CX Posting No.: DOE-ID-INL-19-033 R4

SECTION A. Project Title: Carbon Free Power Project (CFPP) Site Characterization (Revision 4)

SECTION B. Project Description and Purpose:

Revision 4

This revision to the Environmental Compliance Permit (ECP) for the Utah Associated Municipal Power Systems (UAMPS) Carbon Free Power Project (CFPP) site characterization program is intended to cover new work scope related to the completion of supplemental spectral-analysis-of survey-waves (SASW) and seismic reflection surveys at the CFPP. This revision also addresses the placement of new temporary infrastructure (trailers and generators) in the existing administrative area at the CFPP.

Supplemental SASW Surveys

UAMPS plans to complete supplemental SASW surveys on six (6) lines centered on the reactor building area at Location 2A of the CFPP, as previously described in Attachment 1 to Revision 2 of the ECP for the CFPP (INL-19-067 R2). Approximate surface traces of these proposed supplemental SASW lines are shown on Figure 1. Estimated start point and end point coordinates for each of the SASW survey lines are correspondingly presented in Table 1. This area has been surveyed (for biological and cultural resources) and mowed for mitigation of wildland fire risk and bird nesting as per Revision 3 of the ECP for the CFPP (INL-19-067 R3).

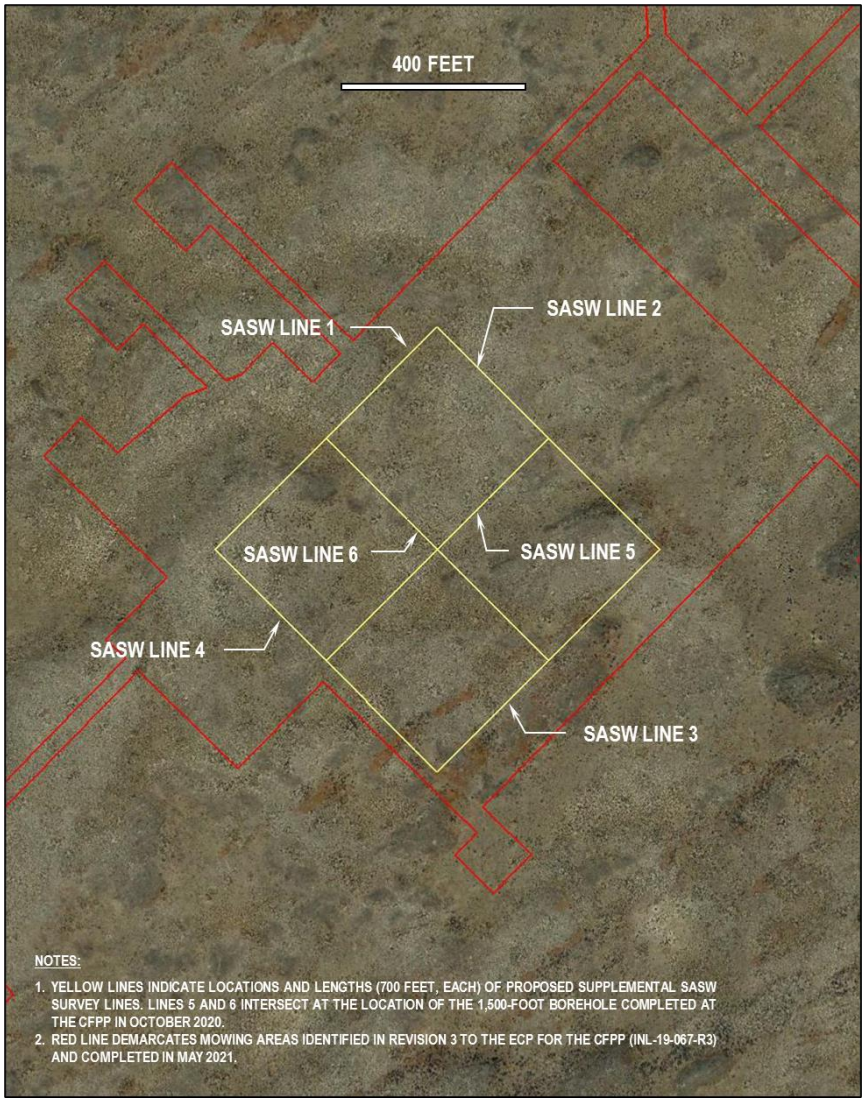

FIGURE 1. PROPOSED LOCATIONS OF SPECTRAL-ANALYSIS-OF-SURFACE-WAVES (SASW) SURVEY LINES

TABLE 1
SASW SURVEY LINE DETAILS

LINE	LENGTH	ORIGIN		TERMINATION	
	(ft)	(dd.dddddd)	(dd.dddddd)	(dd.dddddd)	(dd.dddddd)
1	700	43.637217	-113.056978	43.638575	-113.055109
2	700	43.638575	-113.055109	43.637218	-113.053239
3	700	43.637218	-113.053239	43.635860	-113.055109
4	700	43.635860	-113.055109	43.637217	-113.056978
5	700	43.636540	-113.056045	43.637895	-113.054172
6	700	43.637895	-113.056045	43.636540	-113.054172

As noted in Attachment 1 to Revision 2 of the ECP, SASW testing involves the generation of long-period elliptical surface waves from a fixed location on an exposed material surface, and the measurement of resulting ground motions along a single path radiating from the wave source. Representative photographs of the surface wave source (a large vibroseis truck) and the measurement arrays (geophone receivers) expected to be used in the supplemental SASW surveys at the CFPP are shown in Figures 2 and 3. Consistent with SASW surveys previously completed at the CFPP, the potential area of impact on any given SASW survey line should be limited to approximately 12 feet on either side of the center lines shown on Figure 1. This 24-foot total width should accommodate vehicle drive-over, geophone (receiver) and cable placement, and discrete locations of ground cover flattening via impacts of the surface wave source. Placement of geophones is strictly surficial and should require clearing of no more than one (1) square foot of any remaining (mowed) ground cover.

FIGURE 2. TRUCK-MOUNTED SURFACE WAVE SOURCE SYSTEM OPERATING AT THE CFPP IN OCTOBER 2019

FIGURE 3. EXAMPLE GEOPHONE PLACEMENT ALONG ON AN SASW SURVEY LINE AT CFPP IN OCTOBER 2019

Maximum vertical and shear forces produced by the surface wave source to be used at the INL are approximately 20,000 pounds and correspond to a normal operating frequency range of 1.3 hertz to 75 hertz. Such low frequency waves should not propagate to, or be registered by, automatic seismic trip systems or accelerometers installed on neighboring INL facilities. Strain levels in the geologic materials impacted by the surface wave source system should also be extremely small (below 0.000001 percent) and thus should result in only very small, non-impactful elastic motions.

Seismic Reflection Surveys

UAMPS plans to similarly complete two (2) high-resolution seismic reflection survey transects at the CFPP site and on adjacent Bureau of Land Management (BLM) areas located north of the CFPP. The proposed extent of the HRS surveys (totaling 4.375 linear miles) are shown on Figure 4 and detailed on Table 2. UAMPS representatives will coordinate with BLM staff, as needed, regarding survey transect sections extending outside of INL areas. Depending on current fire conditions on the INL, these lines may also need to be mowed (and surveyed) prior to commencement.

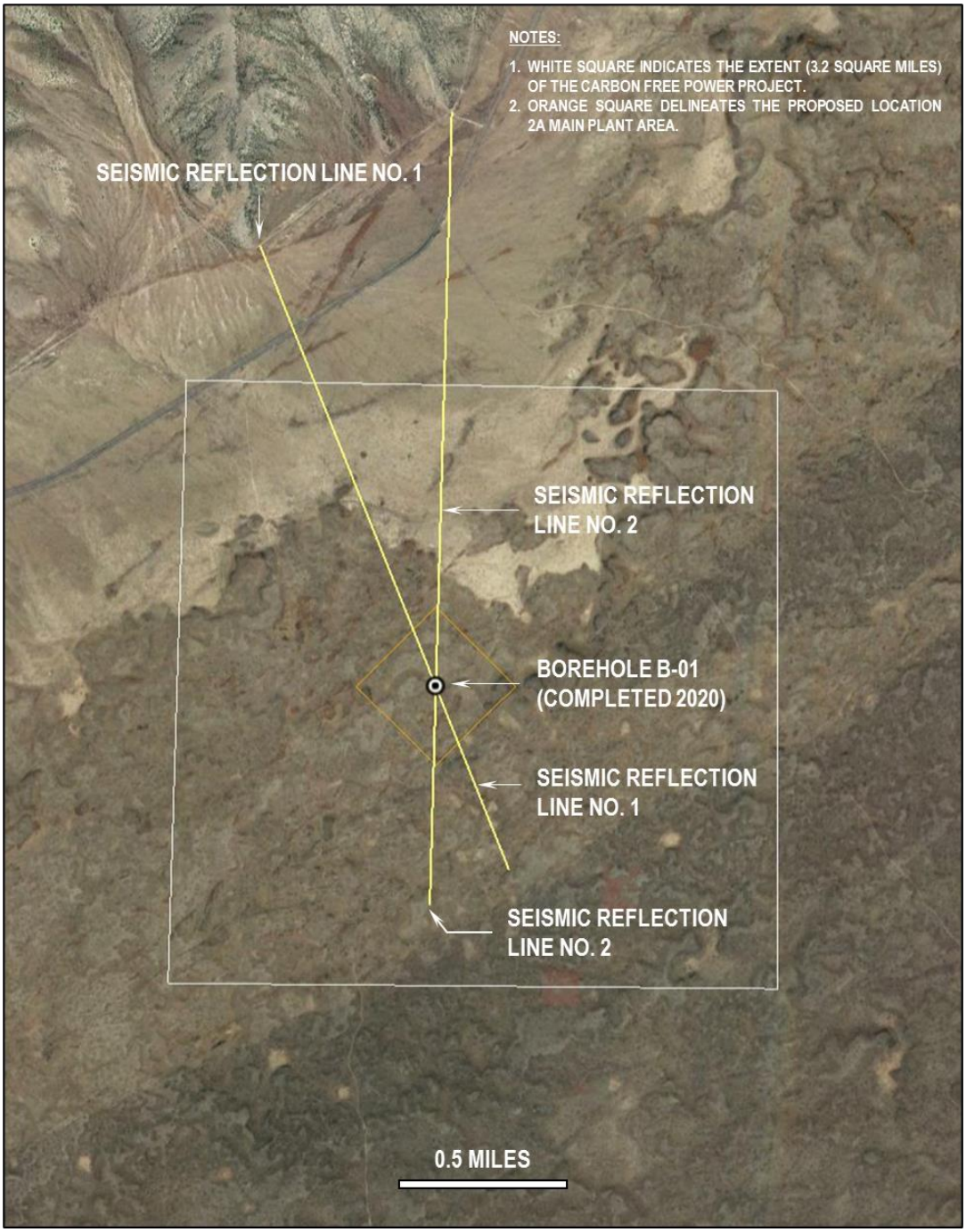

FIGURE 4. PROPOSED LOCATIONS OF SEISMIC REFLECTION SURVEY LINES

TABLE 2
SEISMIC REFLECTION SURVEY LINE DETAILS

LINE	LENGTH	ORIGIN		TERMINATION	
	(ft)	(dd.dddddd)	(dd.dddddd)	(dd.dddddd)	(dd.dddddd)
1	10,600	43.629317	-113.050763	43.656313	-113.065648
2	12,500	43.627805	-113.055487	43.662085	-113.054175

The seismic reflection surveys are expected to employ up to 400 Sunfull Model PS-14B geophones (measurement points) connected via a long, ground-laid cable (a geophone string). A one-page manufacturer's cutsheet for the geophones can be provided by project personal on request. Geophones are expected to be spaced in grouped intervals of 20 feet or more, depending on ground conditions. Data from the geophones (i.e., seismic signals) will in turn be recorded via a Seistronix EX6 seismograph system housed in a standard, cabbed pick-up truck (the seismic "doghouse").

UAMPS intends to use the previously described SASW vibroseis truck as a seismic source for the seismic reflection surveys at the CFPP, as well as a separate 450-pound accelerated hammer system. This hammer system (a United Service Alliance Model AF-450) will be mounted on an International Harvester Model IH-50 rubber-tracked vehicle or a Model 4800 truck. A cutsheet for the AF-450 hammer can be provided by project personnel on request; an example photograph of the AF-450 hammer system mounted on a rubber-tracked vehicle is provided in Figure 5. Seismic source shot spacing is expected to be based on signal response and data quality as determined during initial field testing.

FIGURE 5. EXAMPLE FIELD DEPLOYMENT OF AN AF-450 HAMMER SYSTEM ON A RUBBER-TRACKED VEHICLE

The impact of the reflection surveying should be limited largely to minor soil or vegetation disturbance from overland movements of the seismic source (i.e., the vibroseis truck, the IH-50, or the Model 4800 truck) and support vehicles (Gator™ utility vehicles or equivalent quad-runners and the doghouse truck). Projected truck and support vehicle disturbance extents are expected to be limited to an 80-foot swath centered on the lines shown on Figure 4. Similar to the SASW surveys, this width is expected to accommodate vehicular traffic, geophone and cable placement, and discrete positioning of the seismic source and seismic recording (doghouse) trucks. Placement of the seismic reflection survey geophones is also surficial and should require only very shallow hand-excavation (less than 3-inches) to ensure proper ground coupling.

It should be noted that generation of fugitive dust, vehicle exhaust emissions, and unintentional fluid releases (oils, diesel, etc.) are also potential environmental impacts; however, exhaust emissions from the seismic source truck should be well below significant (reportable) levels, and potential fluid releases will be mitigated via the implementation of formalized spill prevention measures.

New Temporary Infrastructure

Previous temporary infrastructure for the CFPP site characterization efforts included one (1) project trailer and an associated mobile diesel generator for electrical power in the fenced CFPP administrative area adjacent to Highway 33. Site characterization activities at the CFPP planned during 2021 will require additional temporary trailers and associated mobile diesel generator units. Specifically, one (1) additional project office trailer is needed to accommodate the increased number of field-based project personnel. No more than four (4) ground-level office/storage combination trailers (including full-width swing doors) are also planned for placement in the administrative area, to store core samples from drilling activities. These storage trailers require continuous climate control for proper core sample preservation. Power for these storage trailers (and for the project office trailers) is expected to be supplied by temporary, mobile generator units (one [1] generator for each trailer). Generators to be deployed on-site are not expected to exceed 50 kilovolt amperes (kVA) in size. Periodic refueling of the generators is planned to be accomplished using INL Site Services fuel delivery trucks. Each mobile generator unit will be surrounded by a portable liner to prevent ground contamination in the event of a diesel spill/leak.

Transfer of core storage materials to longer-term storage facility is planned to be completed prior to the end of 2021, at which time the emptied, temporary core storage containers, one (1) office trailer, and the mobile generators will be removed by the vendor/supplier. One (1) trailer will remain on-site for use during long-term groundwater and meteorological monitoring. If a temporary mobile generator is needed to supply power to the remaining project trailer through the winter, it would be removed from the site within twelve months of installation.

Revision 3

The purpose of this revision is to add planned work scope associated with changes to the core boring/well drilling locations proposed for completion in 2021, minor improvements to T-11 and access routes from T-11 to core boring locations, and expansion of area to be mowed prior to the continuation of drilling. For efficiency and clarity, this Environmental Compliance Permit (ECP) revision does not include all information discussed and analyzed in the prior versions. Previous revisions to this document (with additional graphics and descriptions) can be found in INL-19-067 R2, INL-19-067 R1, and INL-19-067. However, all Environmental Aspects and Impacts, Hold Points, and Project Specific Instructions are consistent between all versions of the CFPP revisions and are captured here in Revision 3 as well.

On-going CFPP design efforts have enlarged the facility footprint and shifted some of the planned core boring and well drilling locations outside of the originally proposed Location 2A area, which is now the preferred location of the CFPP facility. Specifically, the facility footprint has expanded in the southwestern and northeastern direction, and as a result, there are likely to be core boring activities and monitoring/testing well drilling activities which are no longer inside the bounds of Location 2A as shown on Figure 2-1. Mowing of vegetation in these expanded areas is planned in the spring of 2021 to mitigate risks of wildland fire and bird nesting activities during core boring and well drilling activities. Mowing of the areas surrounding the existing meteorological tower is also planned to facilitate laydown and repairs to the tower instrumentation. This mowing plan encompasses approximately 40 – 50 acres in Location 2A and areas immediately surrounding Location 2A, along with the aforementioned area immediately adjacent to the meteorological tower. All of the areas planned for mowing have only sparse sagebrush cover. While the majority of access for the planned work is expected to be via the T-11 roadway, access to the northeastern-most monitoring well locations may include use of the T-3 Stage Road and the Rocky Mountain Power transmission line road. Such a route would also provide a secondary egress pathway from the CFPP drilling sites out to Highway 33 in the event of wildland fire or other emergencies.

The current mowing plan is shown in the attachment; however, some further adjustments to the mowing plan locations may be needed to account for unsuitable site conditions and/or final designs. Prior to mowing, new cultural and biological surveys of the affected areas would be completed. Please note: there are two large non-uniform black shapes located on the map. These are areas designated as avoidance locations. Further instructions are in the Hold Points.

With regard to access route improvements, the main area of the CFPP's core boring site is accessed via an existing INL two-track access road (T-11) and a short overland (off-road) route extending roughly 0.4 miles eastward from the existing two-track road. Several rock outcroppings along the route make travel difficult for water truck support, and consequently slow drilling operations to a significant extent. Consideration is being given in work scope planning to improve the travel route by use of a skid-steer loader or a backhoe (with a bucket) to level and smooth areas of existing rock outcroppings on the overland route extending from the T-11 two-track to the main CFPP drill site.

Surface disturbance associated with leveling and smoothing is largely expected to be limited to depths of less than 12-inches, excepting some deeper pitting likely to be associated with the removal of larger rock fragments. The CFPP would limit improvements to a 0.5-mile segment of the T-11 two-track. This segment would extend from the termination point of previously completed improvements on T-11 (at a point approximately 0.46 miles south of State Highway 33) to the drill site turn off (approximately 0.96 miles from the intersection of T-11 and State Highway 33). Improvements along this segment would only include targeted (spotty) grading and leveling of particularly uneven track sections or locations with exposed boulders, and to placement of gravel on particularly problematic areas. We expect this gravel placement to be limited largely to the placement of 2 to 3 cubic yards of gravel on the first sharp elevation rise on the T-11 two-track, at a location with prominent surface exposures of rock. Placement of the gravel is also expected to be completed using a skid-steer loader or a backhoe with a bucket. Gravel will be spread only on the existing road surface, to fill-in low areas between rock exposures. Compaction is expected to be provided only by movement of vehicles across the surface.

The areas planned for the route access improvements have been previously surveyed for cultural resources and biological impacts. Also, the environmental footprint impacts associated with these activities will be largely enveloped by those already realized by initial core boring activities and overland travel in support of those activities to date. Areas identified in previous surveys will be avoided by all project related activities. Additionally, a physical barrier will be erected to ensure all vehicles will avoid the area near P124, P125, and P126.

The following attachment shows the areas needing mowed for 2021 in red. Since some of the areas are small and detailed, it is safe to assume total mowed areas may extend beyond the boundaries shown. A buffer should be considered when field surveys are completed.

SECTION C. Environmental Aspects or Potential Sources of Impact:

Air Emissions

Project activities have the potential to generate fugitive dust.

Mobile engine/generator sets used during Phase I activities are exempted from permitting in APAD INL -01-83 R1, Mobile Sources - Nonroad Engines - Generic Coverage for engines less than 294 hp and APAD INL-02-20, Mobile Sources - Nonroad Engines - Generic Coverage for gasoline engines less than 52 hp.

A truck mounted coring unit with an air compressor would be used to core the boreholes. Because drilling activities would be conducted several hundred feet below the surface, air pollutants from the boreholes are not anticipated. Emissions from the operations of mobile coring units and other heavy equipment are not regulated as stationary sources. No emission reporting is required.

Discharging to Surface-, Storm-, or Ground Water

Project activities discharge wastewater from well and borehole drilling operations to the ground.

Disturbing Cultural or Biological Resources

Soil disturbing activities have the potential to impact cultural resources.

Impacts to biological resources (e.g., vegetation, birds, nests, leks) have the potential to occur during project activities. The CFPP Site is within the SGCA.

Generating and Managing Waste

Project activities have the potential to generate industrial waste such as boxes, wiring, paper, insulation, and some metals (wire, conduit, etc.) and hazardous waste. Industrial waste would be properly managed and disposed.

Core drilling activities are expected to generate several hundred cubic feet of rock cuttings and drilling fluid, most of which would enter fractures in the boreholes. Drilling activities would also generate basalt and sediment core, which when no longer needed for project activities would be archived at the INL/USGS Core Storage Library for future studies.

Releasing Contaminants

Chemicals such as hydraulic oil may also be used. Because this project would use petroleum products and possibly other potentially hazardous industrial chemicals, there is the potential for release of small amounts of contaminants into the air, water, or soil. Although not anticipated, there is a potential for spills when using chemicals or fueling equipment. In the event of a spill, notify facility PEL. If the PEL cannot be contacted, report the release to the Spill Notification Team (208-241-6400). Clean up the spill and turn over spill cleanup materials to WGS (waste generator services), or otherwise manage and dispose of the waste in accordance with all applicable federal, state, and local laws, codes, and regulations.

Using, Reusing, and Conserving Natural Resources

Project personnel will use every opportunity to recycle, reuse, and recover materials and divert waste from the landfill when possible.

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," and B3.2 "Aviation activities," and B1.13 "Pathways, short access roads, and rail lines."

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.

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

B1.13, “Construction, acquisition, and relocation, consistent with applicable right-of-way conditions and approved land use or transportation improvement plans, of pedestrian walkways and trails, bicycle paths, small outdoor fitness areas, and short access roads and rail lines (such as branch and spur lines).”

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

Approved by Jason L. Anderson, DOE-ID NEPA Compliance Officer on: 06/30/2021