

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** University of Hawaii Manoa**STATE:** HI

PROJECT TITLE: Comprehensive analysis of Hawaii's geothermal potential through Play Fairway integration of geophysical, geochemical, and geological data

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000841	DE-EE0006729	GFO-0006729-006	GO6729

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

CX, EA, EIS APPENDIX AND NUMBER:

Description:

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 at Manoa 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. Previous NEPA Determinations (GFO-FOA0000841-001 and GFO-0006729-002 through 005) reviewed Budget Periods (BP) 1, 2 and a few tasks in BP3 of the project. Activities in Task 22 are independent of and have scientific utility separate from the planned drilling on Lanai, therefore DOE is reviewing this task separately within this NEPA determination. All remaining BP3 tasks will require further NEPA review.

Task 22 activities include the collection of groundwater samples from around the State and performance of magnetotelluric (MT) geophysics at two locations in the State that, previously in Phase 2 of the project, showed positive indication of a subsurface resource (East Rift Haleakala on Maui Island and Kauai Island). Water sampling would occur at existing wells and would not require any surface disturbance. MT geophysics would require two (in some cases, three) 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 four holes approximately 6 inches deep or less and 4 inches in diameter in which small electrode units would be placed. The electrodes would be connected to the antennae by wire, and the wiring and data logger would be above ground and contained in a plastic container. The dipole lengths would be adjusted to maintain fit within the current existing disturbance. The stations would occupy

the sites for less than 72 hours, then all equipment would be removed from the study area, and all holes would be filled in upon completion of the measurements. The MT sites would be installed completely within areas of existing disturbance. Although no historic resources are expected due to the disturbed nature of the installation sites, DOE will require the following as part of best management practices for the project: If during the installation of field equipment cultural or archeological artifacts are encountered, the recipient must stop the site installation immediately and inform the DOE Project Officer of the finding. The affected installation must be relocated to another nearby site. All landowner permissions would be obtained prior to beginning any field work activities. Based on the nature of the project activities and all work occurring within existing disturbance, DOE does not anticipate any impacts to resources of concern due to the proposed activities of the project.

NEPA PROVISION

DOE has made a conditional NEPA determination.

The NEPA Determination applies to the following Topic Areas, Budget Periods, and/or tasks:

[Task 22: Geophysical and Groundwater Data Collection](#)

The NEPA Determination does not apply to the following Topic Area, Budget Periods, and/or tasks:

[Task 17: Ship UH drill rig and ship/purchase preliminary supplies to Lanai](#)

[Task 18: Install temporary casing in Lanai Well 10](#)

[Task 19: Deepening of Lanai Well 10. Collection of core and fluids](#)

[Task 20: Downhole Geophysics on Lanai Well 10](#)

[Task 21: Analyses and Archiving of Drill Core](#)

[Task 23: Refine and improve Play Fairway BP2 probability and confidence models](#)

[Task 24: Integration of Results into improved Conceptual Model of Lanai's Geothermal Resource, and updated Phase 3 probability and confidence maps](#)

Include the following condition in the financial assistance agreement:

If during the installation of field equipment cultural or archeological artifacts are encountered, the recipient must stop the site installation immediately and inform the DOE Project Officer of the finding. The affected installation must be relocated to another nearby site.

Notes:

[Geothermal Technologies Office](#)

[This NEPA determination requires a tailored NEPA provision.](#)

FOR CATEGORICAL EXCLUSION DETERMINATIONS

The proposed action (or the part of the proposal defined in the Rationale above) fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D. To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.

There are no extraordinary circumstances related to the proposed action that may affect the significance of the environmental effects of the proposal.

The proposed action has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)), and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

A portion of the proposed action is categorically excluded from further NEPA review. The NEPA Provision identifies Topic Areas, Budget Periods, tasks, and/or subtasks that are subject to additional NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:  _____
NEPA Compliance Officer

Date: 1/17/2019

FIELD OFFICE MANAGER DETERMINATION

- Field Office Manager review not required
- Field Office Manager review required

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

Field Office Manager's Signature: _____
Field Office Manager

Date: _____