SUPPLEMENTAL INFORMATION REPORT
PROJECT PELE

STRATEGIC CAPABILITIES OFFICE

SEPTEMBER 2023

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. Specific details for Project Pele are provided in the following document, which is 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).

This SIR is intended to document that after the signing of the Record of Decision (ROD) on April 5, 2022, the Strategic Capabilities Office (SCO) has 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 and may offer programmatic and environmental advantages over the CITRC pad sites evaluated in the EIS. The purpose of this SIR is to document the potential environmental impacts from using the alternate pad site and determine if the environmental impacts of using the alternate pad site are bounded by the conservative analyses of the pad sites identified in the EIS.

1. INTRODUCTION

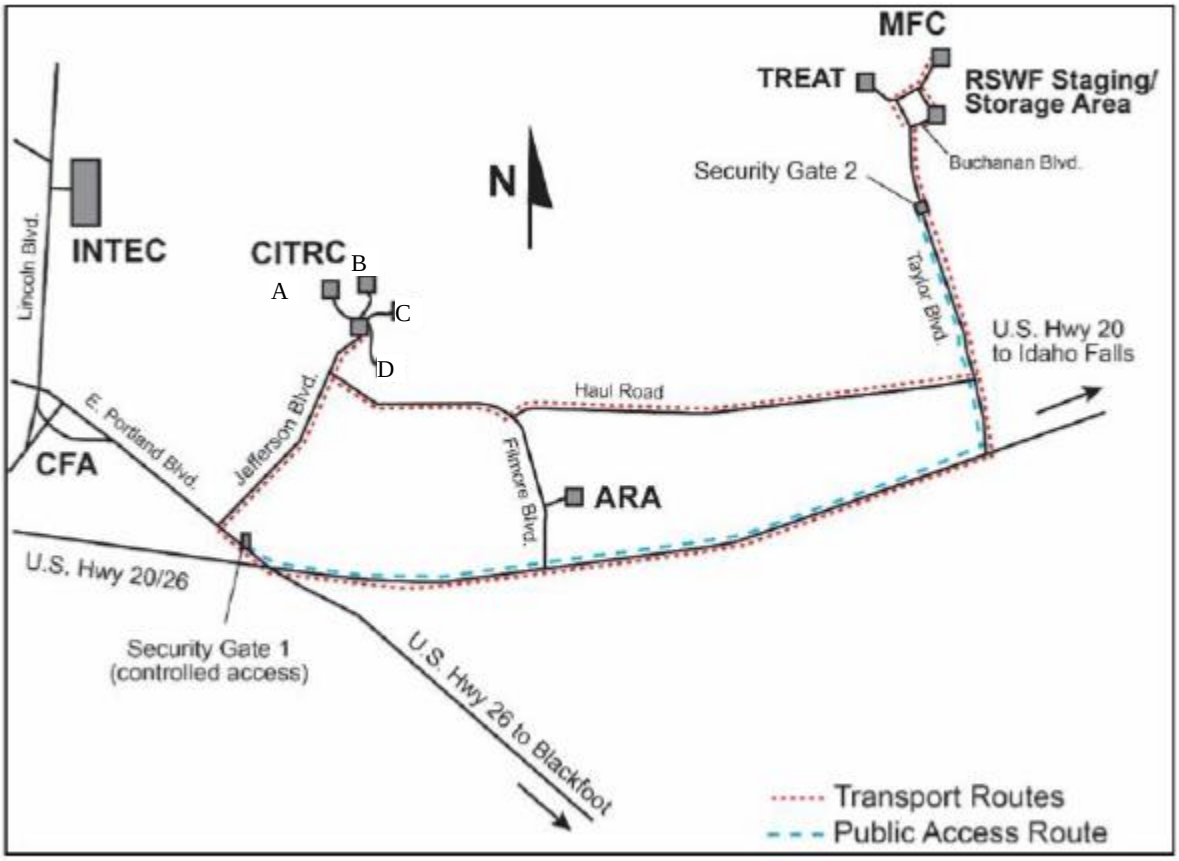
In the EIS, CITRC User Pad B, Pad C, and Pad D were identified as potential test locations for the Project Pele microreactor (DoD-SCO, 2022). The EIS did not describe a preferred location and the ROD (Federal Register 87, no. 73, April 15, 2022: 22521) did not select a specific pad at CITRC. Pad A was not included in the EIS because it was unavailable for use by the project. Since publication of the EIS, Pad A became available. This SIR provides background information on Pad A, conceptual site layout, a bounding estimate of the construction area, volume of concrete, trenching (depth), and compares the projected environmental impacts of using Pad A as a reactor site location instead of CITRC Pad B, Pad C, or Pad D, which were evaluated in the EIS.

2. BACKGROUND ON CITRC AND PAD A

CITRC is part of the INL Site's 13.8-kilovolt (kV), 61-mile power loop electrical test bed (see **Figure 1**), supporting critical infrastructure research and testing. CITRC includes a configurable and controllable substation and a 13.8-kV distribution network that includes four user test pad areas on a distribution network that can operate alone or together to support larger operations at

any of multiple test voltage levels. Each user test location allows a connection to 13.8-kV power to supply a 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, 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 has prepared a background report on the technical and siting details of using Pad A (INL, 2023). The background and technical description presented in the remainder of this section is largely taken from that report.



Key: ARA = Auxiliary Reactor Area; 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 that was 10 feet below ground. Above-grade equipment and piping were removed from the above-ground level portion of the facility. Except for the blowdown tank, which was greater than 10 feet below ground level, all contaminated piping systems and equipment were removed from the first and second basement. 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 (DOE-ID, 2019; also see **Figure 2**). 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.

2.2 CONCEPTUAL LAYOUT OF THE MOBILE MICROREACTOR AT CITRC PAD A (FROM INL, 2023)

If Pad A is selected for mobile microreactor operations, 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. 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.
- Establish a "no loitering" area with a diameter of approximately 650 feet to keep personnel out of the radiation zone around the reactor.
- Position a support ISO container approximately 650 feet from the interior fencing.

Figure 2 provides a diagram that shows how the mobile microreactor may be located at CITRC Pad A.

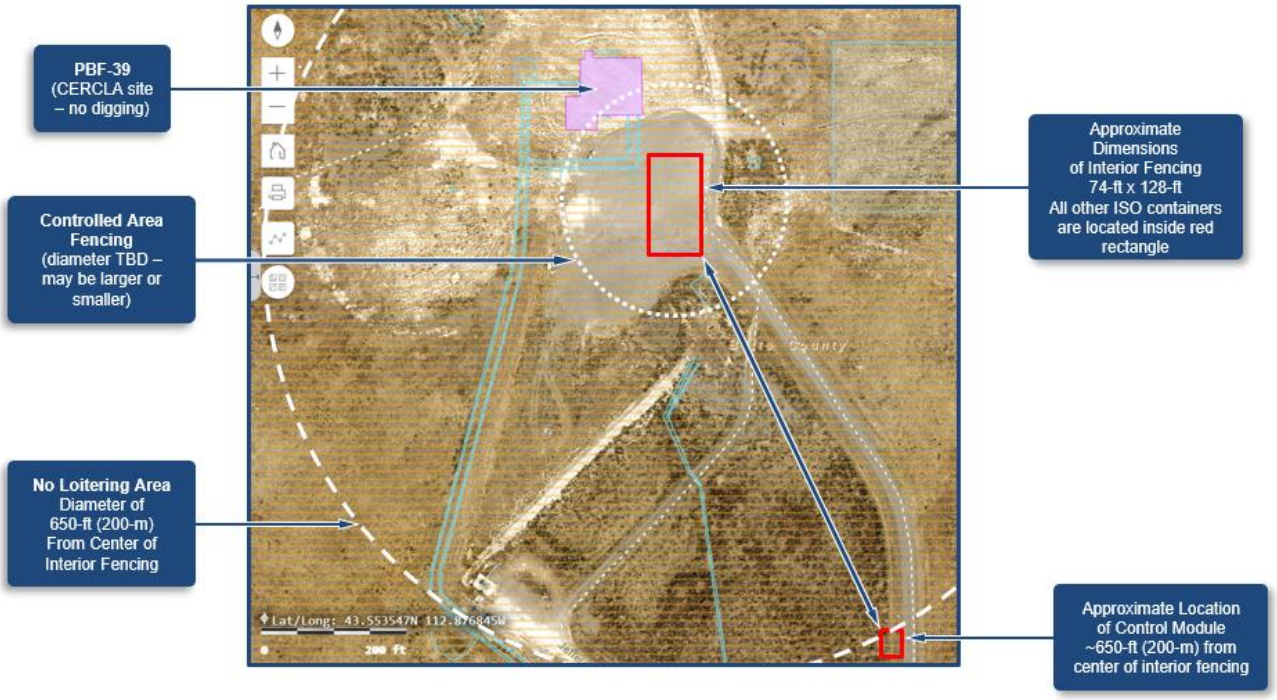


Figure 2. Conceptual Layout of the Mobile Microreactor at CITRC Pad A (from Nelson, 2023a)

The mobile microreactor would be placed to facilitate electrical connection of the mobile microreactor's power conversion equipment to the local power poles. It is anticipated the mobile microreactor would be located similarly to the previous installation of other equipment at CITRC Pad A. A photograph of the previous installation at CITRC Pad A is shown in **Figure 3**.

Figure 3. Photograph of Previous Installation of Equipment at CITRC Pad A (from INL, 2023)

2.3 PROJECTED CONSTRUCTION ACTIVITIES AT PAD A (FROM INL, 2023)

As stated in the EIS, 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. About 1.6 acres would be disturbed at one of the four pads (Pad A, Pad B, Pad C, or Pad D) for construction of a concrete pad as noted in Section 2.2 and surrounding fences for mobile microreactor demonstration at CITRC. Construction laydown areas outside the 1.6-acre area would be minimal. 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, steel bladders for water shielding, and HESCO® bags would 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.

The available construction area varies from 6,000 square feet at Pad B to 50,000 square feet at Pad A. If the installation requires more space than the available footprint, then additional grading and laying of concrete may be needed at the applicable CITRC pad to support the demonstration of the mobile microreactor. As a conservative estimate, the total area of potential effects evaluated in the EIS was 44.8 acres at CITRC. Electrical connections are available at all four pads. Water is available at Pad B, Pad C, and Pad D, but significant quantities of water are not needed to support operations of the mobile microreactor. A summary of the available construction area and estimated potential impact for these activities at each pad at CITRC is provided in **Table 1**.

Table 1. Estimated Impact and Limitations of Mobile Microreactor Installation and Testing on CITRC Pad A, Pad B, Pad C, and Pad D

Area	Available Construction Area	Volume of Concrete Needed (width, depth, and length)	Volume of Fill Material (Earth) Needed to Install Mobile Microreactor	How Deep Can You Dig	Distance to Nearest Site Boundary
Pad A	~50,000 ft^2	2,000 yd^3	3,200 yd^3	Minimize (lava is at grade to 5-ft bls)	7 miles
Pad B	~6,000 ft^2	2,000 yd^3	3,200 yd^3	Minimize (lava is at grade to 5-ft bls)	7 miles
Pad C	~40,000 ft^2	2,000 yd^3	3,200 yd^3	Minimize (lava is at grade to 1-ft bls)	7 miles
Pad D	~20,000 ft^2	2,000 yd^3	3,200 yd^3	Minimize (lava is at grade to 1-ft bls)	6 miles

Key: bls = below land surface; CITRC = Critical Infrastructure Test Range Complex; ft = feet; ft^2 = square feet; yd^3 = square yards
Note: Other construction and operational data are assumed to be the same regardless of which CITRC pad is used to perform testing (e.g., employment, water use, air emissions).

2.4 PAD SELECTION SCREENING (FROM INL, 2023)

Design of the site layout for Project Pele will commence within the next few weeks. To support this effort, it is necessary to recommend and select a specific CITRC user pad for mobile microreactor testing and operations.

Screening criteria for this evaluation include the impact to the existing footprint, other potential users, and existing environmental documentation. Results of the screening analysis are in the matrix below (**Table 2**).

Table 2. CITRC Site Selection Matrix

Criteria	Pad A	Pad B	Pad C	Pad D	Notes
CITRC user pad has sufficient footprint to accommodate shield structure and security perimeter?	Y	N	Y	N	CITRC User Pad A (gravel) and Pad C (asphalt) offer largest footprints for construction with least modification or excavation. Both require some modification to support Project Pele. Pad B and Pad D are smaller in size and would require intrusion into surrounding vegetation.
CITRC user pad minimizes potential conflict/needs with other CITRC stakeholders/users?	Y	N	N	N	Pad A is presently vacant, offers least conflicts with other CITRC users, and has no nearby permanent buildings. A small structure that houses 5G communications is located approximately 500 feet southwest from the interior fencing. This structure would need to be accessed up to twice per year for less than 1 hour each time. Pad B, Pad C, and Pad D have competing programmatic missions, nearby permanent buildings that require frequent access for

Table 2. CITRC Site Selection Matrix

Criteria	Pad A	Pad B	Pad C	Pad D	Notes
					maintenance, radiological surveys, and training exercises. The predicted radiation levels while operating the Pele system would require personnel accessing these buildings to be on a Radiological Work Plan, be qualified as radiation workers, and receive dose while in the area. Based on modeled dose rates the permanent buildings could be in a high-radiation area at >100 mrem/hr dose rates during mobile microreactor operation.
Site is evaluated in the EIS?	N	Y	Y	Y	Pad B, Pad C, and Pad D were evaluated in the EIS. Pad A was not evaluated in the EIS. Effort required to add Pad A to environmental analyses is not anticipated to be substantial since impacts are similar to the impacts for the other pads evaluated.

Key: 5G = fifth generation; EIS = Environmental Impact Statement; mrem/hr = millirem per hour; N = no; Y = yes
Note: Other potential screening criteria such as access to the CITRC test grid and existing electrical power, and sufficient isolation from other INL facilities and the CITRC site boundary are the same for all four CITRC pads and are not included in the evaluation.

3. COMPARISON OF IMPACTS IN THE EIS WITH THOSE FROM USE OF PAD A

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

Table 3 (adapted from Table 2.7-1 of the EIS) presents potential incremental environmental consequences for the construction and operation of the mobile microreactor at INL, with the reactor sited at Pad B, Pad C, or Pad D at CITRC. **Table 3** also compares the potential impacts of use of Pad A instead of Pad B, Pad C, or Pad D evaluated in the EIS. As illustrated in **Table 3**, switching the reactor demonstration location from Pad B, Pad C, or Pad D to Pad A would make little difference in the projected impacts and the overall impacts would be bounded by the EIS. As indicated in **Table 1**, the actual construction activities and size of the pad are similar at all four pad locations. All four 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, all four pad locations have similar geology and water issues. All pad locations but Pad D are about 7 miles from the nearest site boundary. 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 Pad A should be similar to, and bounded by, the impacts evaluated in the EIS. The areas where there might be differences are expected to include biological resources since the Pad A site is west of the EIS's study area, cultural and paleontological resources since the site is west of the study area, and perhaps radiological impacts of normal operations and accidents since the reactor would be at a different location. **Table 3** summarizes these differences, and subsequent sections provide more basis for the conclusions as needed.

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.	*Bounded by the EIS.* Land use around Pad A would be similar to the land use near the pads evaluated in the EIS except for the former PBF site to the northwest of Pad A. Construction and operations activities at Pad A, including the amount of land disturbed during construction and occupied during operations, would be similar to those evaluated in the EIS. Therefore, land use impacts would be similar and do not require additional analysis.
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. Construction and operations activities 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 cubic yards. The amount of rock/gravel needed would be 3,200 cubic yards. 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.* Geology and soils conditions at Pad A would be similar to conditions at the sites evaluated in the EIS. Construction and operations activities at Pad A, including the amount of land disturbed and geologic and soils materials used, would be similar to those evaluated in the EIS. Therefore, geology and soils impacts would be similar and do not require additional analysis.
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.	*Bounded by the EIS.* Surface water conditions at Pad A would be similar to conditions at the sites evaluated in the EIS. Construction and operations activities at Pad A, including the amount of land disturbed and lack of surface water use and effluent discharge, would be

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
	Sanitary wastewater from the construction and operational workforce would be handled by existing on-site systems.	similar to those evaluated in the EIS. Therefore, surface water impacts would be similar and do not require additional analysis.
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 Pad A would be similar to that at the sites evaluated in the EIS. Construction and operations activities 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 impacts 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 nearest 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 Pad A would be similar to conditions at the sites evaluated in the EIS. Construction and operations activities 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	Impacts on biological resources at the Pad A site would not be anticipated. The entirety of the Pad A footprint is comprised of disturbed and degraded habitats. 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 implemented through the ESER 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
	mutation rates, reduced growth rates, changes in pollen production and seed viability, as well as abnormal development.	
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.	Preliminary 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. See Section 3.2 in this SIR for more details.
Infrastructure (EIS Chapter 4, Section 4.7)		
	The Proposed Action would use 140 megawatt-hours of electricity, with the majority (100 megawatt-hours) 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 Pad A 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 activities 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.
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 Pad A would be similar to conditions at the sites evaluated in the EIS. Construction and operations activities 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.
Waste Management and Spent Nuclear Fuel Management (EIS Chapter 4, Section 4.9)		
	Small amounts of waste and spent nuclear fuel would be 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. **<u>Low-Level Waste</u>** 338.9 cubic meters 1,000 feet wiring	*Bounded by the EIS.* The waste management infrastructure at Pad A would be similar to the infrastructure at the sites evaluated in the EIS. Construction and operations activities 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.

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
	750 feet piping 50 connections (units) 1 CONEX container 1 reactor vessel Various reactor and power conversion CONEX internals **Mixed Low-Level Waste** 7.3 cubic meters **Cold Waste** 2,385.6 cubic meters 500 feet wiring 250 feet wiring conduit 250 feet piping 3 CONEX containers **Spent Nuclear Fuel** Small quantities (less than 3.4 cubic meters)	
Human Health – Normal Operations (EIS Chapter 4, Section 4.10)		
	The annual dose to individuals in the INL Site areas from natural background radiation is about 380 millirem 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. *Operations (annual radiological impacts)*: Off-site population within 50 miles Dose: less than 0.001 person-rem LCFs: 0 (less than 1×10^{-6}) (i.e., less than 0.000001) Maximally exposed individual Dose: less than 0.01 millirem LCF risk: less than 1×10^{-8} (i.e., less than 0.00000001) 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 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 Pad A, would be bounded by the EIS. Incremental increases in non-involved worker, maximally exposed individual, and population doses would be expected due to the increase in air activation product source terms. Impacts would be well below regulatory limits and would not be expected to result in any latent cancer fatalities. See Section 3.3 of this SIR for 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
Human Health – Facility Accidents (Annual Impacts) (EIS Chapter 4, Section 4.11)		
	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, or Pad D. 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 feet from the accident would continue to be well below any regulatory limits and the probability of LCFs would also continue to be very small.
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.	*Bounded by the EIS.* The transportation infrastructure at Pad A 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

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
	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.	Haul Road. Construction and operations activities 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 Pad A 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 activities 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 Pad A would be similar to the conditions at the sites evaluated in the EIS. Construction and operations activities 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.
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 Pad A would be similar to the conditions at the sites evaluated in the EIS. Construction and operations activities 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); ESER = Environmental Surveillance, Education and Research Program; HALEU = high-assay low-enriched uranium; INL = Idaho National Laboratory; LCF = latent cancer fatality; LLW = low-level radioactive waste; MEI = maximally exposed individual; 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; TRISO = tristructural isotropic

3.1 COMPARISON OF THE USE OF PAD A ON BIOLOGICAL RESOURCES

The region of influence (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 200-foot by 200-foot concrete pad and associated fencing would total approximately 1.6 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 the *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).

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. Habitat within this area is classified as borrow sources/disturbed. Land immediately outside of the Pad A footprint is comprised of big sagebrush – green rabbitbrush (threetip sagebrush) shrubland (see **Figure 4**) (Veolia, 2020; INL, 2019a; ESER, 2023).

The actual selection and location of construction activities at Pad A for site preparation at CITRC is not known at this time. Therefore, the analysis considers that construction activities within the existing gravel pad or new concrete pad and fencing would occur in previously developed or disturbed areas, to the maximum extent practical, to minimize impacts on vegetation. The analysis also assumes that construction access, staging, and parking would be restricted to existing developed areas and not result in impacts to native vegetation. Sagebrush habitats would not be impacted, and sagebrush restoration in compliance with the *Candidate Conservation Agreement* (DOE-ID & USFWS, 2014) would not be required.

Where required, revegetation would occur 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 weed control.

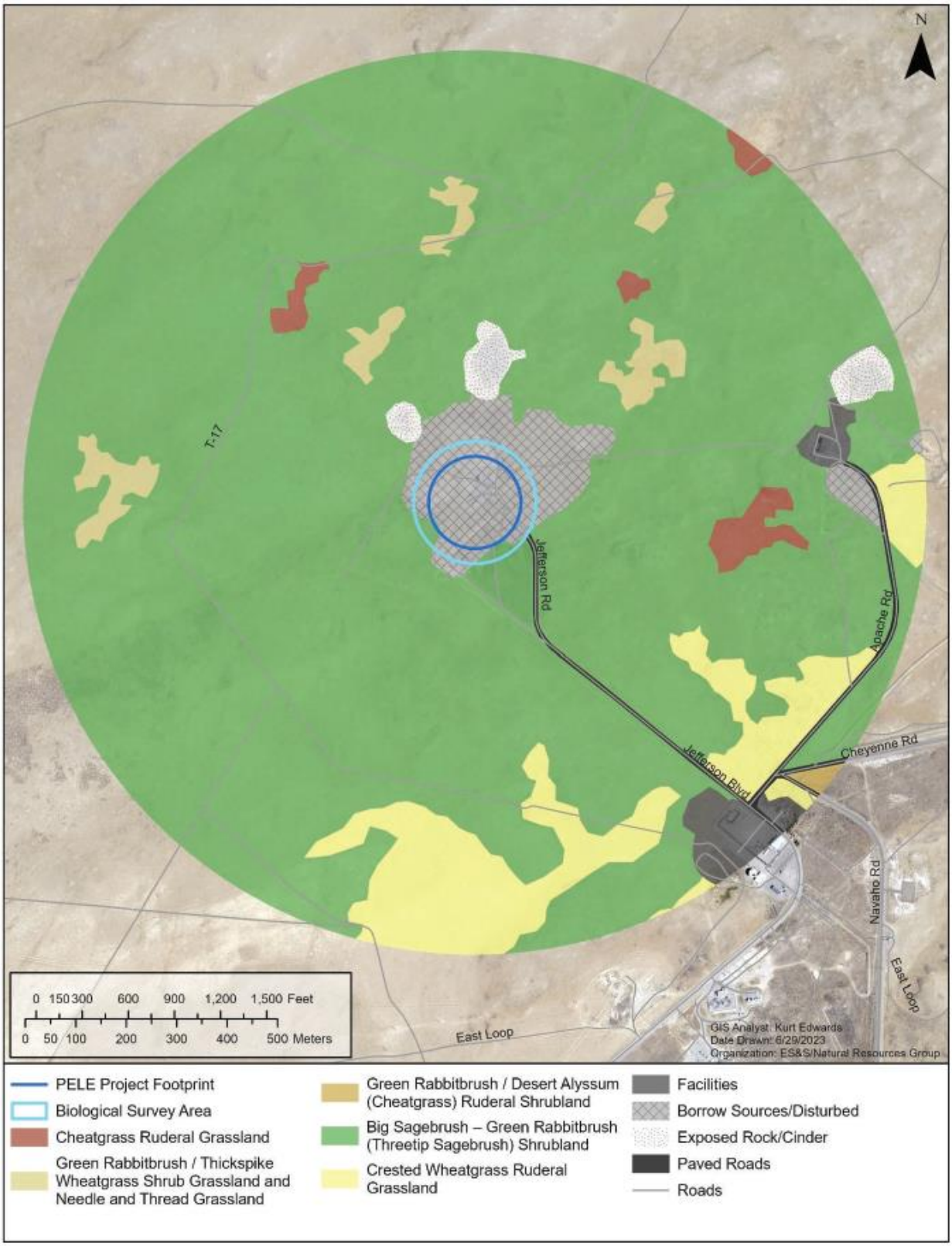


Figure 4. Ecological Resources Map
Source: ESER, 2023

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 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.

As described in Section 3.3, 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. The size/intensity of this radiation field is being evaluated. A high dose rate associated with this radiation field could substantially contribute to impacts on human health or 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 and seed viability, changes in 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, 2021). 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 is disturbed. Although 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

One pygmy rabbit burrow, located to the center southeast of Pad A, was documented during visual surveys conducted on June 21, 2023. Pygmy rabbits are an Idaho Tier 2 Species of Greatest Conservation Need (SGCN) and are known to frequent the entirety of the INL Site. Best management practices to avoid or minize impacts to the burrow include reducing activity within 300 feet of the burrow, or avoidance of collapsing the burrow, where possible. It is likely that pygmy rabbits would flee upon initiation of human disturbance. Suitable habitat is immediately available outside of the Pad A footprint.

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 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

The areas for potential affects (APE) for cultural resources at CITRC Pad A is 118.93 acres and takes into account potential visual, auditory, and atmospheric effects from the proposed undertaking on architectural properties within the viewshed of the proposed facilities. The APE includes 105.94 acres where ground disturbance may occur, and 12.99 discontinuous acres defined at each cluster of built resources from which the proposed new vertical intrusions would be visible. The ground disturbance APE consists of an irregular 18.4-acre project area encompassing Pad A, a 200-yard buffer around the project area to accommodate any potential ground-disturbance activity outside the project area, and the septic system replacement area at the Control Center Area pending a decision to refurbish PBF-632 (Nelson, 2023b).

Archaeological investigations of this area have been ongoing for more than 30 years in support of various INL projects. To ensure all cultural resources within the Pad A APE were identified, INL conducted additional intensive survey to investigate areas of the Pad A ground disturbance APE that had not been recently surveyed. In May 2023, a Craters of the Moon National Monument and Preserve (CRMO) archaeologist and a Shoshone–Bannock Heritage Tribal Office cultural resource specialist surveyed 77.3 acres of the Pad A APE. A small Precontact site and two Precontact isolates were recorded during the 2023 survey. All three cultural resources are recommended not eligible for the National Register of Historic Places (NRHP) (Nelson, 2023b).

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. In addition to the four previously recorded archaeological resources within the APE at CITRC Pad B, Pad C, and Pad D that were confirmed through cultural resource investigations conducted for the Project Pele EIS, there are 12 additional archaeological resources within the APE for ground disturbance at CITRC

Pad A. Nine of the resources are previously recorded, and three are newly discovered during additional intensive survey conducted to investigate 77.3 acres of the Pad A ground disturbance APE that had not been recently surveyed. One of the resources, site 10BT1147, has been determined eligible for listing in the NRHP, and the other 10 are recommended as not eligible. An additional archaeological resource, site 10BT1991, which is culturally significant to the Shoshone and Bannock people, is outside and immediately adjacent the APE (Nelson, 2023b).

Although site 10BT1147 is within the APE, the site is located over 656 feet (200 meters) from where the majority of ground disturbance would occur. All ground disturbance would be monitored by a CRMO archaeologist to ensure the site is avoided by project implementation activities. While no ground disturbance is proposed in the immediate vicinity of site 10BT1991, it is near where considerable activity could occur. CRMO staff would work with project managers to determine the most appropriate method for separating the areas at sites 10BT1147 and 10BT1991 for avoidance. Options include flagging or the placement of temporary fencing or barricades. Both areas would be periodically monitored to ensure they are not impacted by project activities. Imposing these conditions on project implementation which includes the use of Pad A, PBF-632, and the Control Center Area for Project Pele actions, the review of the proposed undertaking resulted in a finding of *no adverse effect* to historic properties (Nelson, 2023b).

An architectural inventory of all remaining non-temporary buildings and structures within CITRC has been completed and determined that none are eligible for the NRHP (DOE-ID, 2021). Therefore, it is anticipated that there would also be no effects on ethnographic, cultural, or paleontological resources from proposed construction activities at CITRC Pad A, with adherence to all mitigation measures and management actions agreed to for the Project Pele EIS. In compliance with Section 106 of the NHPA, 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 construction and demonstration of a prototype mobile microreactor at CITRC Pad A. In a letter dated September 7, 2023, the Idaho State Historic Preservation Officer concurred with DOE's determination of *no adverse effect* to historic properties.

3.3 COMPARISON OF THE USE OF PAD A ON HUMAN HEALTH – NORMAL OPERATIONS

The human health impacts from releases of radioactive materials during normal operations involving the mobile microreactor located on Pad A instead of on Pad B, Pad C, or Pad D are considered. Testing the reactor at Pad A instead of at Pad B, Pad C, or Pad D does not alter any characteristics of the reactor and associated components or reactor operation. Also considered is a change in the air activation products release terms.[1]

Human health impacts during construction/modification of the facilities at CITRC Pad B, Pad C, or Pad D did not result in any radiological impacts to workers or the public. Only industrial (nonradiological) accidents had the potential to impact workers. The selection of Pad A would not

[1] The air activation product source term has been refined as details of the reactor and test design have become further developed. While not specifically associated with the change in test location, the impacts of this change is addressed in this analysis.

impact the construction activities needed to site the mobile microreactor at Pad A. Therefore, the change in pad selection does not impact nonradiological health impacts.

The GENII code was used to estimate impacts to the public from mobile microreactor operational releases in the Project Pele EIS. Site-specific population distributions and meteorology and generic land use (farming) data were used in the analysis. Exposure pathways considered were direct exposure (from the release plume as well as ground shine), inhalation, and ingestion. Population dose (to the population within 50 miles of the reactor), average individual dose, and a maximally exposed individual (MEI) dose were all calculated. The MEI was assumed to be located at the site boundary, approximately 6 miles south of CITRC Pad D (the location selected for analysis). The analysis calculated doses to the population of less than 1 person-millirem, the average individual of a small fraction of a millirem, and the MEI of less than 0.01 millirem.

Pad A is approximately a mile north of Pad D. Locating the mobile microreactor at Pad A results in an increase in distance to the site boundary south of CITRC to about 7 miles. Pad A is also slightly west of Pad D. Locating Pele here also results in an increase in the distance to the largest population centers (Idaho Falls). The change in location would not result in changes to the operation of Pele; test/operational times, radiological release quantities, and release characteristics. Since no other operational parameters changed due to the change in location, the increase in distance to the various public receptors would result in a decrease in impacts to the public. The same post-release parameters (meteorology, exposure pathway characteristics) apply to operation at any of the CITRC pads. The results of the analysis in the EIS would therefore be representative of the impacts associated with operation of the reactor at CITRC Pad A.

The EIS estimated that workers directly involved in the operation of the mobile microreactor would be expected to receive a dose totaling 10 person-rem over the approximately 3 years of the demonstration portion of Project Pele. The doses to individual workers are expected to range from 0.5 rem to 1 rem over the lifetime of Project Pele (about 170 millirem to 330 millirem per year per worker). Workers would be exposed to a radiation environment in all phases of the demonstration from startup testing through transfer to the temporary storage location. The change from Pad B, Pad C, or Pad D to Pad A does not impact the reactor operational parameters. Therefore, the change in location in and of itself would not be expected to change worker doses.

The EIS also evaluated the impacts to a non-involved worker, a worker not directly involved in Pele operations, but potentially impacted by those operations. At the CITRC test pads, the nearest non-involved worker would not be at the CITRC test site, but at the CITRC facility located about 2,500 feet to the south of Pad B. Based on the radiological emissions identified previously in the EIS, the dose to a worker at this location was estimated. This non-involved worker would receive a dose of less than 0.1 millirem per year.

The analysis of the public and occupational health effects from normal operations from the Project Pele EIS was revised to reflect the change in in the test location to CITRC Pad A and the increase in the air activation products source term. Only those parameters directly affected by these two changes were modified for the reanalysis. Others (such as meteorology, population distribution) were not modified from the analysis in the Project Pele EIS. The revised information used in the reanalysis relates to air activation releases, the location of the Project Pele microreactor, and the distance to the nearest non-involved worker.

Air Activation Releases

Revised estimates of the Project Pele radiological emissions due to air activation have been provided in **Table 4**. In addition to an increase in the annual quantity of argon (Ar-41) identified in this new information, additional air activation products that would be released from the berm were identified. To provide additional margin, a 25-percent increase was applied to each of the annual releases.

Table 4. Air Activation Annual Releases

Nuclide	Project Pele EIS Release (curies)	Revised Release (curies)	Revised Release +25% (curies)
Argon-37	---	4.59E-02	5.74E-02
Argon-39	---	5.82E-07	7.28E-07
Argon -41	132	814	1018
Boron- 12	---	5.24E-01	6.55E-01
Carbon-14	---	1.38E-02	1.73E-02
Carbon-15	---	1.05E-01	1.31E-01
Chlorine-36	---	4.26E-11	5.33E-11
Chlorine-38	---	5.00E-04	6.25E-04
Chlorine-38m	---	3.57E-03	4.46E-03
Hydrogen-3	---	4.35E-04	5.44E-04
Nitrogen-13	---	7.39E-01	9.24E-01
Nitrogen-16	---	16.5	20.6
Phosphorus-32	---	3.16E-09	3.95E-09
Potassium-42	---	1.00E-05	1.25E-05
Sulphur-35	---	1.63E-06	2.04E-06
Sulphur-37	---	2.80E-01	3.50E-01

Source: Nelson, 2023c
Key: % = percent

Location of Project Pele Microreactor

The normal operational human health impact analysis was performed assuming the Pele microreactor would be located at CITRC Pad D during operational tests. This pad was selected for analysis because it is the pad located closest to the nearest INL boundary. This placed the microreactor closer to the location of the MEI (assumed to be located at the site boundary) and also closer to many of the off-site population centers. This ensured the analysis provided a bounding assessment of the potential radiological exposure to the affected population and individual.

This SIR is assessing the impact of moving the test location from Pad B, Pad C, or Pad D to Pad A. With no other changes to the assumptions of the analysis performed in support of the Pele EIS, this move would result in lower population and individual doses due to the greater distance from Pad A to the site boundary as compared to from Pad D. (Pad A is approximately 0.9 mile [1.4 km] north and 0.7 mile [1.1 km] west of Pad D.) Due to the greater distances to the affected populations (Pad A is farther from both the nearest INL border and the larger population centers than Pad D), this move would result in lower population and MEI doses. However, with the change in air activation releases, new analyses were performed to assess the impacts of the increased nuclide releases on the non-involved worker, population, and individual doses.

Distance to Nearest Non-Involved Worker

The analysis in the Project Pele EIS used the distances from CITRC Pad D to the other pads and the CITRC central facility to assess the radiological impact to the collocated worker (a nearby worker not directly involved in the mobile microreactor demonstration). Although these locations are not continuously occupied, the analysis addressed the dose to a full-time worker located at these four locations. With the potential move to Pad A, the distances to the other CITRC locations and the directions to the locations change. The following are the distances and directions from CITRC Pad A to the other CITRC facilities:

- Pad A to Pad B, 2,339 feet (713 meters) east
- CITRC, 2,976 feet (907 meters) southeast
- Pad C, 4,495 feet (1,370 meters) east-southeast
- Pad D, 6,299 feet (1,920 meters) south-southeast

Table 5 presents the results of the recalculation of the public doses from the modified source terms and the test location change to Pad A from the results provided in the Project Pele EIS. The non-involved worker results also reflect the distance and direction from Pad A to the other CITRC facilities. The most affected non-involved worker would now be located at Pad B. The MEI and population analyses used both the new air activation source terms and the new location (Pad A) for the Pele microreactor. All doses remain well below applicable regulatory limits and are not expected to result in any latent cancer fatalities among the affected populations.

Table 5. Table Annual Radiological Impacts from Air Activation Products

Receptor	Dose	Cancer Fatality Risk	Compared to Project Pele EIS
Non-involved worker – located at Pad B	0.03 mrem	2×10^{-8}	A factor of ~3 higher
MEI (located at site boundary)	0.005 mrem	3×10^{-9}	A factor of ~10 higher
Population (within 50 miles)	3.2 person-mrem	0 (2×10^{-6})	A factor of ~10 higher

Key: ~ = approximately; EIS = Environmental Impact Statement; MEI = maximally exposed individual; mrem = millirem

3.4 COMPARISON OF USE OF PAD A ON FACILITY ACCIDENT IMPACTS

The human health impacts from exposures to hazardous or radioactive materials released as a result of accidents involving the mobile microreactor on Pad A instead of on Pad B, Pad C, or Pad D are considered. The mobile microreactor is designed to protect human health by relying primarily on the passive safety of the design with limited to no requirements for intervention of active safety systems. The characteristics of the tristructural isotropic (TRISO) fuel are such that the uranium in the high-assay low-enriched uranium (HALEU) fuel would not be released in an accident. Locating the reactor at Pad A instead of at Pad B, Pad C, or Pad D does not alter any characteristics of the reactor or associated components.

The WinMACCS computer program was used to calculate impacts from accidents involving the mobile microreactor at CITRC. SecPop provided estimates of population, land use, and economic values related to siting the mobile microreactor at CITRC. Human health risks from facility accidents were considered for individual receptors and population groups. Consequences to the MEI

member of the public within the off-site population, the off-site population residing within 50 miles of the facility, and a non-involved worker located 330 feet from the facility were calculated. Consequences to the involved worker were qualitatively evaluated. The potential near-term impacts from the initial plume passage were reported as the "Near-Term-Dose," while the long-term impacts of exposure to the radionuclides after the plume passage were added to the "Near-Term-Dose" and reported as the "Near+Long-Term Dose." The long-term (or chronic) dose included the combined effects of exposure to radionuclides remaining after the plume passage. Exposure pathways included ingesting contaminated foods; direct radiation exposure from residual material on the ground (ground shine); inhalation of disturbed, residual ground level particulates (resuspension); and ingestion of contaminated water. Locating the reactor at Pad A does not affect the exposure pathways or the qualitative evaluation of involved worker impacts.

Input to the WinMACCS and SecPop impact calculations included the amount of material released (source term) from accidents, the time duration over which the material was released, the meteorological conditions for the location, and the number and location of people (receptors) affected. The amount of material released depends on the quantity of material in the reactor and how an accident affects the material. The nature of the accident affects the duration of the material release. A duration of 10 minutes was assumed for all mobile microreactor accident releases. The impact calculations used meteorological conditions for CITRC.

Locating the mobile reactor at Pad A instead of at Pad B, Pad C, or Pad D does not affect the amount of material released, the duration over which the material is released, the meteorological conditions for CITRC, or the distance of 330 feet to the non-involved worker. Changing the location of the reactor increases the distance to an individual member of the public located at the nearest site boundary and potentially reduces the number of people within 50 miles of the facility. Locating the microreactor at Pad A results in an increase in the distance to the largest population center at Idaho Falls. As the distance from a release of radioactive or hazardous material increases, the exposures decrease. The calculations presented in the EIS were developed for the reactor on Pad D to provide the greatest exposure to the person at the nearest site boundary and the public within 50 miles of the facility from releases of radioactive or hazardous material. Pad D is the pad nearest the site boundary. Pad D is approximately 6 miles from the nearest site boundary while Pad A, Pad B, and Pad C are approximately 7 miles from the nearest site boundary. Consequently, locating the reactor at Pad A would be expected to slightly reduce the impact to the person at the nearest site boundary and the impacts to the off-site public within 50 miles of the facility and not change the impacts to the non-involved worker at 330 feet. Radiation doses and hazardous material exposures to the MEI 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 feet from the accident would continue to be well below any regulatory limits and the probability of latent cancer fatalities (would also continue to be very small.

4. RECOMMENDED USE OF CITRC PAD A

Based on the results of the CITRC Pad A environmental impact evaluation, CITRC Pad A would present no greater environmental impacts than those evaluated in the EIS as a location for mobile microreactor operations and testing. From a programmatic perspective, the main differentiators are that CITRC Pad A is the largest and therefore would provide maximum flexibility in layout, be dedicated to mobile microreactor testing and operations, have nearly no impact to other programs,

and minimize interfaces with other programmatic interests. The additional efforts required to facilitate using Pad A are summarized in the section below.

5. REFERENCES

DoD-SCO. (2022). *Construction and Demonstration of a Prototype Mobile Microreactor Environmental Impact Statement,* Volume 1. Department of Defense Strategic Capabilities Office. Available on the Internet at https://www.cto.mil/wp-content/uploads/2022/05/Final-EIS-Vol-1-Distro-A.pdf. April.

DOE-ID. (2007). Action Memorandum for Power Burst Facility (PER-620) *Final End State and PBF Vessel Disposal,* DOE/ID-11331, Rev. 0, U.S. Department of Energy Idaho Operations Office. July.

DOE-ID. (2019). NSI-26019, 2019, PBF-39 – PBF Reactor Location (Parts A and B), *Idaho Cleanup Project,* U.S. Department of Energy Idaho Operations Office; U.S. Environmental Protection Agency, Region 10; Idaho Department of Environmental Quality, July 9, 2019.

DOE-ID. (2020). *Idaho National Laboratory Site Environmental Report Calendar Year 2019* DOE/ID-12082(19). Idaho Falls, Idaho. September: Prepared by VNS Federal Services, Environmental Surveillance, Education, and Research Program for the Idaho Operations Office. U.S. Department of Energy.

DOE-ID. (2021). *Cultural Resource Investigations for the Construction and Demonstration of a Prototype Advanced Mobile Nuclear Reactor (Project Pele) (INL/LTD-20-60577).* U.S. Department of Energy, Idaho Operations Office.

DOE-ID & USFWS. (2014). *Candidate Conservation Agreement between U.S. Department of Energy, Idaho Operations Office and the U.S. Fish and Wildlife Service.*

ESER. (2023). *Pad A - Supplemental Ecological Summary Data and Field Survey Report (INL/RPT-23-73518).* Environmental Monitoring & Natural Resource Services (ESER). Environmental Support & Services - Battelle Energy Alliance. Idaho National Laboratory. July 2023.

INL. (2012). *INL Site Revegetation Guide*. Idaho National Laboratory.

INL. (2018). *Idaho National Laboratory Site Bat Protection Plan (DOE/ID-12002).* September.

INL. (2019a). *INL Site Geographic Information System.* Idaho Falls: Idaho National Laboratory.

INL. (2019b). *INL Site Revegetation Assessment (2019)*. Idaho National Laboratory.

INL. (2023). *CITRC Pad Selection for Pele Operation,* PLN-8781. Idaho National Laboratory.

Nelson, L. (2023a). Personal communication via electronic mail dated September 28, 2023, from Lee Nelson (Idaho National Laboratory) to John Mendenhall (Strategic Capabilities Office) and Leidos regarding concrete volumes and conceptual drawing.

Nelson, L. (2023b). Personal communication via electronic mail dated September 25, 2023, from Lee Nelson (Idaho National Laboratory) to Sharon Plager (INL), courtesy copied to Joseph Jimenez (Leidos) regarding Section 106 Process on Project Pele – Pad A Addendum.

Nelson, L. (2023c). Personal communication via electronic mail dated September 25, 2023, from Lee Nelson (Idaho National Laboratory) to Dan Gallagher (Leidos) regarding Pele Air Activation Numbers.

USFWS. (2021). *Information for Planning and Consultation (IPaC) Resource List*. Retrieved from U.S. Fish and Wildlife Service. https://ipac.ecosphere.fws.gov/. May 18.

Veolia. (2020). *PELE: Ecological Summary Data and Field Surveys Report (VFS-ID-ESER-LAND-086)*. Idaho Falls: Veolia Nuclear Solutions – Federal Services.

6. CONCLUSION

Supplementation of the existing NEPA documentation will not be required per 40 CFR 1502.9(c) if Pad A is used instead of Pad B, Pad C, or Pad D evaluated in the EIS. There are no substantial change(s) to the proposed action due to the use of 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/.

9/29/2023

Date

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