2). Native vegetation will be established on the closure cover to promote re-establishment of native habitat (section 4.1.3). Continuing to send ATR resins, hardware and filters to the existing disposal location at NNSS will not impact any unique characteristics.

**4) Degree to which effects on the quality of the human environment are likely to become highly controversial [40 CFR 1508.27 (b)(4)]:** DOE used state-of-the-art science, technology, and expertise to assure quality in the impacts analyses. There are no substantive technical or scientific reasons related to the size, nature, and effect of the selected action that indicate its effects are likely to become highly controversial.

**5) Uncertain or unknown risks on the human environment [40 CFR 1508.27 (b)(5)]:** There are no unknown or uncertain risks to the environment associated with implementing the selected action. All resource areas were carefully screened before selecting those considered critical for detailed analysis in the EA (section 4).

**6) Precedent for future actions [40 CFR 1508.27 (b)(6)]:** The selected alternative does not set a precedent for future actions on the INL. No future or connected actions or operations are being considered that rely on decisions made in this EA.

**7) Cumulatively significant impacts [40 CFR 1508.27 (b)(7)]:** The selected action has only a minimal potential to affect cultural, ecological, groundwater, air and energy resources due to land disturbance, waste disposal activities, and transportation activities. All potentially cumulative effects from associated INL operations and existing resource contamination were methodically analyzed in the EA. With respect to groundwater at the INL site, DOE's analyses included the potential effects from groundwater contaminant plumes from nearby INL facilities. The analyses indicate that the impacts from all potential sources on the INL site on all resource areas will not be cumulatively significant (section 4.4). The continued disposal of ATR resins, hardware and filters at NNSS will not substantively contribute to the cumulative impacts at that site.

**8) Effect on cultural or historical resources [40 CFR 1508.27 (b)(8)]:** The EA analysis identified existing cultural and historic resources in the selected project area. Location and construction of the disposal facility footprint within the selected candidate site will be undertaken to avoid disturbing the archaeological resources identified through the cultural resource surveys. Although no subsurface archaeological resources have been identified, cultural resource monitoring will occur during all ground disturbing activities to prevent inadvertent damage to subsurface archaeological resources (section 4.1.1). To reduce the potential for impacting cultural resources, construction and operational controls will be implemented (Table 2-3). Cultural resources will not be impacted by shipping ATR resins, hardware and filters to NNSS.

**9) Effect on threatened or endangered species or critical habitat [40 CFR 1508.27 (b)(9)]:** No critical habitat for threatened or endangered species, as defined in the Endangered Species Act, exists on the INL site. Greater sage-grouse is considered to be a candidate species for listing under the Endangered Species Act. However, if a species such as the Greater sage-grouse is listed before or during construction of the facility, DOE would initiate formal consultation with the U.S. Fish and Wildlife Service. No habitat or sign of Greater sage-grouse was found in either candidate site location (section 4.1.3). No threatened or endangered species would be impacted by shipping ATR resins, hardware and filters to NNSS.

**10) Violation of Federal, State, or Local law [40 CFR 1508.27 (b)(10)]:** DOE asserts with confidence that the selected alternative/disposal project does not pose any threat of a violation of any federal, state or local law. The DOE regulatory compliance history at the INL site demonstrates a progressive and comprehensive compliance status and the results of regulatory oversight activities affirms the existence of a strong environmental, safety and health culture.

**Determination:** Based on the analysis presented in the attached EA, I have determined that the selected action would not significantly affect the quality of the human environment. Therefore, preparation of an environmental impact statement is not required.

Issued at Idaho Falls, Idaho on this 21 day of December, 2011 .



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Copies of the EA and FONSI are available from: Tim Jackson, Office of Communications, MS-1203, Idaho Operations Office, U. S. Department of Energy, 1955 Fremont Avenue, Idaho Falls, Idaho, 83415, or by calling (208) 526-8484.

For further information on the NEPA process contact: Jack Depperschmidt, NEPA Compliance Officer, MS-1216, U. S. Department of Energy, 1955 Fremont Avenue, Idaho Falls, Idaho, 83415, (208) 526-5053. For further information on the RHLLW Disposal Facility project contact: Julie Conner, Federal Project Director, MS-1170, U. S. Department of Energy, 1955 Fremont Avenue, Idaho Falls, Idaho, 83415, (208) 526-9503.