

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** UNR**STATE:** NV

**PROJECT TITLE:** Discovering Blind Geothermal Systems in the Great Basin Region: An Integrated Geologic and Geophysical Approach for Establishing Geothermal Play Fairways

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-0000841	DE-EE0006731	GFO-0006731-004	GO6731

**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.

**Rationale for determination:**

The U.S. Department of Energy (DOE) is proposing to provide federal funding to the University of Nevada Reno (UNR) 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; 7/31/14). Budget Period 2 of this project was reviewed by GFO-0006731-001 (CXs B3.1, B3.2, B3.6; 2/25/16). Budget Period 3 (BP3) of this project was reviewed by GFO-0006731-002 (CXs A9, B3.1, B3.6; 08/28/17), which restricted Task 27 "Temperature-Gradient (TG) Drilling" pending the definition of drill locations and required drilling activities. Task 27 activities taking place in southern Gabbs Valley were reviewed by GFO-0006731-003 (CXs A9, A11, B3.1; 04/20/18). GFO-0006731-003 restricted any Task 27 activities proposed to be conducted at the northern Granite Springs Valley study area pending the submission of additional site specific information for NEPA review including the geographical coordinates of proposed TG wells.

This final NEPA Determination is for the remainder of BP3 activities. Proposed Task 27 activities under review herein would involve the rotary drilling of as many as six (6) TG wells selected from among thirteen (13) prospective sites within northern Granite Springs Valley (located northwest of the town of Lovelock, Pershing County, NV) for the measurement of equilibrated temperature gradients at depths not to exceed approximately 1000 ft. Temperature logs would be run in the wells immediately after completion and several additional times in monthly intervals for up to a year thereafter to assure that temperatures have equilibrated. Additional field-based analyses would include logging of cuttings and other standard well-logging/sensing techniques using in-house equipment from the Great Basin Center for Geothermal Energy at UNR.

All 13 prospective TG well sites are located on public lands administered by the Bureau of Land Management (BLM) Winnemucca District Office. Drilling would be carried out by the United States Geological Survey (USGS) under supervision of experienced USGS personnel. UNR would provide onsite technical assistance/analysis of results during the drilling. Established industry best operating procedures would be observed by all project participants in order to mitigate hazards associated with rig operations. UNR has submitted a Notice of Intent (NOI) to the BLM Winnemucca District Office for the proposed rotary TG drilling activities, as well as Geothermal Resource Development Permit applications to the Nevada Division of Minerals (NDOM) for each proposed TG well location. UNR would not begin any Task 27 activities in northern Granite Springs Valley nor would USGS mobilize to the study area until such time as BLM and NDOM complete their reviews and provide written authorization to proceed.

The proposed drilling would require the mobilization and short-term deployment of equipment outdoors. Equipment and personnel would be transported to and from the selected drilling sites by overland vehicles. The overall dimensions of the temporary use area would be approximately 50 ft. x 100 ft. This area would contain a truck-mounted 3 axle rotary drill rig, pipe truck/trailer combo, mud cleaning system, in addition to supply/service vehicles. All equipment is either truck- or skid-mounted and can be placed in flexible configurations to accommodate ground surface conditions at each site. Access to the sites has been planned along existing roadways and drilling operations would be located as close to the roadways as possible to avoid/minimize new ground disturbance. No excavation, grading, or road building would be required for rig up.

With the exception of monthly follow-up temperature logging described above, which does not require extensive field deployment, all drilling and measurement activities are expected to be completed within a month of mobilization to the study area. After the conclusion of drilling and measurements, all equipment, materials, supplies, camp facilities, and personnel would be demobilized from that location. Minor and temporary ground moving activities would be limited to shallow (less than 2 ft.) trenching which would be refilled and smoothed before demobilization. Vegetation in the study area is sparse; however, some scrub brush may be impacted by vehicles. Ground disturbance would be restored as per BLM permit terms and conditions. The only remaining effect of project activities would be superficial traces of restored surfaces and tire tracks.

All TG wells would eventually be plugged and abandoned by the USGS following applicable state and federal regulations, notably BLM and NDOM rules/requirements for this process and its timeframe. No surface equipment (e.g. wellheads) would be left on location once measurements are complete. Non-hazardous waste commonly generated on drill rig sites, such as empty paper sacks of concrete or emptied shipping pallets, would be properly contained and entirely removed from the study area at the completion of operations. Rotary drilling creates rock chips of local subsurface formations, and these natural materials would be dispersed over the desert surface in the immediate area of each wellsite in compliance with pertinent regulations and any special stipulations made by BLM and/or NDOM.

DOE has reviewed all 13 prospective well sites and the surrounding environment. Given this context for the activities described above, DOE has concluded that no adverse impacts to sensitive resources are expected as a result of Task 27 at any northern Granite Springs Valley location due to the minimal footprint and short-term duration of the proposed TG drilling in conjunction with the siting elements summarized below:

Task 27 activities and site access would be located to the extent possible on or immediately adjacent to previously disturbed land, and would be confined to a total of less than one acre of such land across no more than 6 geographically dispersed locations within the relatively expansive study area. Isolated and short-term sources of vehicular emissions would not have the potential to meaningfully impact atmospheric levels within this rural attainment area. Ground disturbance produced by equipment deployment and work camp activities would be shallow and impermanent, and disturbed areas would be reclaimed as obligated by BLM and NDOM permit conditions of approval per all applicable federal and state regulations. No work would be located in wetlands, designated wilderness areas, or areas with known protected species. According to the U.S. Fish and Wildlife Service Endangered Species Program website (IPaC), there are no threatened or endangered plant or wildlife species

expected to occur at any prospective drill site within the northern Granite Springs Valley study area. There are no migratory birds of conservation concern expected to occur at this location.

BLM has already authorized geoprobe studies of this study area, and no cultural resources of concern were identified during prior BLM reviews conducted specifically for the purpose of permitting earlier phases of the proposed project. Nonetheless, if during the course of project activities cultural or archaeological artifacts are encountered, USGS personnel, the recipient, and/or their staff must stop the site installation immediately and inform the BLM and the DOE Project Officer of the discovery so that an evaluation of the discovery can be completed prior to continuing work. The affected work must be relocated to another nearby site.

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:

Before undertaking any Task 27 activities at the northern Granite Springs Valley study area, including mobilization for drilling to be conducted by the United States Geological Survey (USGS), the recipient is required to obtain all requisite permits and/or authorizations from the Bureau of Land Management (BLM) and Nevada Division of Minerals (NDOM). Further, the recipient is required to submit copies of all BLM and NDOM permits and/or written approvals required for Temperature-Gradient (TG) drilling to the DOE Project Officer prior to commencing field work, and must comply with any associated terms and conditions set forth by these agencies.

If the recipient or other project participants encounter cultural or archaeological artifacts during the course of project activities, all activities must immediately cease in the vicinity of the discovery. The recipient must notify the DOE Project Officer and the BLM 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.

Note to Specialist :

Geothermal Technologies Office

This NEPA determination requires a tailored NEPA Provision.

NEPA review completed by Whitney Doss, 10/17/18

### SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:



Casey Strickland

NEPA Compliance Officer

Date: 10/22/2018

### 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: \_\_\_\_\_  
Field Office Manager

Date: \_\_\_\_\_