

PMC-ND

(1.08.09.13)

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



RECIPIENT: University of Utah/Energy & Geoscience Institute

STATE: UT

PROJECT TITLE : Structurally Controlled Geothermal Systems in the Eastern Great Basin Extensional Regime, Utah

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-EE0000841	DE-EE0006732	GFO-0006732-002	GO6732

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 University of Utah/Energy and Geoscience Institute (EGI) would utilize DOE and cost share funds to address the overarching theme of uncertainty quantification and reduction for geothermal exploration, specifically through the development of Geothermal Play Fairways. Previous NEPA Determinations (GFO-FOA0000841-001 and GFO-0006732-001) reviewed Budget Periods (BP) 1 and 2 of the project. This NEPA review is for BP3 activities.

Budget Period 1 and 2 activities of the project have led to the anticipated drilling of thermal gradient wells that will be funded separately from this award. These drilling activities are part of the project selected under the Geothermal Play Fairway Analysis FOA. To minimize drilling risks, establish operational consistency across awards, and ensure recipients have a qualified drilling contractor, the drilling activities will be conducted by the United States Geological Survey (USGS). Funding for the drilling activities will be paid directly to USGS by DOE; however, those costs are still considered part of the project and therefore subject to NEPA. These drilling activities would not occur without the project activities proposed under this award. While this award does not include funding for drilling of the thermal gradient wells, the locations for where drilling would occur, activities necessary to permit the wells, analysis of well data, and site reclamation after drilling is completed are all under the control of, and are the responsibility of, the University of Utah/Energy and Geoscience Institute. Because of the above, thermal gradient well drilling is a connected action to the proposed project activities being funded under this award and, therefore, the drilling and its

associated impacts will be reviewed as part of this award. Initial project work planned in Budget Period 3 will define drill locations and required drilling activities, so there is insufficient data available at this time to complete a thorough review of the anticipated drilling activities and any potential associated impacts. These activities will be reviewed once drilling is fully defined.

Initial proposed BP3 work includes activities designed to help target drilling locations for thermal gradient wells and dissemination of project research. New field work is involved and would include magnetotelluric (MT), passive seismic, gravity, and helium isotope surveys; as well as geologic mapping, all with associated computer and laboratory analyses. EGI has identified three areas of interest (North Cove Fort, East Dog Valley, and Antelope Valley) in the southwest part of the State where field work could occur on Bureau of Land Management (BLM), U.S. Forest Service (USFS), and private lands. Any work occurring on BLM or USFS managed lands would be submitted to the appropriate agency for review and approval prior to initiating field activities on those lands. All field work would require little or no surface disturbance with any surface disturbance being completed by hand. At MT station locations (approximately 75), cylindrical coils (2.5" x 48" tubes, two horizontal and one vertical) and electrode plates (three per site) would be buried so a small amount of surface disturbance would be required. Disturbance at each MT site would involve two trenches 5 inches deep for the horizontal coils, approximately 2.5 feet deep for the vertical coil, and small six by six inch holes for the electrode plates with the electronic data logger remaining on the surface. Total surface disturbance at each site would be less than 10 square feet. All disturbance would be reclaimed within 24 hours. Passive seismic installations (approximately 100 sites) would require very little disturbance, similar to one MT coil, and would be left in the field for at least one month. Installation of passive helium gas sensors would require minimal surface disturbance using a two inch auger to emplace diffusive membrane collectors at depths of 1-2 meters where they would remain in place for 2-4 weeks. Other field work such as gravity surveys and geologic mapping would not require any surface disturbance. Laboratory analyses would occur in dedicated laboratories designed for this type of work at the University of Utah.

U.S. Fish and Wildlife Service (USFWS) lists two endangered or threatened species (California Condor and Yellow-billed Cuckoo) and 26 to 29 migratory bird species that could occur in the three areas of interest but because of minimal disturbance, short duration, and the type of the proposed activities there would be no effect to any of the listed species. There is a National Register of Historic Places listed site (Cove Fort, Ref. #70000623) located in the southwest corner of the North Cove Fort area of interest. Project activities would not occur in the vicinity of this listed site so there would be no potential to cause effects to the Cove Fort historic property. During the installation of field equipment, if cultural or archeological artifacts are encountered, the recipient would stop the site installation immediately and inform the DOE Project Officer of the finding. The affected installation would be relocated to another nearby site. Exact locations for individual installations within southwest Utah have yet to be selected, but DOE does not anticipate any impacts to resources of concern regardless of location because all access to field work locations would either be by existing roads or by foot, surveys and field work would require little or no new surface disturbance, the amount of time for installation and sampling activities at each location is short, and locations would be selected in accord with the above siting requirements.

Based on the review of the proposal, DOE has determined that tasks in BP3 (excluding Task 19) fit 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. All tasks in BP3 (excluding Task 19) are categorically excluded from further NEPA review.

NEPA PROVISION

DOE has made a conditional NEPA determination for this award, and funding for certain tasks under this award is contingent upon the final NEPA determination.

Insert the following language in the award:

You are restricted from taking any action using federal funds, which would have an adverse affect on the environment or limit the choice of reasonable alternatives prior to DOE/NNSA providing either a NEPA clearance or a final NEPA decision regarding the project.

Prohibited actions include:

Task 19: Thermal Gradient Drilling

This restriction does not preclude you from:

Task 15: 3D Resistivity Acquisition and Modeling

Task 16: Earthquake Swarm and Non-Swarm Cluster Imaging

Task 17: Structural Geology Analysis

- Task 18: Geochemistry and Geological Model Integration
- Task 20: Market Transformation
- Task 21: Reporting

If you move forward with activities that are not authorized for federal funding by the DOE Contracting Officer in advance of the final NEPA decision, you are 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:

For any work occurring on Bureau of Land Management or U.S. Forest Service managed lands, the recipient must submit project information to the appropriate agency for review and approval prior to initiating field activities on those lands.

During the installation of field equipment, if cultural or archeological artifacts are encountered, the recipient will stop the site installation immediately and inform the DOE Project Officer of the finding. The recipient will relocate the affected installation to another nearby site.

Note to Specialist :

Geothermal Technologies Office
This NEPA determination requires a tailored NEPA provision.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____



Casey Strickland

NEPA Compliance Officer

Date: _____

8/18/2017

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: _____