

PMC-ND

(1.08.09.13)

U.S. DEPARTMENT OF ENERGY
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
NEPA DETERMINATION

**RECIPIENT:**Utah State University - Geology**STATE:** ID

PROJECT TITLE: PLAY FAIRWAY ANALYSIS OF THE SNAKE RIVER PLAIN, IDAHO

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000841	DE-EE0006733	GFO-0006733-003	GO6733

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:

Description:

- A9 Information gathering, analysis, and dissemination** Information gathering (including, but not limited to, literature surveys, inventories, site visits, and audits), data analysis (including, but not limited to, computer modeling), document preparation (including, but not limited to, conceptual design, feasibility studies, and analytical energy supply and demand studies), and information dissemination (including, but not limited to, document publication and distribution, and classroom training and informational programs), but not including site characterization or environmental monitoring. (See also B3.1 of appendix B to this subpart.)
- B3.1 Site characterization and environmental monitoring** 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 an existing building for sample analysis). Such activities would 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 would 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 as assessment of potential wind energy resources); (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.
- B3.6 Small-scale research and development, laboratory operations, and pilot projects** Siting, construction, modification, operation, and decommissioning of facilities for smallscale research and development projects; conventional laboratory operations (such as preparation of chemical standards and sample analysis); and small-scale pilot projects (generally less than 2 years) frequently conducted to verify a concept before demonstration actions, provided that construction or modification would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible). Not included in this category are demonstration actions, meaning actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial deployment.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to Utah State University (USU) to address the overarching theme of uncertainty quantification and reduction for geothermal exploration, specifically through the development of Geothermal Play Fairways. Phase/Budget Period 1 of the Geothermal Play Fairway Analysis FOA was reviewed by GFO-FOA0000841-001 (CX A9; 07/31/14). Budget Period 2 of this project was

reviewed by GFO-0006733-001 (CXs A9, B3.1; 02/11/16). Budget Period 3 (BP3) of this project was reviewed by GFO-0006733-002 (CXs A9, B3.1; 08/24/17), which restricted Task 10 "Drilling, Logging and Reservoir Testing" and Task 11 "Post-Drilling Synthesis and Analyses" pending the definition of slim hole locations and required drilling activities. This final NEPA Determination is for the remainder of BP3 activities.

The remainder of BP3 activities would involve validating methodology by drilling a slim hole designed to intersect permeability in the Idaho Snake River Plain Geothermal Play Fairway study area. Task 10 would involve the drilling, logging, and abandonment of at least one exploratory slim hole at the Camas Prairie study area (detailed below) to document the change in subsurface temperature with depth and conduct flow testing of reservoir permeability if the targeted layer is indeed intersected during drilling. Task 11 would involve post-drilling laboratory analyses and data assimilation.

Task 10 drilling activities would be carried out by the United States Geological Survey (USGS) under supervision of USGS personnel in partnership with USU. A total of two potential drill sites have been identified, both located on private property belonging to SV Ranch LLC near Fairfield, Camas County, Idaho. Based on current project plans, only one of the two proposed slim hole sites would be drilled. Both sites are located on private land, and the landowner currently holds geothermal rights. The recipient has received written confirmation from the landowner that demonstrates full cognizance and support of the proposed project. A formal drilling prospectus has been submitted by the recipient for the review of the Idaho Department of Water Resources (IDWR). Permitting would be carried out through the IDWR, which sets standards for this type of drilling, including plug-and-abandon requirements. The recipient and USGS are required by DOE to comply with all associated permit terms and conditions.

The recipient and USGS would follow applicable regulations and industry best practices for geothermal test wells, in addition to site-specific recommendations from cultural resource subject matter experts and the Idaho State Historic Preservation Office (SHPO) discussed below. The upper parts of the hole (sediment layers) would be rotary drilled and cased off, then drilling would continue into the targeted thermal zone to a maximum depth of approximately 2,000 feet (ft), with the final depth to be determined by drilling conditions and encountered geology. The work area would have a footprint of approximately 50 ft by 200 ft, within which a relatively small (approximately 60 ft x 150 ft) drill pad would be temporarily installed. The work area would also contain a small sump pit to catch geothermal water pumped from the hole during reservoir tests. Locally-obtained agricultural well water would be used during drilling to remove cuttings and later to carry out reservoir tests. Each site would be occupied for approximately two to three weeks during drilling and only occasionally for a few hours afterwards to conduct reservoir testing over the span of several months. The hole would not be designed or cased as a production well and therefore would not be left open at the conclusion of the proposed project. After an appropriate amount of time for temperature equilibration and data gathering, plugging and abandonment would be conducted by the USGS in accordance with all permitting requirements. The drill pad would be removed according to the landowner's specifications upon site reclamation. The proposed work would not involve any permanent equipment installations at the selected site or substantial ground disturbance beyond the aforementioned excavation of a single slim hole.

It is anticipated that the proposed drilling would produce approximately 2-3 cubic meters of cuttings. These non-hazardous, natural materials would either be disposed of locally in consultation with the landowner (e.g. spread on previously disturbed rangeland) or properly transported to a regional waste collection site. Recycled drilling water containing non-toxic bentonite clay would be stored in the sump pit and buried on site, or transported to an appropriate waste facility. Well water injected for reservoir tests would be left in place or used for irrigation. No hazardous materials posing a risk to health and safety would be used, produced, transported or stored at the drilling site. Diesel-powered electric generators would generate minor emissions that would not have the potential to meaningfully impact atmospheric levels within this rural attainment area.

DOE has reviewed the prospective slim hole drilling sites and surrounding environment. Based on this context for the activities described above, DOE has concluded that no adverse impacts to sensitive resources are expected as a result of Task 10 activities at any location based on the following summations:

The proposed study area is located on currently unused rangeland in a remote agricultural area. Both drill sites/contiguous work areas are made up of grass-covered fields. Existing roads would be used to access either drill site. All work would be conducted along or immediately adjacent to these previously disturbed tracts of land cross-cutting the private property. The two candidate sites, requisite water source (likely an existing agricultural well next to the farm road), and means of access to these locations were selected to avoid the necessity of overland travel as well as wetlands in the region. No work would be located in wetlands or floodplains. Regardless, to avoid any potential contamination issues to Camas Creek, barriers would be used to prevent the flow of produced water outside the site boundary.

According to the U.S. Fish and Wildlife Service Endangered Species Program website (IPaC), there are no federally listed plant species expected to occur in the project area. IPaC identifies one threatened or endangered (T&E) wildlife species that is believed to occur near the proposed drilling sites: the North American Wolverine. However, there is no designated or proposed critical habitat on or near the project area. Further, a wildlife report prepared on behalf of the recipient based on a field survey conducted in Fall 2017 concluded that there is no suitable habitat for the North American wolverine in this area and consequently negligible probability of presence. IPaC also identifies eight Migratory Bird species with an estimated range overlapping this region, but the expected timing of project activities (Fall 2018) does not overlap with the typical nesting or breeding seasons for any of these species. Since project activities would not take place between April and August, the aforementioned wildlife report did not recommend bird surveys prior to commencing work. Moreover, the field survey found that the project sites do not contain any suitable nesting or foraging habitat for some of the listed migratory bird species, and that the potential for others to occur in the project area is limited due to marginal habitat and seasonal considerations. Due to these factors in conjunction with the short duration of drilling activities and the small (less than one acre), impermanent project footprint on previously disturbed land, DOE has determined the proposed activities would have no effect on T&E species or Migratory Bird species at the two prospective Camas Prairie drilling sites.

No known cultural resources or historic properties occur within the project area per results of an intensive cultural resource inventory and file search conducted in Spring 2018 on behalf of the recipient towards compliance with Section 106 of the National Historic Preservation Act. Although this report (as well as previously conducted studies) did not identify cultural resources within the survey area, it found that the region is moderately likely to obscure buried cultural materials. Therefore, required federal consultation under Section 106 of the National Historic Preservation Act must be completed prior to DOE authorizing funds for drilling activities. The recipient is restricted from initiating drilling activities until consultation with the Idaho SHPO is complete and notification has been received from DOE. The DOE Contracting Officer will notify the recipient, in writing, when the consultation has been completed and of any conservation or mitigation measures that must be implemented for drilling activities. In addition, the recipient is required by DOE to comply with the recommendation of the aforementioned cultural resource report to arrange for the presence of a qualified archaeological monitor for all ground disturbing activities occurring within the first 5 meters of the current ground surface. If the recipient or other project participants encounter cultural or archaeological artifacts during project activities, all activities must immediately cease in the vicinity of the discovery. The recipient must notify the DOE Project Officer and the State of Idaho Archaeologist at the Idaho SHPO of the discovery within forty-eight hours of the discovery. Project activities in the vicinity of the discovery must cease until an evaluation of the discovery is completed by the appropriate officials and the DOE Contracting Officer provides written authorization to resume the activities. If the recipient seeks to relocate the affected work to another nearby site, the recipient must first obtain written authorization from the DOE Contracting Officer.

Task 11 activities would include desktop-based data analysis, computer modeling, and software development at the existing offices of various project participants. Laboratory activities associated with Task 11 would include a detailed laboratory study of recovered core materials in dedicated research facilities at USU, Lawrence Berkeley National Laboratory, and Idaho National Laboratory. The scope of proposed research would not exceed past and ongoing related work at these purpose-built facilities. No change in the use, mission, or operation of existing facilities would arise out of project efforts. Any work proposed to be conducted at a DOE laboratory may be subject to additional NEPA review by the cognizant DOE NEPA Compliance Officer for the specific DOE laboratory prior to initiating such work. Further, any work conducted at a DOE laboratory must meet the laboratory's health and safety requirements.

Based on the review of the proposal, DOE has determined the proposal fits within the class of action(s) and the integral elements of Appendix B to Subpart D of 10 CFR 1021 outlined in the DOE categorical exclusion(s) selected above. DOE has also determined that: (1) there are no extraordinary circumstances (as defined by 10 CFR 1021.410(2)) related to the proposal that may affect the significance of the environmental effects of the proposal; (2) the proposal has not been segmented to meet the definition of a categorical exclusion; and (3) the proposal is not connected to other actions with potentially significant impacts, related to other proposals with cumulatively significant actions, or an improper interim action. This proposal is categorically excluded from further NEPA review.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

If the Recipient intends to make changes to the scope or objective of this project, the Recipient is required to contact the Project Officer, identified in Block 15 of the Assistance Agreement before proceeding. The Recipient must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved. If the Recipient

moves forward with activities that are not authorized for Federal funding by the DOE Contracting Officer in advance of a final NEPA decision, the Recipient is doing so at risk of not receiving Federal funding and such costs may not be recognized as allowable cost share.

Insert the following language in the award:

You are required to:

The recipient and USGS are required by DOE to comply with all associated permit terms and conditions set forth by the Idaho Department of Water Resources (IDWR) authorizing the proposed drilling and testing activities. Further, the recipient is required to submit all written authorizations and/or permits obtained from IDWR to the DOE Project Officer.

Required federal consultation under Section 106 of the National Historic Preservation Act must be completed prior to DOE authorizing funds for drilling activities. The recipient is restricted from initiating drilling activities until consultation with the Idaho SHPO is complete and notification has been received from DOE. The DOE Contracting Officer will notify the recipient, in writing, when the consultation has been completed and of any conservation or mitigation measures that must be implemented for drilling activities.

The recipient is required to arrange for the presence of a qualified archaeological monitor for all ground disturbing activities occurring within the first 5 meters of the current ground surface. If the recipient or other project participants encounter cultural or archaeological artifacts during project activities, all activities must immediately cease in the vicinity of the discovery. The recipient must notify the DOE Project Officer and the State of Idaho Archaeologist at the Idaho SHPO of the discovery within forty-eight hours of the discovery. Project activities in the vicinity of the discovery must cease until an evaluation of the discovery is completed by the appropriate officials and the DOE Contracting Officer provides written authorization to resume the activities. If the recipient seeks to relocate the affected work to another nearby site, the recipient must first obtain written authorization from the DOE Contracting Officer.

Any work proposed to be conducted at a DOE laboratory may be subject to additional NEPA review by the cognizant DOE NEPA Compliance Officer for the specific DOE laboratory prior to initiating such work. Further, any work conducted at a DOE laboratory must meet the laboratory's health and safety requirements.

Note to Specialist :

Geothermal Technologies Office
This NEPA determination requires a tailored NEPA Provision.
NEPA review completed by Whitney Doss, 07/30/2018

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:  Casey Strickland Date: 7/30/2018
NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

Field Office Manager review required

NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:

- Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
- Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: _____ Date: _____
Field Office Manager