SUPPLEMENTAL INFORMATION REPORT
PROJECT PELE

STRATEGIC CAPABILITIES OFFICE

MAY 2025

This Supplemental Information Report (SIR) is prepared and adopted in accordance with Title 33 Code of Federal Regulations (CFR) section 230.13(d). This SIR provides updates to the project design and plans as described in the Final Environmental Impact Statement (EIS) for Project Pele and the September 2023 Supplemental Information Report Project Pele (the 2023 SIR). Specific details for Project Pele are provided in the following documents, which are hereby incorporated by reference in accordance with the National Environmental Policy Act (NEPA):

- Strategic Capabilities Office. *Construction and Demonstration of a Prototype Mobile Microreactor Environmental Impact Statement*. February 2022 (the "Project Pele" EIS) (DoD-SCO, 2022)
- Strategic Capabilities Office. *Supplemental Information Report Project Pele September 2023* (the 2023 SIR) (DoD-SCO, 2023)

In the 2023 SIR, the Strategic Capabilities Office (SCO), after the signing of the Record of Decision (ROD) on April 5, 2022, evaluated an alternate pad location for siting the Project Pele mobile microreactor at the Idaho National Laboratory (INL) Critical Infrastructure Test Range Complex (CITRC) that was not previously available when preparing the EIS. The purpose of that SIR was to document the potential environmental impacts from using the alternate pad site (Pad A) and determine whether those impacts are bounded by the conservative analyses of the pad sites identified in the EIS.

This SIR is intended to document SCO's evaluation of an alternate pad location within INL's CITRC Pad A for siting the Project Pele mobile microreactor. The purpose of this SIR is to document the potential environmental impacts from using the alternate location at the Pad A site and determine if those impacts are bounded by the conservative analyses of the pad sites identified in the EIS and follow on analysis of the 2023 SIR.

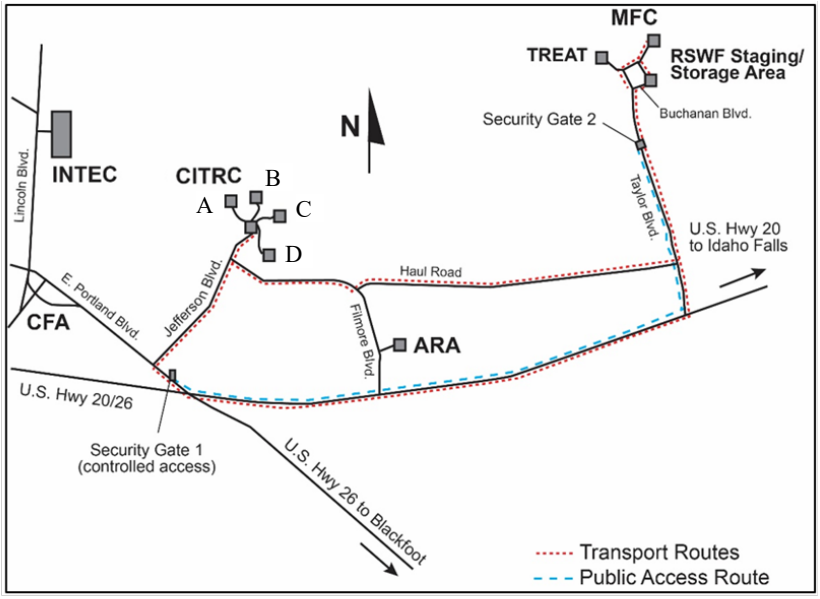
1. INTRODUCTION

In the EIS, CITRC User Pad B, Pad C, and Pad D were identified as potential test locations for the Project Pele microreactor (DoD-SCO, 2022). The EIS did not describe a preferred location and the ROD (Federal Register 87, no. 73, April 15, 2022: 22521) did not select a specific pad at CITRC. The 2023 SIR provided background information on Pad A and included a conceptual site layout, a bounding estimate of the construction area, volume of pad and shielding concrete, trenching (depth), and a comparison of the potential environmental impacts of a reactor test site at Pad A instead of CITRC Pad B, Pad C, or Pad D, which were previously evaluated in the EIS.

2. BACKGROUND ON CITRC AND PAD A

CITRC is part of INL's 13.8-kilovolt (kV), 61-mile power loop electrical test bed (see **Figure 1**), which supports critical infrastructure research and testing. CITRC includes a configurable and controllable substation and a 13.8-kV distribution network. This distribution network includes four user test pad areas which can operate alone or together to support larger operations at any of multiple test voltage levels. Each user test location allows connection to 13.8-kV power supply for separate source of noninterrupted power to support test operations.

Project Pele aims to construct and demonstrate a mobile microreactor that produces 1 to 5 megawatts-electric (MWe) on the CITRC electrical test grid. Prior to testing, the microreactor will be fueled at the Transient Reactor Test Facility (TREAT); shipped to one of the CITRC pads; and then assembled, tested, and operated. The assembled configuration will include four 20-foot International Organization for Standardization (ISO) containers and a shielding structure around three of the four containers. INL prepared a background report on the technical and siting details of using Pad A (INL, 2023) in support of the 2023 SIR. The background and some of the technical description from that report are reproduced in this SIR.



Key: ARA = Auxiliary Reactor Area; Blvd = Boulevard CFA = Central Facilities Area; CITRC = Critical Infrastructure Test Range Complex; Hwy = Highway; INTEC = Idaho Nuclear Technology and Engineering Center; MFC = Materials and Fuels Complex; RSWF = Radioactive Scrap and Waste Facility; TREAT = Transient Reactor Test Facility

Figure 1. CITRC and Nearby INL Complexes

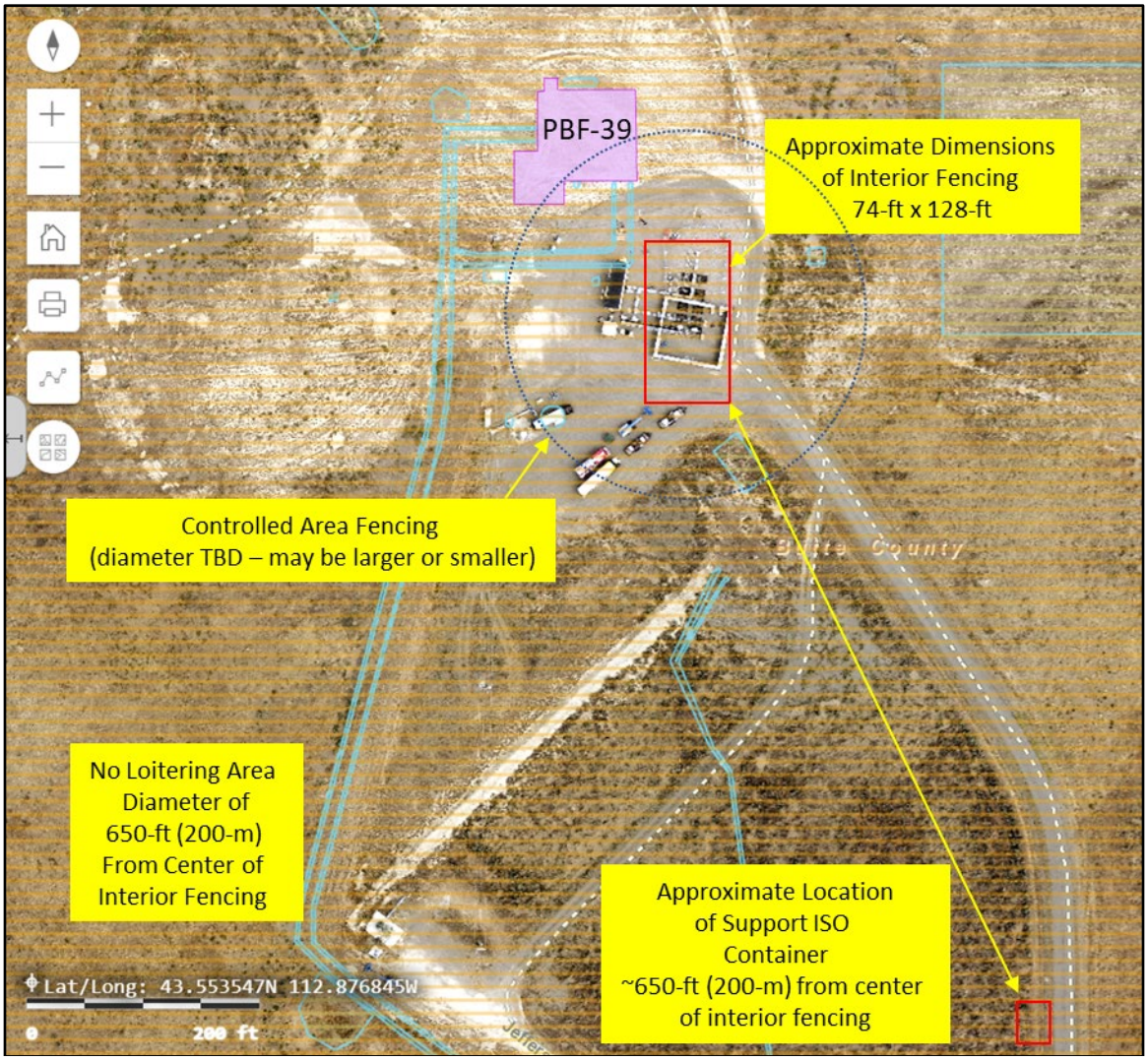
2.1 HISTORICAL DATA FOR CITRC PAD A (FROM INL, 2023)

An area surrounding CITRC Pad A formerly hosted the Power Burst Facility (PBF) and supported nuclear fuel testing from September 1972 until February 1985. The PBF consisted of a reactor vessel, fuel storage canal, and various process systems that supported reactor operations. The PBF's structure was a two-story, steel-frame building with steel plate interior and aluminum exterior siding and two block-wall wings (east and west). The building was divided into a main reactor high-bay room, two single-story wings containing instrumentation and electrical control equipment, various support offices, operational and utility areas, and a two-level basement. The first basement extended to approximately 20 feet below ground; the second basement extended to approximately 40 feet below ground.

Decontamination and decommissioning of the PBF was performed between October 2003 and October 2009. The method of decontamination and decommissioning included removal and disposal of the PBF vessel. The above-grade structure, except for the main floor slab, was removed. The main floor slab was broken up during demolition and dropped into the void (an empty space within the PBF structure) that was 10 feet below ground. Above-grade equipment and piping were removed from the above-ground level of the facility. All contaminated piping systems and equipment were removed from the first and second basement, except for the blowdown tank, which was greater than 10 feet below-ground level. In addition, some inert structures and systems in the first basement were left below ground; these structures consisted of materials such as piping, tanks, structural metal, and utility systems. Void spaces were backfilled with the main floor slab, other inert demolition waste from the above-ground level structures, and clean backfill materials. The *Action Memorandum for Power Burst Facility (PER-620) Final End State and PBF Vessel Disposal* (DOE-ID, 2007) stipulated less than 0.2 curie (Ci) of total activity could remain in the 0- to 10-foot below-ground level interval, and approximately 4.7 Ci of total activity could remain below the 10-foot interval.

Just north of Pad A is a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site designated as PBF-39, which is where the PBF was located (also see **Figure 2**) (DOE-ID, 2019). Due to the presence of residual contamination, PBF-39 is designated as a CERCLA site that requires no further action with Institutional Controls through 2095.

To facilitate use of CITRC Pad A for previous projects, a gravel pad was installed south of the power poles associated with the local connections to the 13.8-kV, 61-mile power loop electric test bed.



Source: (INL, 2023)

Figure 2. 2023 SIR Conceptual Layout of the Mobile Microreactor at CITRC Pad A

2.2 CONCEPTUAL LAYOUT OF THE MOBILE MICROREACTOR AT CITRC PAD A

2.2.1 Conceptual Layout from 2023 SIR (From INL, 2023)

As analyzed in the 2023 SIR, activities include ground disturbance associated with site clearing, excavation, and grading conducted as part of constructing concrete pads, parking areas, laydown areas, and fencing. About 1.6 acres would be disturbed for construction of a concrete pad with dimensions of up to 100 feet x 100 feet x 5 feet deep and surrounding fences for mobile microreactor demonstration. The mobile microreactor and direct support structures would be placed on new concrete pads just south of the local power poles. A "no loitering" area with a diameter of approximately 650 feet would be established to keep personnel out of the radiation zone around the reactor. Other support structures and equipment would be arranged as follows:

- Install approximately 74 feet by 128 feet of fencing to isolate personnel from the mobile microreactor and direct support structures.

- Install a controlled area fence with a diameter of 50 feet to 600 feet to exclude personnel from potential hazards caused by mobile microreactor operations. This fencing would be installed using above-ground level structures such as Jersey barriers to avoid any digging.
- Position a support ISO container approximately 650 feet from the interior fencing.

Figure 2 provides a diagram that shows the mobile microreactor location assessed in the 2023 SIR at CITRC Pad A.

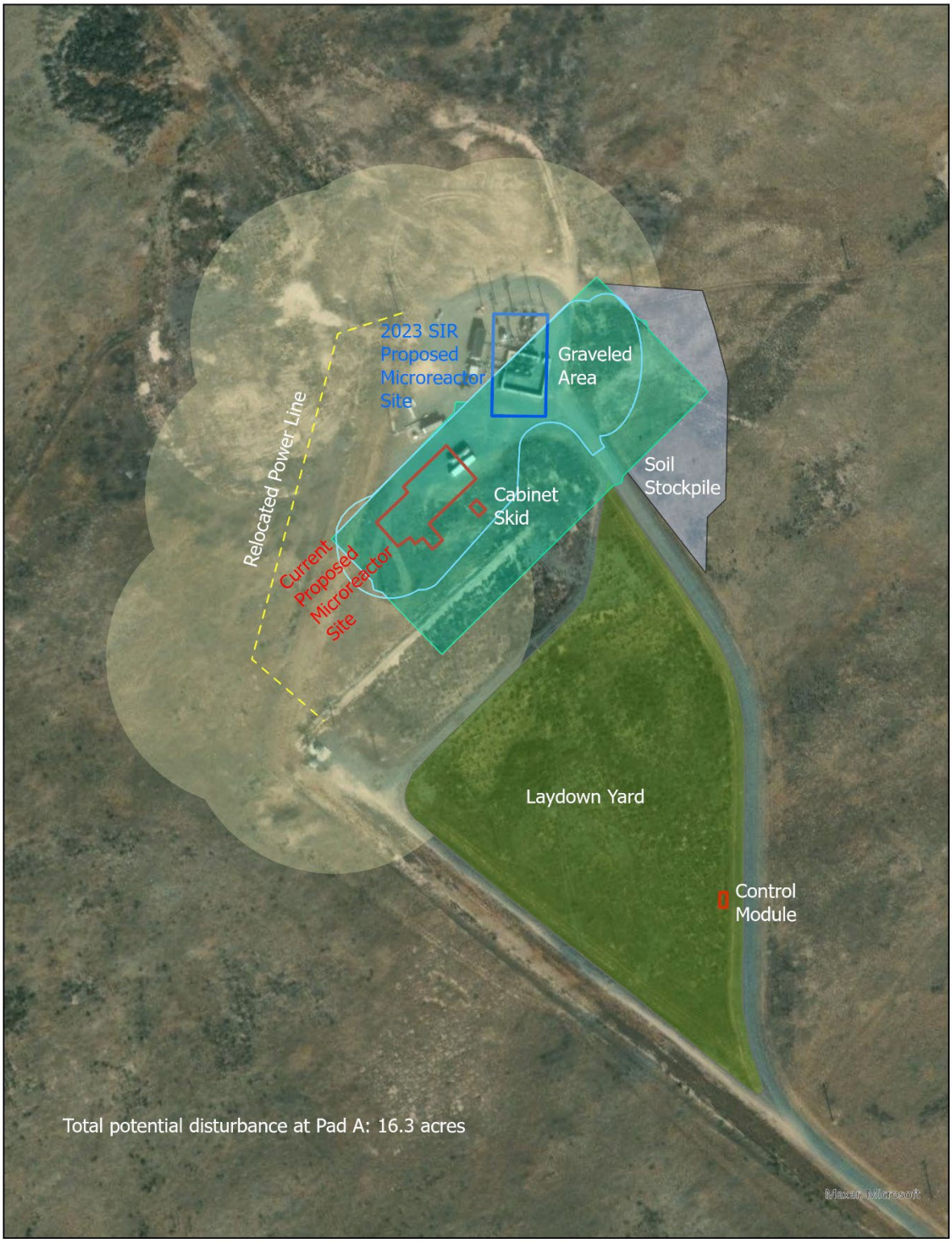
The mobile microreactor would be placed to facilitate electrical connection of the mobile microreactor's power conversion equipment to the local power poles.

2.2.2 Revised Conceptual Layout

A revised location for the Pele Mobile Microreactor has been proposed. Due to the results of the subsurface work at CITRC Pad A, the location of the concrete pad has shifted approximately 150 feet to the south and west from the originally envisioned location. Because of this move, most of the concrete and shield structure will not be located on the existing pad. Additional cuts and fills are needed to level out the new proposed area and to accommodate a laydown area. Also, several power poles need to be relocated to avoid interference with the new location of the structure. The EIS provided an estimate of a total impact of 44.8 acres and with the changes being described in this document up to 16.3 acres would be impacted (Nelson, 2024a).

Additional design work has modified the layout of the plant. In addition to the four 20-ft ISO containers and shielding structure, multiple auxiliary skids and a diesel tank are needed to support plant operations. These changes increased the plant footprint from 1.6 to 2.5 acres. The proposed layout and affected areas are shown on **Figure 3**.

In addition, though not shown in **Figure 3**, a modular office building could be installed at the CITRC Control Central Area to house operators and visitors following initial startup of the reactor at CITRC.



Source: (Nelson, 2024a)

Figure 3. Revised Pele Mobile Microreactor Affected Areas

2.3 PROJECTED CONSTRUCTION ACTIVITIES AT PAD A

Construction could result in ground disturbance associated with site clearing, excavation, and grading conducted as part of constructing concrete pads, parking areas, laydown areas, and fencing. The 2023 SIR estimated that about 1.6 acres would be disturbed at Pad A for construction of the 100 feet x 100 feet x 5 feet deep concrete pad and surrounding fences for mobile microreactor demonstration at CITRC. It also stated the construction laydown areas outside the 1.6-acre area would be minimal. As stated in the EIS, upon arrival at the test pad area, the mobile microreactor would be offloaded from transports to a concrete pad at the test pad area and the modules would be connected. Temporary and permanent shielding possibly consisting of concrete T-walls, steel-reinforced concrete roof panels, concrete wall blocks, water shielding, and HESCO® bags could be installed. Areas at CITRC that could be disturbed have already been impacted by human-surface interactions, and below-ground level disturbances would be limited to localized areas and minimized as much as reasonable. As a conservative estimate, the total area of potential effects evaluated in the EIS was 44.8 acres at CITRC (Nelson, 2024b).

A summary of the available construction area and estimated material quantities at CITRC Pad A based on information used in the 2023 SIR and the proposed relocation of the Pele mobile microreactor at this pad is provided in Table **1**.

Table 2. Estimated Impact and Limitations of Mobile Microreactor Installation and Testing on CITRC Pad A

	2023 SIR	Revised Location at Pad A
Available Construction Area	50,000 ft^2	50,000 ft^2
Area for reactor site	1.6 acres	2.5 acres (within security fence)
Total Disturbed Area[a]	minimal	~16.3 acres (includes area for reactor site)[b]
Leveling cut and fill materials		
Cut (material removed)	N/A	2,600 yd^3
Fill	N/A	2,300 yd^3
Net Fill	N/A	300 yd^3
Fill Material – pad construction	3,200 yd^3	3,200 yd^3
Excavation area/volume	100x100 ft to 5 ft depth 1,851 yd^3	120x80 ft to nominal 5 ft depth[c] Less than 1,900 yd^3
Concrete Used During Construction		
Concrete needed	2,000 yd^3	4,500 yd^3

Source: (Nelson, 2024b)

Key: N/A = not applicable; ft = foot; ft^2 = square feet; yd^3 = cubic yards

[a] Total area of potential effects evaluated in the EIS was 44.8 acres. Total disturbed area noted here includes additional areas not included in the original analysis for the laydown area (originally identified as minimal area), soil stockpile area, and relocation of power lines

[b] Total Disturbed Area includes approximately 4.4 acres for the laydown area, 0.7 acres for the soil stockpile area, and 7.5 acres for electrical power line relocation

[c] Due to uneven lava surface depths could vary slightly.

In addition to the construction effects of preparing the new location for the installation of the Pele mobile microreactor, ancillary changes are required.

The EIS and 2023 SIR did not address the relocation of power lines. As shown in **Figure 3**, power lines are to be relocated to run from southwest of the location of the Pele mobile microreactor to north of its location. This relocation of the power lines will require the movement of up to 5 power poles (add 3 and remove 2) along this route. Additional poles may be removed or relocated within the areas identified in Figure 3 to accommodate construction and operational activities.

Both the EIS and 2023 SIR discussed the need for security fencing and provided an estimate of the amount of fencing required. The shape and size of the area within the fencing (primarily the fencing to protect personnel from the Pele mobile microreactor and not the control area fencing) has changed with the relocation of the Pele mobile microreactor. A revised estimate of the amount of fencing required has not been finalized, but significant changes are not expected as most of the fencing would be located within the 50- to 600-foot diameter control area.

In addition to a shield structure, another structure similar in height to the shield structure may be placed nearby to house other support equipment.

2.4 PROJECTED OPERATIONAL CHANGES AT PAD A

There are no significant changes to the proposed operation of the Pele Mobile Microreactor based on the selection of the site and specific location at Pad A. However, further analysis has identified a few minor changes:

- In addition to the reactor module CONEX container (i.e., a “container express” shipping container), the trailer used to transport the Pele mobile microreactor module in its CONEX container may need to be considered low level radioactive waste (LLW).
- While not a change from the design as analyzed in the EIS and 2023 SIR, both of which addressed the use of up to 72,000 gallons of diesel fuel, neither addressed the anticipated installation of a ~5,000 gallon diesel fuel tank. A tank is part of the site design and would need to be installed.
- Up to 120,000 gallons of propylene glycol will be used in the shield water as a freeze protection measure. To support operational needs a temporary storage tank will be used to temporarily store these liquids on site. These 120,000 gallons of glycol would be disposed as LLW.
- Addition of a 5,000 gallon water tank for makeup water to the plant. This will be installed near the structure.
- The shield structure will have two sumps installed that will be capable of containing a shield water leak and handle any precipitation.
- An optional standby diesel will be installed in the commercial electrical power loop.

3. COMPARISON OF IMPACTS IN THE 2023 SIR WITH THOSE FROM USE OF PAD A AT THE REVISED LOCATION

The proposed site description and construction activities presented in Section 2 have been evaluated and compared to the potential impacts presented in the EIS and 2023 SIR.

Table 2 (adapted from Table 2.7-1 of the EIS and Table 3 of the 2023 SIR) presents potential incremental environmental consequences for the construction and operation of the mobile microreactor at INL, with the reactor sited at CITRC Pad A as described in the 2023 SIR and in this SIR. **Table 2** also compares the potential impacts of use of the revised Pad A location, with reference to the evaluations of the EIS, as needed.

As illustrated in **Table 2**, switching the reactor demonstration location from the originally proposed location at Pad A to an alternate Pad A location would make little difference in the potential impacts and the overall impacts would continue to be bounded by the EIS. As indicated in **Table 1**, the actual construction activities and size of the pad are similar for both pad locations. Both are in the same general area of INL, have lava flows beneath the minimal soil, and are served by the same access road. In addition, the location of the Pele mobile microreactor at the two locations at Pad A would result in similar geology and water issues. Both pad locations are about 7 miles from the nearest site boundary. (Note that Pad D, being closest to the site boundary, was used in the EIS to bound off-site impacts.) Thus, from an environmental impact perspective, the impacts of using either Pad A location should be similar to, and bounded by, the impacts evaluated in the 2023 SIR. Changes in the location of the Pele mobile microreactor affect the region of influence (ROI) for biological, cultural, and paleontological resources. The potential environmental consequences of the test reactor relocation for these resource areas are discussed in this SIR. **Table 2** summarizes the differences because of the relocation. The following sections discuss these differences in more detail.

Table 3. Summary and Comparison of Environmental Consequences Presented in the EIS and with the Use of Pad A

Resource Area	EIS Impacts Summary (use of Pad B, Pad C, or Pad D)	Pad A Impacts Summary and Comparison
Land Use and Aesthetics (EIS Chapter 4, Section 4.1)		
Land Use	There would be minor impacts on land use from the disturbance of less than 2 (up to about 1.6) acres during construction activities at the CITRC test location. Less than an additional 0.1 acre would be disturbed at the temporary storage site. No additional land would be disturbed during operations.	Land use around Pad A would be similar to the land use near the pads evaluated in the EIS and the 2023 SIR except for the former PBF site to the northwest of Pad A. Construction activities could impact a larger area than considered in the EIS/2023 SIR (less than 16.3 acres compared to the previous value of less than 2 acres). However, these impacts should be temporary and remain a small fraction of the INL site lands. Operations at Pad A, including the amount of land occupied during operations, would be similar to those evaluated in the EIS. Therefore, although a larger area is impacted, land use impacts would be similar and do not require additional analysis.

Table 3. Summary and Comparison of Environmental Consequences Presented in the EIS and with the Use of Pad A

Resource Area	EIS Impacts Summary (use of Pad B, Pad C, or Pad D)	Pad A Impacts Summary and Comparison
Aesthetics	Localized and temporary visual impacts could result from construction equipment (e.g., cranes), but only in areas within the line of sight of CITRC and the temporary storage location during construction. Construction at CITRC would be limited to daylight hours with limited or nonexistent nighttime or weekend work and thus would not contribute to any local or regional night sky impacts. New facilities associated with mobile microreactor demonstration would be designed to minimize, to the extent practicable, new sources of light pollution. Impacts on the Craters of the Moon National Monument and Preserve (an International Dark Sky Park) would not be expected from exterior lighting required for the mobile microreactor demonstration at CITRC.	*Bounded by the EIS.* The visual environment around Pad A would be similar to the environment near the pads evaluated in the EIS and 2023 SIR. Construction and operations at Pad A, including the dimensions of temporary structures, would be similar to those evaluated in the EIS. Therefore, aesthetic impacts would be similar and do not require additional analysis.
Geology and Soils (EIS Chapter 4, Section 4.2)		
	The area disturbed would be less than 2 acres. The volume of excavated materials would be about 4,250 yd^3. The amount of rock/gravel needed would be 3,200 yd^3. The total quantities of geologic and soil materials needed during construction would represent small percentages of regionally plentiful resources and are unlikely to adversely impact geology and soil resources. At the conclusion of testing, any soil determined to be LLW would be removed and the area returned to a state allowing unrestricted access and use.	*Bounded by the EIS.* The area disturbed would be less than 16.3 acres. The volume of excavated materials would be about 4,200 yd^3 (including cut material for leveling the site and excavation for pad construction). The amount of rock/gravel needed would be less than 3,200 yd^3. The total quantities of geologic and soil materials needed during construction would represent small percentages of regionally plentiful resources and are unlikely to adversely impact geology and soil resources. At the conclusion of testing, any soil determined to be LLW would be removed and the area returned to a state allowing unrestricted access and use.
Water Resources (EIS Chapter 4, Section 4.3)		
Surface Water	No effluent would be discharged across the previously graded ground surface, and no surface water would be used. No activities are expected to add to or change the constituents in the stormwater discharge during construction. Sanitary wastewater from the construction and operational workforce would be handled by existing on-site systems.	*Bounded by the EIS.* Surface water conditions at either Pad A location would be similar to conditions at the sites evaluated in the EIS. Construction and operations at Pad A, including the amount of land disturbed and lack of surface water use and effluent discharge, would be similar to those evaluated in the EIS. Therefore, surface water impacts would be similar and do not require additional analysis.

Table 3. Summary and Comparison of Environmental Consequences Presented in the EIS and with the Use of Pad A

Resource Area	EIS Impacts Summary (use of Pad B, Pad C, or Pad D)	Pad A Impacts Summary and Comparison
Groundwater	No effluent would be discharged directly to groundwater, and thus, the Proposed Action would not adversely affect groundwater quality. The Proposed Action would use 260,500 gallons of groundwater over the approximately 6 years of mobile microreactor demonstration and potential PIE activities.	*Bounded by the EIS.* Groundwater use at either Pad A location would be similar to that at the sites evaluated in the EIS. Construction and operations at Pad A, including the amount of groundwater used and lack of discharges to groundwater, would be similar to those evaluated in the EIS. Therefore, groundwater impacts would be similar and do not require additional analysis.
Air Quality (EIS Chapter 4, Section 4.4)		
	None of the proposed operations would produce substantial air emissions. The combined annual emissions from all sources would be well below annual indicator thresholds. Therefore, annual emissions from the proposed project would not result in adverse impact to air quality. The mobile and/or intermittent operation of project emission sources would result in dispersed concentrations of air pollutants at locations outside the INL Site. The transport of these emissions to the neares boundary of the Craters of the Moon National Monument and Preserve would produce substantial dispersion and would result in negligible concentrations of air pollutants within this pristine Class I area. PM_{10} emissions from the project also would negligibly impact the nearest PM_{10} nonattainment or maintenance area to the INL Site, which is the Fort Hall Indian Reservation PM_{10} nonattainment area in northeastern Power County and northwestern Bannock County.	*Bounded by the EIS.* Ambient air quality at either Pad A location would be similar to conditions at the sites evaluated in the EIS. Construction and operations at Pad A, including minor air pollutant emissions, would be similar to those evaluated in the EIS. In addition, all four CITRC Pads are about 22 miles from Craters of the Moon National Monument. Therefore, air quality impacts would be similar and do not require additional analysis.
Biological Resources (EIS Chapter 4, Section 4.5)		
	The Proposed Action could disturb 28 vegetated acres across Pads B, C, or D at CITRC. Appropriate mitigations (such as sagebrush restoration, invasive species management, and the INL Revegetation Assessment program) would be enforced. As described in EIS Section 4.10, *Human Health – Normal Operations*, radiological emissions from the Proposed Action would not substantially contribute to impacts on human health or biological resources. If an unforeseen hypothetical accident were to occur, radiological exposure could affect biological resources. Some plant and wildlife species may be more sensitive than others. In general, exposure to radiation may lead to increased mutation rates, reduced growth rates, changes in pollen production and seed viability, as well as abnormal development.	Impacts on biological resources at the Pad A site would cause temporary impacts to less than 6 acres of big sagebrush – green rabbitbrush (threetip sagebrush) habitat. However, it is anticipated that these areas would revegetate via ecological succession overtime. Common and state listed species of concern (pygmy rabbit and various bat species) inhabiting/traversing the site would be expected to flush from the area to similar habitat(s) immediately available nearby. BMPs and monitoring measures for migratory birds and invasive species management implemented through the Annual Site Environmental Report (ASER) Natural Resources Program would continue.

Table 3. Summary and Comparison of Environmental Consequences Presented in the EIS and with the Use of Pad A

Resource Area	EIS Impacts Summary (use of Pad B, Pad C, or Pad D)	Pad A Impacts Summary and Comparison
Cultural and Paleontological Resources (EIS Chapter 4, Section 4.6)		
	The proposed project is expected to have no effect on ethnographic, significant cultural, and paleontological resources from construction and land disturbance.	Recent analysis indicates there are no NRHP-eligible cultural resources in the Pad A APE, and therefore impacts from construction associated with the mobile microreactor at Pad A are anticipated to be the same as the impacts determined in the EIS for the microreactor located at Pad B, Pad C, or Pad D. A Cultural Resources Survey was conducted in late spring 2023 to confirm previously recorded archaeological resources and findings of NRHP eligibility. No Paleontological Resources have been identified in the CITRC area and no further analysis is required. See Section 3.2 in this SIR for more details.
Infrastructure (EIS Chapter 4, Section 4.7)		
	The Proposed Action would use 140 MWh of electricity, with the majority (100 MWh) of this associated with any PIE activities, 34,000 pounds of propane, and 210,500 gallons of water for staff and operational use plus another 50,000 gallons of water for the water bladders used for neutron shielding. Additionally, small quantities of diesel fuel (72,000 gallons) and gasoline (9,000 gallons) would be used.	*Bounded by the EIS.* The utility infrastructure at either Pad A location would be similar to the infrastructure at the sites evaluated in the EIS, with the exception of the need to import water to Pad A for staff use and shielding. Construction and operations at Pad A, including the utilities needed, would be similar to those evaluated in the EIS. Therefore, infrastructure impacts would be similar and do not require additional analysis. The addition of a diesel storage tank and rerouting of power lines and the movement of 5 power line poles would not impact infrastructure needs.
Noise and Vibration (EIS Chapter 4, Section 4.8)		
	The noise generated from operation would be consistent with other existing industrial activities and equipment at the INL Site and the potential concurrent noise would be similar to existing levels at the INL Site. Due to the distance, estimated noise levels at the INL Site boundary (5.9 miles from CITRC) and closest receptor (6.5 miles) would not be perceptible and would be consistent with ambient levels. Ground-borne vibration due to construction and operational activities are expected to be below the threshold of human perception at off-site locations.	*Bounded by the EIS.* The noise and vibration environment at both Pad A locations would be similar to conditions at the sites evaluated in the EIS. Construction and operations at Pad A, including noise and vibration, would be similar to those evaluated in the EIS. Therefore, noise and vibration impacts would be similar and do not require additional analysis.

Table 3. Summary and Comparison of Environmental Consequences Presented in the EIS and with the Use of Pad A

Resource Area	EIS Impacts Summary (use of Pad B, Pad C, or Pad D)	Pad A Impacts Summary and Comparison
Waste Management and Spent Nuclear Fuel Management (EIS Chapter 4, Section 4.9)		
	Small amounts of waste and spent nuclear fuel would b generated as a result of the proposed project. All waste would be packaged on-site and would be disposed of off-site or stored at approved INL Site facilities. **Low-Level Waste** 338.9 m^3 1,000 ft wiring 750 ft piping 50 connections (units) 1 CONEX container 1 reactor vessel Various reactor and power conversion CONEX internals **Mixed Low-Level Waste** 7.3 m^3 **Cold Waste** 2,385.6 m^3 500 ft wiring 250 ft wiring conduit 250 ft piping 3 CONEX containers **Spent Nuclear Fuel** Small quantities (less than 3.4 m^3)	*Bounded by the EIS.* The waste management infrastructure at both Pad A locations would be similar to the infrastructure at the sites evaluated in the EIS. If the trailer used to transport the reactor CONEX trailer is determined to be LLW, it would result in a small additional contribution to the overall LLW from the project. Construction and operations at Pad A, including the amount of waste generated, would be similar to those evaluated in the EIS. Therefore, waste management impacts would be similar and do not require additional analysis.
Human Health – Normal Operations (2023 SIR Section 3.3)		
	The annual dose to individuals in the INL Site areas from natural background radiation is about 380 mrem per year (EIS Section 3.10.1, *Radiation Exposure and Risk*). The estimated population dose from natural background to the approximately 257,000 persons within 50 miles of the proposed operations is about 98,000 person-rem. The dose from demonstration of the microreactor to both the maximally exposed individual and the total population would be an insignificant fraction of this dose (equivalent to less than 15 minutes of exposure to natural background radiation and much less than the dose received on a flight from New York to Los Angeles). No latent cancer fatalities would be expected to result from these doses. From the 2023 SIR for operation at Pad A *Operations (annual radiological impacts)*: Off-site population within 50 miles Dose: less than 3.2 person-mrem LCFs: 0 (2×10^{-6}) (i.e. 0.000002) Maximally exposed individual Dose: less than 0.005 mrem LCF risk: less than 1×10^{-8} (i.e., less than 0.00000001)	*Bounded by the 2023 SIR*. Human health impacts to the public and workers from normal operations are expected to be similar for testing at any of the pad locations. The location of the MEI and collocated worker is farther from Pad A than from the pad used in the EIS analysis and is farther away from the closest population center (Idaho Falls). All other parameters of the analysis remain unchanged for the use of Pad A. Impacts, related solely to the selection of a specific test pad location at Pad A, would be bounded by the 2023 SIR. The impacts would be unaffected by the movement of the Pele mobile microreactor less than 200 ft to the south-west at Pad A.

Table 3. Summary and Comparison of Environmental Consequences Presented in the EIS and with the Use of Pad A

Resource Area	EIS Impacts Summary (use of Pad B, Pad C, or Pad D)	Pad A Impacts Summary and Comparison
	Non-involved worker Dose 0.03 mrem LCF risk: 2 x 10-8 (i.e. 0.00000002) Worker population Dose: 3 person-rem LCFs: 0 (calculated: 2×10^{-3}) (i.e., 0.002) Industrial accidents: less than 1 injury with no fatalities expected.	
Human Health – Facility Accidents (Annual Impacts) (EIS Chapter 4, Section 4.11, considered bounding in 2023 SIR)		
	Because of the protective characteristics of the TRISO fuel particles, only an extremely small fraction of the radioactive materials would be released from the fuel under operating or accident conditions and temperatures. As a result, radiological impacts to the public from any accident would be a small fraction of an individual's annual natural background radiation dose rate of about 0.38 rem per year. The largest impacts to receptors would be associated with different accidents. The largest long-term impacts to the off-site population would be associated with an operational accident at CITRC. The largest non-involved worker impacts, MEI impacts, and near-term population impacts would be associated with an inadvertent criticality accident (i.e., accidental uncontrolled nuclear fission chain reaction) during transport of the mobile microreactor between locations on the INL Site. Projected radiological impacts from the accident with the largest consequences are: <u>Off-site population within 50 miles</u> Accident probability: less than one in 10,000 per year Collective Population Dose: 4.3 person-rem In contrast, the projected population dose from natural background is about 98,000 person-rem (approximately 0.380 rem per year [EIS Section 3.10.1] x 257,000 people or 98,000 person-rem). LCFs: 0 (0.003) <u>Maximally exposed individual</u> Accident probability: less than one in 10,000 per year Dose: 0.098 rem (natural background 0.38 rem per year) LCF risk: 6×10^{-5} (i.e., 0.00006) <u>Non-involved worker</u> Accident probability: less than one in 10,000 per year Dose: 1.1 rem LCF risk: 7×10^{-4} (i.e., 0.0007)	Impacts from accidents involving the mobile microreactor at Pad A would be no greater than the impacts determined in the EIS for the microreactor located at Pad B, Pad C, Pad D, or the original location at Pad A. Impacts would be expected to be the same for the involved worker and the non-involved worker and slightly less for the individual member of the public at the nearest site boundary and the off-site public within 50 miles of the facility. Radiation doses and hazardous material exposures to the maximally exposed individual member of the public at the nearest site boundary, the off-site population residing within 50 miles of the facility, and a non-involved worker located 330 ft from the accident would continue to be well below any regulatory limits and the probability of LCFs would also continue to be very small.

Table 3. Summary and Comparison of Environmental Consequences Presented in the EIS and with the Use of Pad A

Resource Area	EIS Impacts Summary (use of Pad B, Pad C, or Pad D)	Pad A Impacts Summary and Comparison
Human Health – Transportation Impacts (EIS Chapter 4, Section 4.12)		
	The transportation of radioactive material (fuel) and waste likely would result in no additional fatalities as a result of radiation, either from incident-free operation or postulated transportation accidents. No potential traffic fatalities would be expected over the duration of activities. The nonradiological accident risks (the potential for fatalities as a direct result of traffic accidents) are greater than the radiological accident risks.	*Bounded by the EIS.* The transportation infrastructure at either Pad A location would be similar to the infrastructure at the sites evaluated in the EIS. All four pads are reached by a common road with similar distances to Highway 20/26 and Haul Road. Construction and operations at Pad A, including the amounts of materials and wastes needing transportation, would be similar to those evaluated in the EIS. Therefore, transportation impacts would be similar and do not require additional analysis.
Traffic (EIS Chapter 4, Section 4.13)		
	The impacts on traffic from the Proposed Action are anticipated to be negligible to minor.	*Bounded by the EIS.* The traffic conditions near either Pad A location would be similar to the conditions at the sites evaluated in the EIS. All four pads are reached by a common road with similar distances to Highway 20/26 and Haul Road. Construction and operations at Pad A, including the numbers of employees and amounts of materials and wastes needing transportation, would be similar to those evaluated in the EIS. Therefore, traffic impacts would be similar and do not require additional analysis.
Socioeconomics (EIS Chapter 4, Section 4.14)		
	The increase in jobs and income from construction and operations would have a small and short-term beneficial impact on the local and regional economy. The population influx associated with an in-migrating workforce and their families is considered relatively small and would have no major adverse impacts on the region in terms of population, employment, income levels, housing, or community services.	*Bounded by the EIS.* The socioeconomic conditions near either Pad A location would be similar to the conditions at the sites evaluated in the EIS. Construction and operations at Pad A, including the numbers of employees required, would be similar to those evaluated in the EIS. Therefore, socioeconomic impacts would be similar and do not require additional analysis.

Table 3. Summary and Comparison of Environmental Consequences Presented in the EIS and with the Use of Pad A

Resource Area	EIS Impacts Summary (use of Pad B, Pad C, or Pad D)	Pad A Impacts Summary and Comparison
Environmental Justice (EIS Chapter 4, Section 4.15)		
	No disproportionately high and adverse impacts on minority or low-income populations are expected. Increased health risks to minority or low-income individuals or populations exposed to radiation would be negligible.	*Bounded by the EIS.* The distribution of minority and low income and otherwise disadvantaged populations near either Pad A location would be similar to the conditions at the sites evaluated in the EIS. Construction and operations at Pad A, including activities potentially impacting disadvantaged communities, would be similar to those evaluated in the EIS. Therefore, environmental justice impacts would be similar and do not require additional analysis.

Key: APE = areas of potential effects; BMP = best management practice; CITRC = Critical Infrastructure Test Range Complex; CONEX = container express (shipping container); EIS = Environmental Impact Statement; ESER = Environmental Surveillance, Education and Research Program; ft = feet; HALEU = high-assay low-enriched uranium; INL = Idaho National Laboratory; LCF = latent cancer fatality; LLW = low-level radioactive waste; m^3 = cubic meters; MEI = maximally exposed individual; mrem = millirem; MWh = megawatt-hour; NRHP = National Register of Historic Places; PBF = Power Burst Facility; PIE = post-irradiation examination; PM_{10} = particulate matter less than or equal to 10 microns in diameter; rem = roentgen equivalent man; SIR = Supplemental Information Report; TRISO = tristructural isotropic; yd^3 = cubic yards

3.1 COMPARISON OF THE USE OF PAD A ON BIOLOGICAL RESOURCES

The ROI associated with Project Pele included the construction and demonstration areas for Pad B, Pad C, and Pad D, as well as a 200-foot (61-meter) buffer around the proposed security fences. The ecological review survey area—a 0.5-mile (805-meter) radius buffer that extends beyond Pad B, Pad C, and Pad D—was included in the analysis to account for an unforeseen hypothetical accident. The maximum disturbance footprint associated with site preparations for the required concrete pad, associated fencing, and site upgrades would total around 16.3 acres, assuming the fence would be placed within 30 feet of the concrete pad.

The U.S. Department of Energy (DOE) completed biological field surveys in October 2020 to identify potential sensitive species within the proposed project areas for Pad B, Pad C, and Pad D, and to ensure potential impacts to sensitive biological resources would be minimized and/or avoided. The results are provided in *PELE: Ecological Summary Data and Field Surveys Report (VFS-ID-ESER-LAND-086)*, released in December 2020 (Veolia, 2020) and detailed in EIS Section 3.5, *Biological Resources*. The analysis determined that potential impacts to biological resources would be minimal. Existing agreements and controls would provide protection of federally, state, and locally sensitive species.

For Pad A, ecological datasets from historical and ongoing vegetation and wildlife monitoring were assessed to characterize the area potentially affected by the proposed activity. The *Supplemental Ecological Summary Data and Field Survey Report (INL/RPT-23-73518)* was used for the characterization of the proposed Pele Project Pad A located at the INL Site (ESER, 2023). The Annual Site Environmental Report (ASER) is prepared for the INL Site to inform the public regulators, stakeholders, and other interested parties about INL's environmental performance. It

summarizes environmental data, the performance of the environmental management system, and INL's compliance with applicable DOE, federal, state, and local regulations.

3.1.1 Vegetation

The proposed location of Pad A includes developed and disturbed land that previously hosted the PBF. The area now includes a gravel pad and vegetation that was impacted by the 2019 Sheep Fire.

Under the Proposed Action, around 16.3 acres of land would be impacted (see **Figure 4**). This includes permanent impacts to approximately 3 acres of land classified as "borrow sources/disturbed" from construction activities within previously developed or disturbed areas. Temporary impacts associated with the use of the laydown yard, power pole relocation area, and surplus soil area would impact approximately 6 acres of big sagebrush – green rabbitbrush (threetip sagebrush) shrubland, approximately 6 acres of land classified as "borrow sources/disturbed," and approximately 0.7 acres of paved roads. Construction access, staging, and parking would be restricted to existing developed areas and to minimize impacts to native vegetation.

Because sagebrush habitats would not be permanently impacted, new infrastructure as part of CITRC Pad A would be in compliance with the DOE's goal of "no net loss of sagebrush habitat," as detailed in the *Candidate Conservation Agreement* (DOE-ID & USFWS, 2014) for the INL Site.

Land immediately outside of the Pad A footprint is composed of big sagebrush – green rabbitbrush (threetip sagebrush) shrubland. Green rabbitbrush/thickspike wheatgrass shrub grassland and needle and thread grassland, along with exposed rock/cinder occurs beyound 1,500 feet (500 meters) (Veolia, 2020; INL, 2019a; ESER, 2023).

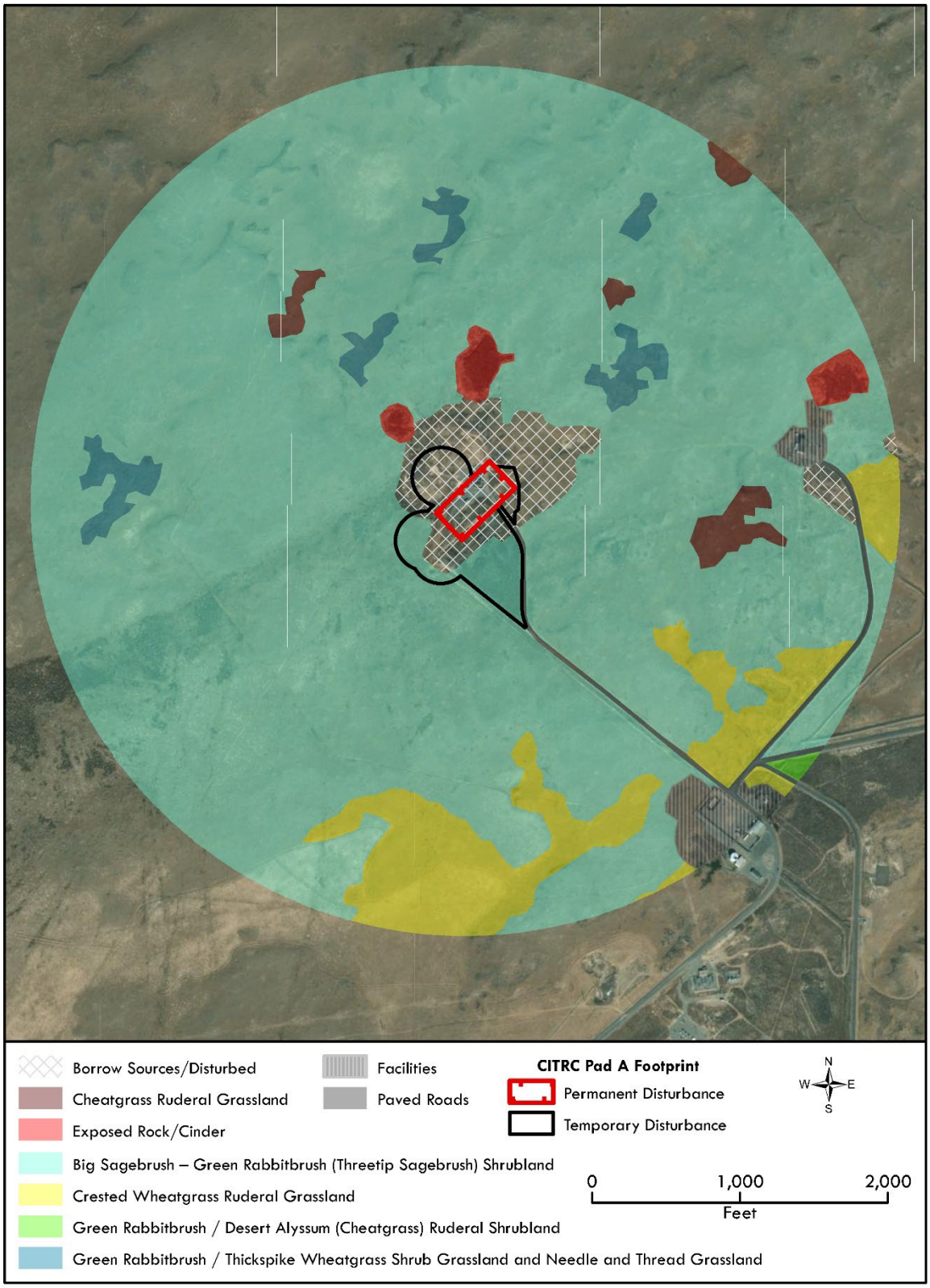


Figure 4. Revised Pele Mobile Microreactor Affected Areas - Biological Resources Habitat Classification Map

Removal and treatment of noxious weeds on the INL Site is considered a regulatory requirement. Two non-native and invasive plant species (rush skeletonweed [*Chondrilla juncea*] and Canada thistle [*Cirsium arvense*]) were identified within the biological survey area of Pad A (ESER, 2023). As such, revegetation would be required in accordance with annual INL Site Revegetation Assessment and INL Revegetation Guide program practices (INL, 2019b; INL, 2012). The project site's revegetation with native grasses would be evaluated and implemented to address soil stabilization and long-term noxious weed control.

Construction and land-clearing activities within the proposed Pad A footprint would potentially increase soil disturbance. Soil disturbance is a primary contributor to the spread of invasive plants and increases in weedy non-native invasive species. As a result, invasive species management and noxious weed control would be necessary to facilitate reestablishing native communities. Indirect impacts associated with personnel, motor vehicles, and equipment transport would provide potential opportunities for invasive plant species to spread into areas supporting native vegetation. Minimizing the spread of non-native species could reduce impacts to sensitive species and habitats.

3.1.2 Wildlife

Wildlife within the vicinity of Pad A could be permanently or temporarily disturbed or displaced due to loss of habitat from land-clearing activities and/or an increase in noise, light, and human activity associated with construction and demonstration. However, noise effects from construction would be short term (lasting only the duration of project construction) and would only affect wildlife in the immediate project areas. Species would likely flush from the area to similar habitat(s) available directly adjacent to Pad A. Those species affected would generally be able to return to the temporarily disturbed areas after construction within the Pad A area is completed.

Radiological emissions from the use of Pad A may result in radiation fields outside the shielding structure that would be larger than what was assumed in the EIS. A high dose rate associated with this radiation field could substantially contribute to impacts on biological resources. As such, mitigations or management actions may be required. Some plant and wildlife species may be more sensitive to radiological exposure than others. In general, exposure to radiation may lead to increased mutation rates; reduced growth rates; changes in pollen production, seed viability, and reproductivity; as well as abnormal development. Additionally, radiological exposure could also affect biological resources if an unforeseen hypothetical accident were to occur.

3.1.3 Federally Listed Species

No federally listed threatened or endangered species or designated critical habitats were identified under the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation review (USFWS, 2024). Additionally, no federally listed threatened or endangered species have been historically documented at the INL Site under the Environmental Surveillance, Education and Research (ESER) Program. As such, land-clearing activities within Pad A are not anticipated to result in temporary or permanent impacts on federally threatened and endangered species and Section 7(a)(2) consultation under the Endangered Species Act would not be required.

The use of Pad A would not result in the direct loss of vegetation as the entirety of the Pad A site that would be permanently impacted is disturbed. Although temporary impacts associated with the use of the laydown yard, power pole relocation area, and surplus soil area would impact approximately 5.66 acres of big sagebrush – green rabbitbrush (threetip sagebrush) shrubland, it is anticipated that these areas would revegetate via ecological succession overtime. While multiple reminant PBF structures present could provide habitat to nesting birds, direct and indirect impacts on birds protected under the Migratory Bird Treaty Act are not likely to occur. Under the Proposed Action, monitoring of breeding birds throughout the entirety of the INL Site would continue. Department of Energy Idaho Operations Office (DOE-ID) has a USFWS Migratory Bird Treaty Act Special Purpose Permit for limited nest relocation and destruction and the associated take of migratory birds if deemed absolutely necessary for mission-critical activities. The permit would be applied in very limited and extreme situations where no other recourse is practicable (DOE-ID, 2020). In accordance with the USFWS Mitigation Policy, DOE would be required to evaluate ways to avoid or minimize any such impacts during construction and operation of the proposed facilities.

3.1.4 State-Listed Species

Pygmy rabbits (*Brachylagus idahoensis*) are an Idaho Tier 2 Species of Greatest Conservation Need (SGCN) and are known to frequent the entirety of the INL Site. Currently, there are no known active pygmy rabbit burrows within the 15-acre Pad A impact area (Kramer, 2024). Because pygmy rabits are mobile species and startle, it is likely that species would flee from the area upon initiation of human disturbance. Similar suitable foraging habitat is readily available outside of the Pad A temporary impact area. However, if a pygmy rabbit burrow was identified during construction, best management practices to avoid or minimize impacts to a burrow would be implemented (i.e., reducing activity within 300 feet of the burrow, or avoidance of collapsing the burrow, where possible).

Special status species bats are known to occur throughout the INL Site. However, due to the disturbed nature of the Pad A site, it is not likely that foraging habitats for these bats would be greatly impacted. Best management practices that include the INL Bat Protection Plan (INL, 2018) are currently implemented at INL, and there would be continued collaboration with Idaho Fish and Game to minimize impacts to bats cumulatively throughout the INL Site.

3.2 COMPARISON OF THE USE OF PAD A ON CULTURAL AND PALEONTOLOGICAL RESOURCES

Effects on ethnographic, cultural, or paleontological resources from proposed construction activities at CITRC Pad A are anticipated to be the same as detailed for Pad B, Pad C, and Pad D in Section 4.6, *Cultural and Paleontological Resources*, of the Project Pele EIS.

The revisions to the conceptual layout and necessary preparations for the placement of a mobile microreactor at CITRC Pad A required additional cultural review and Section 106 consultation. The area of potential effects (APE) to historic properties was determined to be 16.8 acres. This includes areas where ground disturbance could occur. Within the interior security fence, excavation will occur for the construction of a concrete pad to support the microreactor and its surrounding shield, a concrete pad will be constructed for the cabinet skid, and the existing graveled area will be expanded. Truck turn-around areas along the east and west sides of the interior security fence will also be

constructed. The laydown yard area will be grubbed and leveled to accommodate parking, construction materials, the diesel tank, and construction of the concrete pad for the control module. The APE also includes an area east of the interior security fence for placement of surplus soils, a 200-foot buffer of the power poles to be removed and installed, and 0.5-acre area at the Central Control Area for the installation of a modular office building. Visual, auditory, and atmospheric impacts associated with the revisions will be similar to those previously analyzed for the selection of CITRC Pad A for the testing and demonstration of the mobile microreactor and it is not necessary to adjust the APE for these impacts.

No historic or NRHP-eligible properties were identified within the current APE. A cultural review of the construction activities to prepare CITRC Pad A for the setup, testing, and operation of the mobile microreactor resulted in no historic properties affected with adherence to all mitigation measures and management actions agreed to for the Project Pele EIS. In compliance with Section 106 of the National Historic Preservation Act, DOE has completed consultation with the Idaho State Historic Preservation Officer, federally recognized Tribes, and interested parties regarding its determination of effects for the proposed preparations. In a letter dated October 29, 2024, the Idaho State Historic Preservation Officer concurred with DOE's determination of *no historic properties affected*.

4. RECOMMENDED USE OF CITRC PAD A

Based on the results of the environmental impact evaluation for the relocation of the Pele mobile microreactor from the area analyzed in the 2023 SIR to a location at Pad A but to the south-west and still within the area of CITRC Pad A, this new location at CITRC Pad A would present no greater environmental impacts than those evaluated in the EIS and 2023 SIR as a location for mobile microreactor operations and testing. From a programmatic perspective, the main differentiators are that (1) CITRC Pad A is the largest and therefore would provide maximum flexibility in layout, (2) be dedicated to mobile microreactor testing and operations, (3) have nearly no impact to other programs, and (4) minimize interfaces with other programmatic interests.

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6. CONCLUSION

Supplementation of the existing NEPA documentation will not be required per 40 CFR 1502.9(c) if the proposed Pele mobile microreactor location within the area of Pad A is used instead of Pad B, Pad C, or Pad D, sites evaluated in the EIS or the Pad A location evaluated in the 2023 SIR. There are no substantial change(s) to the Proposed Action due to the use of this revised location at Pad A that are relevant to environmental concerns.

All NEPA documentation incorporated by reference or mentioned in this SIR can be downloaded from the internet in PDF format at https://www.cto.mil/pele_eis/

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