

DOE-ID NEPA CX DETERMINATION

Idaho National Laboratory

SECTION A. Project Title: Carbon Free Power Project (CFPP) Site Characterization (Revision 1)

SECTION B. Project Description and Purpose:

Revision 1 adds additional scope related to seismic testing. See uploaded file of EC.

The proposed action performs site characterization studies to determine capability and suitability for locating a small modular reactor (SMR) on about 2000 acres at the Idaho National Laboratory (INL) Site in Butte County, Idaho and to gather data for preparing a Combined License Application for an SMR. To complete site characterization, the project constructs roads to the site, procures and installs an office trailer, and erects a 60-meters high (about 197 ft) meteorological (met) tower. **Figure 1** shows the project area in relation to the potential SMR location. The proposed action also maintains the T-11 road as necessary by dumping gravel fill material in holes and ruts then levelling and establishes a two-track road from T-11 to the potential SMR location (See **Figure 1**), about 1.1 miles from the T-11 road (See Section E, Project-Specific Instructions, #4). This proposed SMR location is under review and no decision has been made to site such a facility. A decision to use the proposed location for purposes other than site characterization studies is subject to further NEPA review.

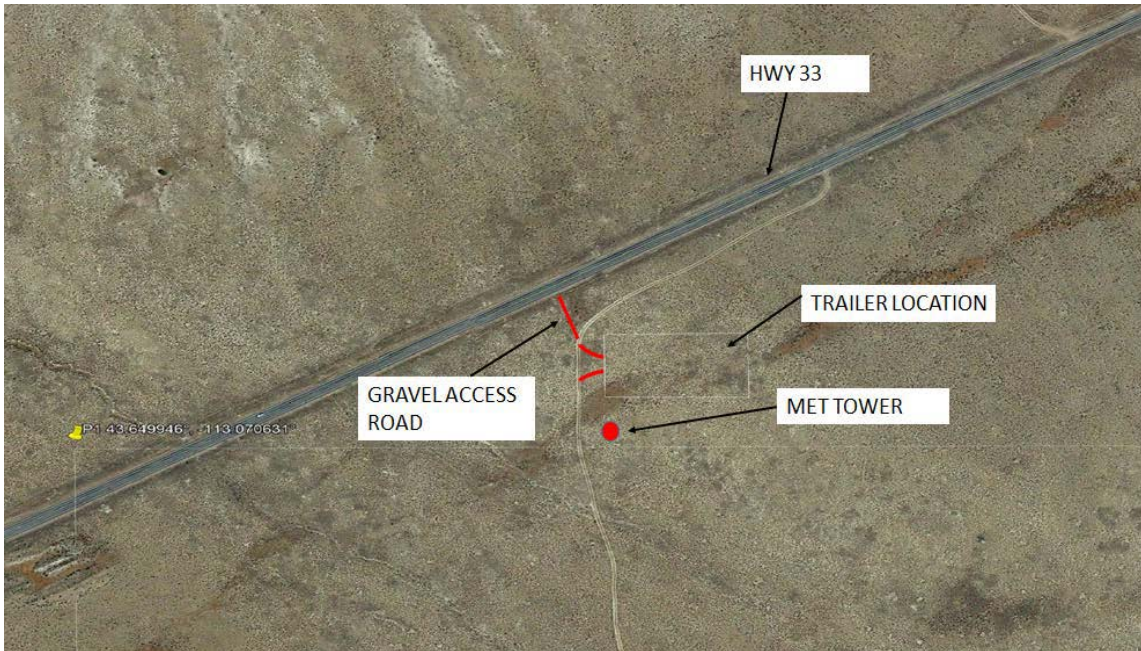
Figure 1. Project area in relation to potential SMR location.



The proposed action constructs a gravel road (about 25 ft wide by 250 ft long) from Highway 33 to the office trailer location using heavy equipment (graders, dump trucks, bulldozers, etc.) and a road adjacent to the proposed office trailer and met tower (about 25 ft wide and 400 ft long). The entrances to the abandoned section of T-11 (i.e., the old Highway 33 access) would be blocked at both ends to prevent use (e.g., by using barricades, signs, or other approved methods). Road construction includes installing drainage features such as culverts if needed.

Project scope includes grading and levelling an administrative area about 130 ft by 250 ft for placing the 12 ft by 60 ft office trailer and parking area. The met tower requires a metal base plate and instrumentation placed on a graded and levelled 20 ft radius area. Four screw-in anchors hold guy wires about 150 ft from the tower. The proposed action has the potential to disturb about 4.8 acres (See Section E, Conditions and Project-Specific Instructions related to Cultural and Biological Resources). **Figure 2** depicts approximate locations for roads, the office trailer, and the met tower.

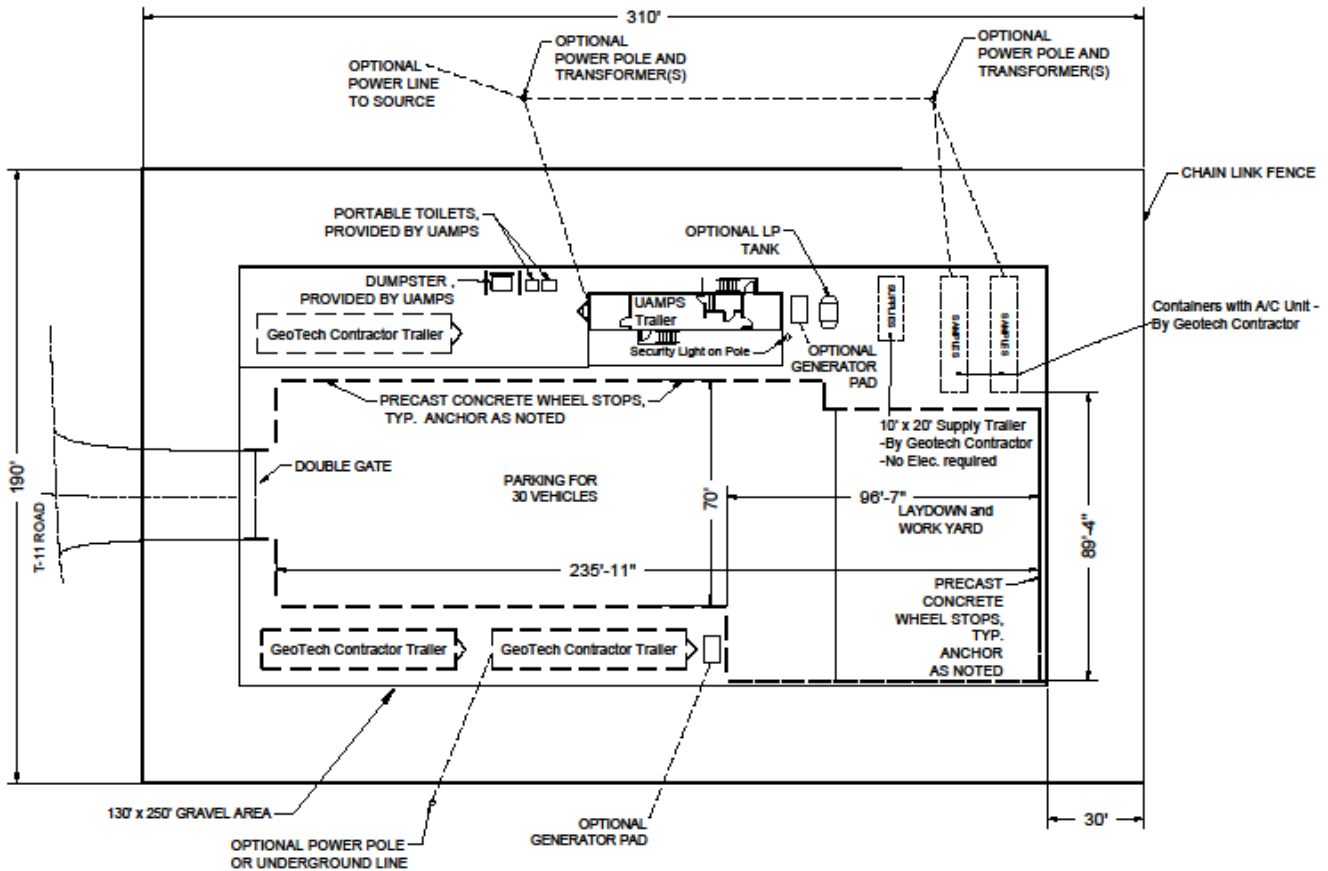
Figure 2. Approximate locations for roads, an office trailer, and met tower.



The administrative area supports a parking area, laydown yard, two climate-controlled 8 ft x 40 ft Conex boxes for storing core borings and soil samples, support crew trailers, and portable concrete curbs that line the perimeter. Construction grades the area, places pit run gravel, installs the office trailer and auxiliary equipment (e.g., pole mounted security light, generators, equipment trailers, restroom trailers, comfort stations, and miscellaneous apparatus and gear) near the support trailer, and constructs a 6 ft high chain link fence with personnel barriers around the perimeter of the office trailer and parking area. A remote monitoring system to alert loss of electric power and temperature excursions in the core boring storage containers. A propane-powered backup generator and propane tank (or diesel-powered electric generator) supply electrical power, and a 50 ft mowed buffer may be required around the gravel pad to meet wildland fire requirements. **Figure 3** shows the proposed layout of the administrative area.

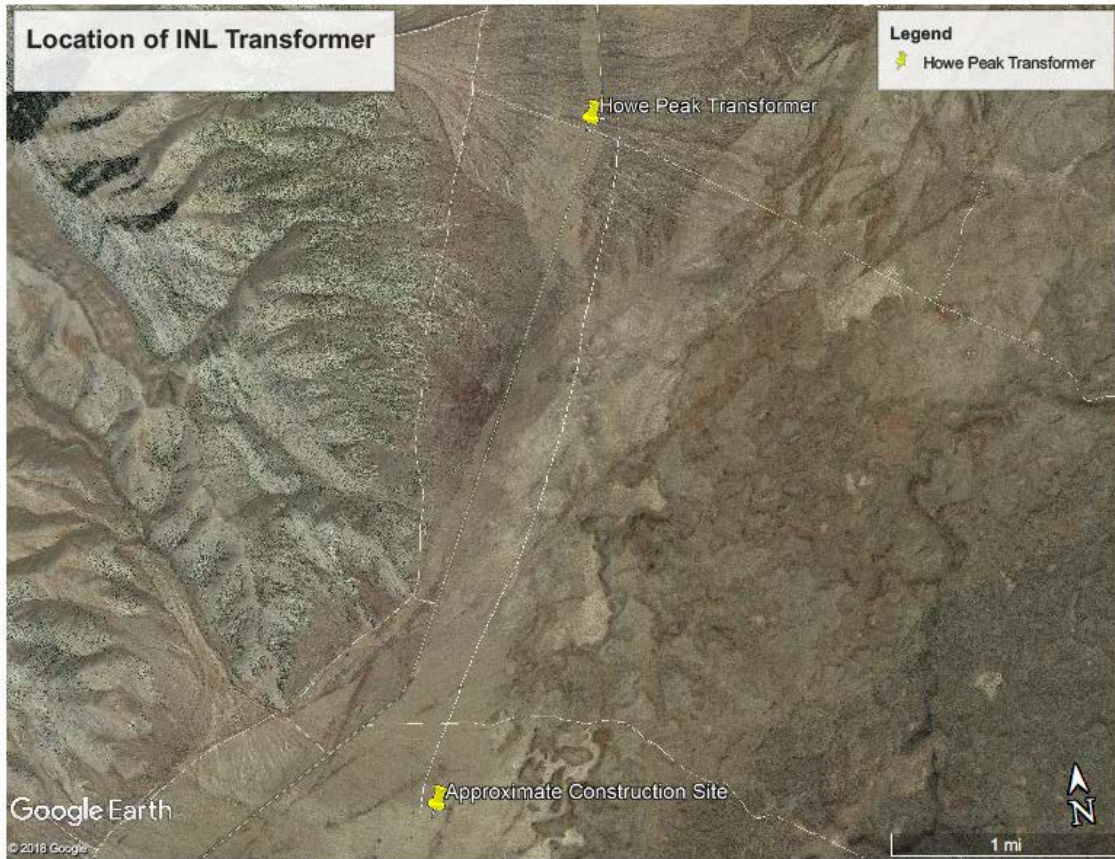
Figure 3. Proposed administrative area for proposed office trailer and support equipment.

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Electrical power for the administrative area is to be supplied by a new power line (about 3.2 miles long) beginning in the spring of 2020 connecting to the Howe Peak Transformer along Highway 33. The exact power line route has not been determined and may require additional review and NEPA action once identified. Figure 4 depicts the approximate power line route.

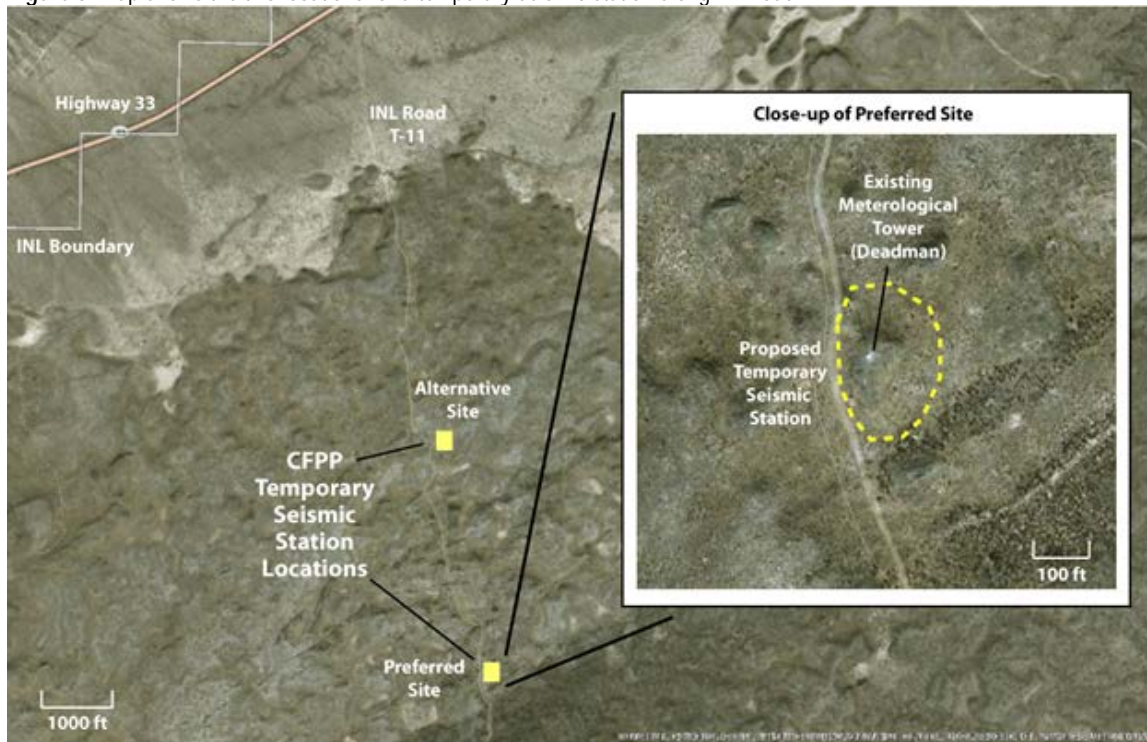
Figure 4. Proposed power line route.



Initial site characterization activities also install a temporary seismic station disturbing an area about 50 ft in diameter. Two locations for the temporary seismic station are being considered, with the preferred location near the met tower (Deadman) just off the T-11 road (see Figure 5). The alternative site is located further north just off T-11. Constructing the temporary seismic station includes:

- Hand excavating a 12-inch diameter, 2-ft deep hole to house a three-component seismometer
- Hand excavating a 12-inch diameter, 2-3 ft deep hole to hold a 10 ft long pole (3-inch diameter) for an antenna and solar panel
- A 2 ft x 3 ft metal box placed on the ground near the antenna pole to house batteries, datalogger, and 2.4G digital radio.

Figure 5. Map shows the two locations for a temporary seismic station along INL road T-11.



If the project area is selected for locating an SMR, then additional review under the National Environmental Policy Act (NEPA) is required. Detailed subsurface investigations requiring two deep seismic velocity boreholes would also be needed, which likely involves removing the temporary seismic station and installing a permanent seismic station near one of the seismic velocity boreholes. Converting temporary seismic stations to a permanent one usually requires disturbing an area about 50 ft in radius around the station to complete the following activities:

- Placing a 4 ft-diameter concrete circular pad housing a circular culvert enclosure (4 ft high) and steel lid with handle
- Hand-augering a 12-inch diameter hole to a depth of 3 or 4 ft to place a steel rod in concrete
- Hand-excavating a 3 x 3 ft base for a 10 ft tower in 1 to 2 ft of concrete.

In general, a permanent seismic station consists of the following instrumentation:

- A datalogger, three-component broadband seismometer, and three-component accelerometer housed in the culvert enclosure
- Two solar panels and one antenna attached to the tower
- Global Positioning System (GPS) antenna attached to the top of the steel rod
- Digital 2.4G radio and GPS receiver in a small enclosure on the tower
- A 2 x 3 ft steel box set on the soil surface adjacent to the tower to house two or more sealed 12-volt, 100 amp/hr. Gel Cell batteries.

Site characterization also includes drilling about 40 boreholes and 10 observation wells, including an aquifer pump test well cluster, which require removing vegetation for heavy equipment access to the boreholes and observation well locations. Borehole and observation well construction involves continuous core drilling, reaming after coring, setting well casings to various depths, collecting geophysical logs, and testing well productivity. Specific locations for the wells and boreholes are presently unknown. This environmental checklist (EC) will be revised to evaluate these locations when they are identified, as needed.

In support of borehole and well construction planned for the spring of 2020, mowing of affected areas is planned for the fall of 2019. Areas planned to be mowed include an approximate 70-acre reactor building area in the southeast corner of the Carbon Free Power Project (CFPP) Site where the core borings would need to be located, and an approximate ¾-mile track from the T-11 roadway to the 70-acre reactor building area for drill rigs and supporting vehicle traffic to traverse (See Figure 6).

Special Note: Before mowing activities can take place DOE needs to consult with the U.S. Fish & Wildlife Service (FWS) regarding the large-scale removal of sagebrush from the 'Sage Grouse Conservation Area' (SGCA), a requirement of DOE's Candidate Conservation Agreement (CCA) with the FWS. CFPP Location 3 falls within the SGCA (See Section E, Conditions, #s 11 & 14).

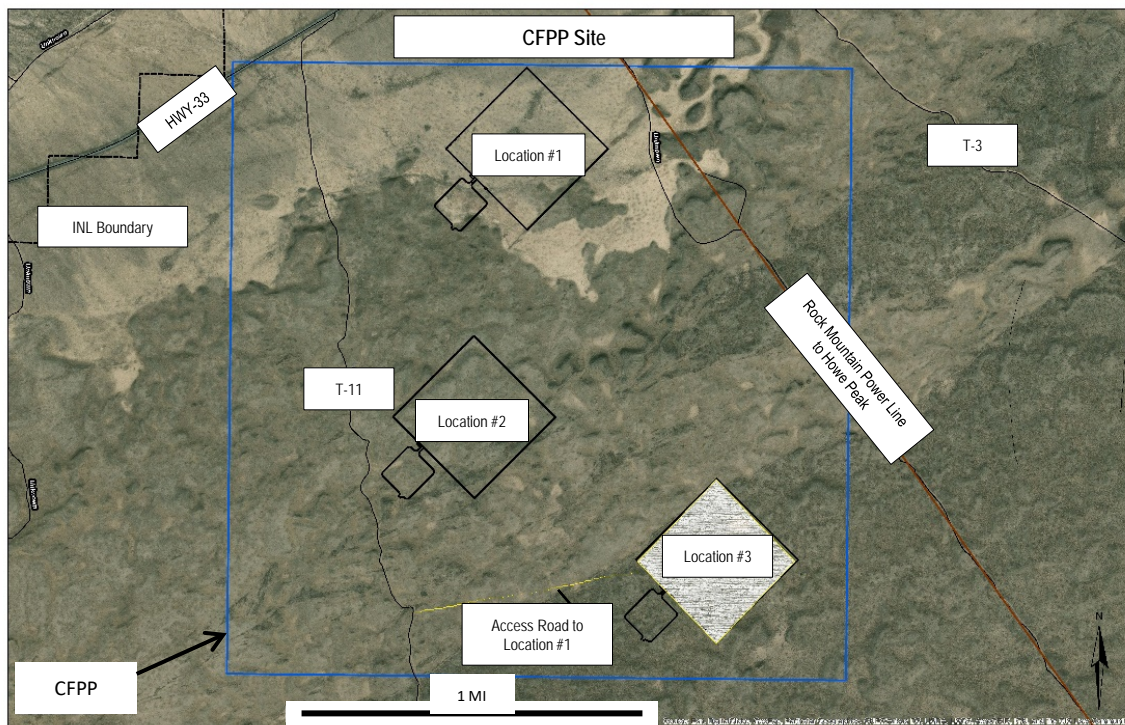


Figure 6. Proposed areas to be mowed in preparation of future core boring/drilling locations.

In addition, prior to borehole and well installation, during the fall of 2019, seismic testing it planned to be conducted at the CFPP Site, comprised of a magnetic survey and spectral analysis of surface waves (SASW) activities. Preparations for the planned seismic testing includes pouring two 7 feet x 10 feet pads, one adjacent to the T-11 road, and one along the T-3 road to give the truck mounted wave generator an impact point. The scope of work for seismic testing is described in Attachment 1 'Seismic Testing Summary Description'.

Attachment 1 – 2019 Seismic Testing Summary Description

UAMPS/TVA plans to conduct spectral analysis of surface waves (SASW) and magnetometer surveys at several CFPP Site Locations (Location 1, 2, & 3) to characterize subsurface geotechnical features. Testing would focus on three possible reactor complex areas and near USGS Well 142/142A (Figure 7). SASW surveys are planned along two lines at each of the three proposed reactor locations and on a single line near USGS 142/142A. The locations of each of the lines are shown on Figure 8, with additional details for the SASW survey lines in Table 1 (see Page 21). SASW testing is a non-destructive/non-invasive method used to estimate the relative stiffness of layered rock or soil materials by generation of surface energy waves from a fixed location and the subsequent measurement of resulting motions perpendicular to the surface created by the passage of surface waves. Measurement points (receiver geophones, Figure 9) in an SASW test are arranged on the ground surface along a single path radiating from the source of the surface wave. Surface waves are generated using a truck-mounted surface wave source in two configurations. An example a field deployed the truck and slab system is in Figure 10. For profiling up to depths of 1,200 feet, the truck source would impact directly on the ground surface at several points along each survey line. To profile to greater depths, a poured concrete slab would be used as a footing/impact point at two points: one adjacent to the T-11 roadway and one adjacent to the T-3 roadway near USGS 142/142A (see Figures 11 and 12). The poured slabs would be about 7-feet long, 10-feet wide, and 1.5-feet high. The surface wave generator truck and support vehicle (carrying geophone equipment) would access and traverse each survey line, as summarized in Figure 8.

Testing would also include pedestrian-based magnetometer surveys of about two square miles of the CFPP Site, which envelops the three potential reactor complex areas (CFPP Site Locations 1, 2, & 3). These surveys may in the future be augmented with unmanned aerial vehicle (UAV) based surveys. Both surveys would use solid-state measurement instrumentation designed to measure variations in the magnitude (and direction) of the Earth's natural magnetic field. These surveys are not expected to result in ground disturbance beyond pedestrian movement and installation of a temporary tripod-mounted base-station/reference station. Support vehicle movements for the magnetometer surveys would use INL two-track roads (e.g., T-3 and T-11). If flown in the future, UAV fly-over activity would be limited to heights of 100-feet to 150-feet above the ground and would not include image or video acquisition.

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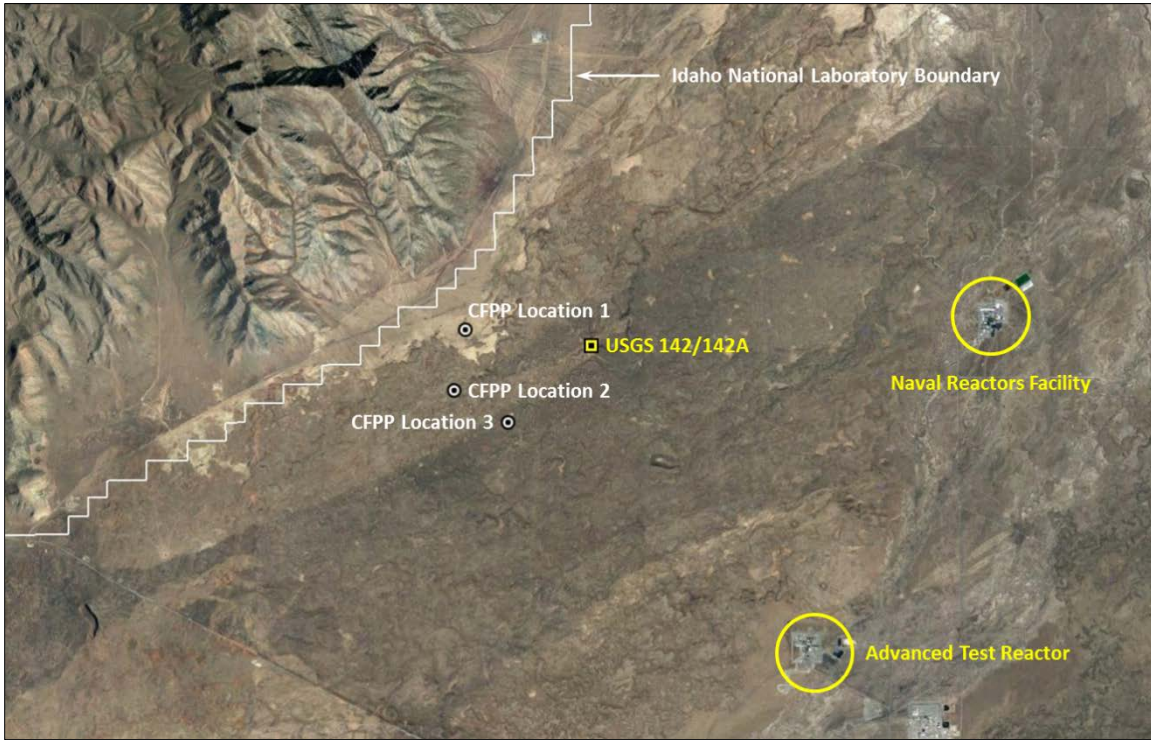


Figure 7. General Project Locations in Relation to INL facilities.

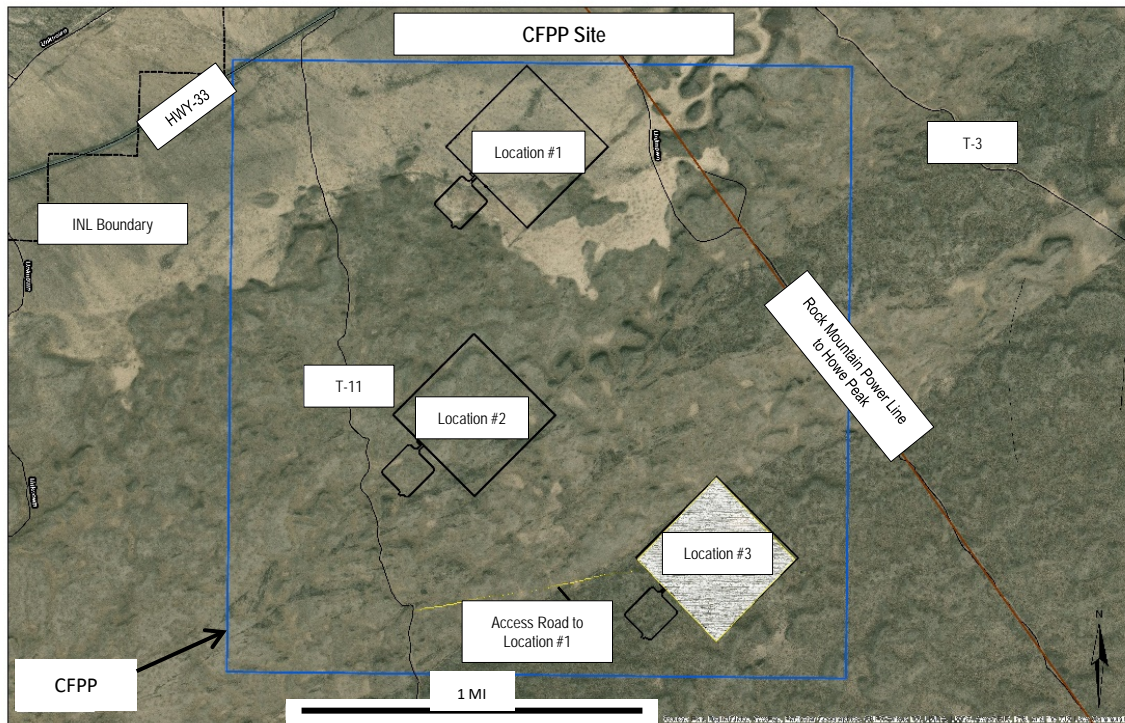


Figure 8. Extent of Potential Disturbance related to SASW survey lines.



Figure 9. Example Geophone Receiver system to be employed during SASW surveys.



Figure 10. Example Field Deployment of the surface wave source system showing A concrete pad and excavations.

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Figure 11. Proposed location of the concrete footing along Road T-11.



Figure 12. Proposed location of the concrete footing along Road T-3.

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Table 1. SASW survey line details.

Line ⁽¹⁾	Location ⁽²⁾	Length ⁽³⁾	Origin ⁽⁴⁾		Mid-Point ⁽⁵⁾		Termination ⁽⁶⁾	
		(ft)	(dd.dxxxxx)	(dd.dxxxxx)	(dd.dxxxxx)	(dd.dxxxxx)	(dd.dxxxxx)	(dd.dxxxxx)
1A	CFPP Location 1	2,400	43.644036	-113.056798	43.64652	-113.053533	43.648796	-113.050538
1B	CFPP Location 1	2,400	43.648757	-113.056762	43.64652	-113.053533	43.644210	-113.050194
2A	CFPP Location 2	2,400	43.630856	-113.062123	43.635285	-113.056216	43.637947	-113.052664
2B	CFPP Location 2	2,400	43.637638	-113.059606	43.635285	-113.056216	43.633092	-113.053058
3A	CFPP Location 3	3,600	43.626976	-113.045337	43.634402	-113.057394	43.631665	-113.038980
3B	CFPP Location 3	2,400	43.631817	-113.045161	43.629478	-113.041945	43.627158	-113.038757
4	USGS 142/142A	3,600	43.645044	-113.023774	43.642373	-113.018057	43.639702	-113.012337

Notes:

- 1-See Figure 7.
- 2-Intended Carbon Free Power Project (CFPP) or other targeted investigation area.
- 3-Proposed total length of the SASW survey line, in feet (ft).
- 4-Proposed location (latitude and longitude, in decimal degrees) of the southwestern-most point of a given northeast-southwest trending SASW survey line, or the northwestern-most point of northwest-southeast trending line. Note that the listed origin point for line 2A is also the proposed location for the construction of concrete pad for use in deep profiling.
- 5-Mid-point location of the of each SASW survey line. For lines 1A and 1B and lines 2A and 2B, the listed mid-point also represents an intersection point for the survey lines.
- 6-Proposed location of the northeastern-most point of given northeast-southwest trending SASW line, or the southeastern-most point of a given northwest-southeast trending survey line. For line 4, the identified termination point is the proposed location for a second concrete pad for use in deep SASW profiling.

SECTION C. Environmental Aspects or Potential Sources of Impact:

Environmental Aspects Table			
Environmental Aspect	Applicability Statement	Yes	No
Air Emissions	Air emissions applies to operations or activities that have the potential to generate air pollutants, including but not limited to radionuclides, chemical and combustion emissions, fugitive dust, asbestos-containing material (ACM), and refrigerants. The INL Environmental ALARA Committee evaluates activities that release radionuclides or involve direct radiation exposure to the environment.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Discharging to Surface-, Storm-, or Ground Water	Discharging to surface water, storm water, or ground water applies to activities that have the potential to contaminate waters of the U.S. or ground water	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Disturbing Cultural or Biological Resources	Cultural resource disturbance applies to activities that have the potential to impact cultural resources, such as disturbing soils by grading, excavating, sampling, off-road vehicle use, or removing vegetation and to project activities in areas where sensitive cultural or biological resources are located. The aspect also applies to modifying or demolishing historical buildings or structures, or activities that could result in loss or damage to these resources. Examples of cultural resources include buildings, structures, or objects over 50 years old or those identified as historic because of special significance, Experimental Breeder Reactor (EBR-I), archaeological resources, historic home sites, trails, and canals, caves, and places or items of significance to Native Americans and others. Biological resources apply to activities that have potential to interact, disturb or affect wildlife or habitat (e.g., soil disturbance – including the areas below the ordinary high-water mark, vegetation removal, physical disturbance of wildlife) or activities involving revegetation or weed control.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Generating and Managing Waste	Regulated, hazardous, or radioactive material and waste packaging and transportation applies to activities that generate, store, treat, or dispose hazardous, radioactive, mixed, industrial waste, or nanoparticle waste.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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Releasing Contaminants	Releasing contaminants applies to activities that may release potentially hazardous contaminants into water, soil, or other non-contaminated or previously contaminated locations (NOTE: the "Air Emissions" aspect covers air contaminants, see above). These activities may include, but are not limited to, industrial and laboratory chemicals; radionuclides; and direct exposure to radiation; hazardous, radioactive, and mixed waste treatment and decontamination operations; and contaminated soils disturbance. Releasing contaminants also applies to asbestos containing material (ACM) remediation; repair, replacement, and disposal of contaminated tanks and associated piping; and the handling and disposal of Polychlorinated biphenyl (PCB)-contaminated equipment and waste. The INL Environmental ALARA Committee evaluates activities that release radionuclides or involve direct radiation exposure to the environment.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Using, Reusing, and Conserving Natural Resources	Using, reusing, and recycling resources applies to activities that use or recycle resources such as water, energy, fuels, minerals, borrow material, wood or paper products, and other materials derived from natural resources. This aspect also applies to activities that require use, reuse, and recycle as integral to the project such as constructing and operating a LEED certified building. This applies to waste disposition activities including building demolition and activities implementing sustainable practices and conserving of natural resources. Energy, Water, and Land Use are not specific singular INL 'work activities'; however, the global nature of their influence across all INL work activities make them integral in a review of significant environmental work activities.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

SECTION D. Determine Recommended Level of Environmental Review, Identify Reference(s), and State Justification: Identify the applicable categorical exclusion from 10 Code of Federal Regulation (CFR) 1021, Appendix B, give the appropriate justification, and the approval date.

For Categorical Exclusions (CXs), the proposed action must not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environmental, safety, and health, or similar requirements of Department of Energy (DOE) or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment or facilities; (3) disturb hazardous substances, pollutants, contaminants, or Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources (see 10 CFR 1021). In addition, no extraordinary circumstances related to the proposal exist that would affect the significance of the action. In addition, the action is not "connected" to other action actions (40 CFR 1508.25(a)(1) and is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1608.27(b)(7)).

References: 10 CFR 1021, Appendix B, B1.24 "Property Transfers," B3.1 "Site characterization and environmental monitoring," B3.2 "Aviation activities", and B4.12 "Construction of powerlines."

Justification: Activities proposed for fall 2018 are consistent with 10 CFR 1021, Appendix B, B1.24, "Transfer, lease, disposition, or acquisition of interests in personal property (including, but not limited to, equipment and materials) or real property (including, but not limited to, permanent structures and land), provided that under reasonably foreseeable uses (1) there will be no potential for release of substances at a level, or in a form, that could pose a threat to public health or the environment and (2) the covered actions will not have the potential to cause a significant change in impacts from before the transfer, lease, disposition, or acquisition of interests."

B3.1, "Site characterization and environmental monitoring (including, but not limited to, siting, construction, modification, operation, and dismantlement and removal or otherwise proper closure (such as of a well) of characterization and monitoring devices, and siting, construction, and associated operation of a small-scale laboratory building or renovation of a room in a building for sample analysis). Such activities will be designed in conformance with applicable requirements and use best management practices to limit the potential effects of any resultant ground disturbance. Covered activities include, but are not limited to, site characterization and environmental monitoring under CERCLA and RCRA. (This class of actions excludes activities in aquatic environments. See B3.16 of this appendix for such activities.) Specific activities include, but are not limited to:

- a) Geological, geophysical (such as gravity, magnetic, electrical, seismic, radar, and temperature gradient), geochemical, and engineering surveys and mapping, and the establishment of survey marks. Seismic techniques will not include large-scale reflection or refraction testing;
- b) Installation and operation of field instruments (such as stream-gauging stations or flow-measuring devices, telemetry systems, geochemical monitoring tools, and geophysical exploration tools);
- c) Drilling of wells for sampling or monitoring of groundwater or the vadose (unsaturated) zone, well logging, and installation of water-level recording devices in wells;
- d) Aquifer and underground reservoir response testing;
- e) Installation and operation of ambient air monitoring equipment;
- f) Sampling and characterization of water, soil, rock, or contaminants (such as drilling using truck- or mobile-scale equipment, and modification, use, and plugging of boreholes);
- g) Sampling and characterization of water effluents, air emissions, or solid waste streams;
- h) Installation and operation of meteorological towers and associated activities (such potential wind energy resources assessments);
- i) Sampling of flora or fauna; and
- j) Archeological, historic, and cultural resource identification in compliance with 36 CFR part 800 and 43 CFR part 7.

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B3.2, "Aviation activities for survey, monitoring, or security purposes that comply with Federal Aviation Administration regulations."

B4.12, "Construction of electric powerlines about 10 miles in length or less, or about 20 miles in length or less within previously disturbed or developed powerline or pipeline rights-of-way."

Is the project funded by the American Recovery and Reinvestment Act of 2009 (Recovery Act) Yes No

Approved by Jason Sturm, DOE-ID NEPA Compliance Officer on: October 22, 2019