

PMC-ND

(1.08.09.13)

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



RECIPIENT: University of Hawaii

STATE: HI

PROJECT TITLE: Comprehensive analysis of Hawaii's geothermal potential through Play Fairway

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000841	DE-EE0006729	GFO-0006729-002	

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 Hawaii to address the overarching theme of uncertainty quantification and reduction for geothermal exploration, specifically through the development of Geothermal Play Fairways. A play fairway analysis defines levels of uncertainty with respect to the presence and utility of geothermal system elements, and translates them into maps to high grade the geographic area over which the most favorable combinations of heat, permeability, and fluid are thought to extend. A previous NEPA Determination (GFO-FOA0000841-001; CX A9; 07/31/14) reviewed Phase/Budget Period 1 activities and a second NEPA Determination (GFO-0006729-002; CX A9, B3.1, B3.6; 04/25/16) reviewed Budget Period 2 (BP2) but restricted Task 10 pending further review. This NEPA Determination is to review the remaining Task 10 activities.

Subtask 10.1: MT/AMT and gravity data acquisition on Lanai

Subtask 10.2: MT/AMT and gravity data acquisition on Haleakala volcano (Maui)

Subtask 10.3: Time series analysis and inverse modeling of MT/AMT and gravity data

Subtask 10.4: Interpret 2-D and 3-D geophysics inversion results

Task 10 would involve performing geophysical surveys on the islands of Lānaʻi and Maui and the analysis of data collected. The geophysical surveys include establishing temporary magnetotelluric (MT), audiomagnetotelluric (AMT) data collection stations and gravity surveys. At this time, there is not enough information to complete a thorough review of the survey activities on Maui; therefore, Subtask 10.2 activities are prohibited until additional information has been submitted by the recipient and an additional NEPA review has been completed by DOE.

The geophysical survey on Lānaʻi would include up to 50 data collection stations for MT, AMT, and gravity data collection. Gravity survey data collection requires no surface disturbance but the MT/AMT survey would require two small trenches approximately 40 inches long by 6 inches wide by 6 inches deep at each site in which cylindrical antennae would be placed. There would be up to 4 holes approximately 6 inches deep and 6 inches in diameter in which small electrode units would be placed. The electrodes would be connected to the antennae by wire. The MT equipment would be left for 24-48 hours to collect data, then removed, and the hole would be filled back in. See the uploaded file (Description of MT Method.pdf) for a more detailed description of the University of Hawaii's proposed MT survey methodology and equipment configuration at the data collection stations. All data collection stations on Lānaʻi would be located within previously disturbed, historically agricultural lands.

The only resources of concern found during project review that could potentially be impacted by survey activities are cultural/historic resources. The University of Hawaii consulted with Kepā Maly, Senior Vice President of Culture & Historic Preservation at Pūlama Lānaʻi and Executive Director at the Lānaʻi Culture & Heritage Center on the proposed survey activities. Kepā Maly prepared a memo report that noted "Recent work conducted in partnership with qualified archaeologists, Pūlama Lānaʻi and the Lānaʻi Culture & Heritage Center have identified scattered cultural deposits in areas of the former fields. The most common finding are lithic scatters, broken artifacts, and outlines of ancient fire pits." The University of Hawaii also consulted with Thomas Dye of T. S. Dye & Colleagues, Archaeologists, Inc. on the proposed survey activities. Mr. Dye recommended that an archaeological monitor be present during excavation activities to guide the survey team to installation sites where cultural artifacts are not present. Based on the consultations with Kepā Maly and Mr. Dye, the following protocols will be required during surveying activities to avoid effects to historic properties that may be present. These protocols will be incorporated into the terms and conditions of the DOE funding agreement with the University of Hawaii as requirements for funding.

1. An archaeological monitor will be onsite during all siting and excavation activities of test unit locations;
2. If cultural deposits are observed on the surface, the test unit location will be moved away from that site;
3. If cultural material is observed while digging occurs, a record of the material and location will be recorded and reported to Pūlama Lānaʻi for action with the Hawaii State Historic Preservation Division (SHPD); and
4. All equipment will be removed from the study area.

Due to project work occurring within previously disturbed areas, minimal amount of surface disturbance at each location, temporary timeframe, and the implementation of the above siting and installation protocols, DOE determined that there would be no historic properties affected by the survey activities. In compliance with 36 CFR Part 800.4(d)(1), DOE requested concurrence with this determination from the SHPD in a letter submitted on April 13, 2016. Although both email and phone calls were exchanged with the SHPD to aid in their review, no correspondence was received from the SHPD within 45 days of their receipt of the DOE determination letter. In accord with 36 CFR Part 800.4(d)(1)(i), DOE, having received no objections from the SHPD, has fulfilled the agency's responsibilities under Section 106 of the National Historic Preservation Act.

Based on review of the project information and the above analysis, DOE has determined that Subtasks 10.1, 10.3, and 10.4 would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined the activities associated with these tasks are consistent with actions contained in DOE categorical exclusion A9 "information gathering, analysis and dissemination," and B3.1 "Site Characterization" and is 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/NSA providing either a NEPA clearance or a final NEPA decision regarding the project.

Prohibited actions include:

Subtask 10.2: MT/AMT and gravity data acquisition on Haleakala volcano (Maui)

This restriction does not preclude you from:

All BP2 tasks and Subtasks other than Subtask 10.2

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:

- 1. An archaeological monitor will be onsite during all siting and excavation activities of test unit locations;
- 2. If cultural deposits are observed on the surface, the test unit location will be moved away from that site;
- 3. If cultural material is observed while digging occurs, a record of the material and location will be recorded and reported to Pūlama Lāna'i for action with the Hawaii State Historic Preservation Division (SHPD); and
- 4. All equipment will be removed from the study area.

Note to Specialist :

Geothermal Technologies Office

This NEPA determination requires a tailored NEPA provision. Please see above.

Casey Strickland 05/31/16

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____



Kristin Kerwin

NEPA Compliance Officer

Date: 6/2/2016

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: _____