

PMC-ND  
(1.08.09.13)

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

**RECIPIENT:** Texas A&M University**STATE:** TX

**PROJECT TITLE:** Changing the Way Geothermal Wells Are Drilled: Physics-Based Drilling Parameter Selection, Workflow Implementation and Training in Order to Reduce Non-Productive Time and Increase ROP

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-0001880	DE-EE0008794	GFO-0008794-001	GO8794

**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:

**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.)

**A11 Technical advice and assistance to organizations** Technical advice and planning assistance to international, national, state, and local organizations.

**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 funding to Texas A&M University (Texas A&M) to develop a training course that would seek to address site-specific performance limiters that result in inefficiencies and non-drilling time. Training sessions would be held for drilling personnel at a number of existing drill sites throughout the United States. Workflow solutions would then be implemented on-site and results would be documented with regards to the program's impacts on lost circulation, rate of penetration, and the lack of efficient/consistent drilling programs. The project would be completed over two Budget Periods (BPs), with a Go/No-Go Decision Point in between each BP.

Proposed project activities during BP1 would consist of development of the training course and materials, characterization of performance limiters throughout the drilling process, data collection/analysis, provision of classroom training, and the completion of field trials of solutions developed in classroom. Proposed BP2 activities would center on the development of a physics-based drilling program/workflow and final reporting.

Texas A&M would lead the project and would be responsible for development of the training course, data gathering, and advising drilling personnel on operational, engineering, and workflow changes that could be implemented at the selected worksites. Field trials of the solutions developed as part of the program would be implemented by the drilling operators and drilling contractors that operate at the selected sites. No physical, hands-on activities (e.g. drilling activities) would be performed by Texas A&M personnel. Routine drilling operations would continue to be performed by the drilling operators/contractors. These entities' roles would not change as a result of the project.

Site identification and preliminary selection of wells would take place in the first 6-12 months of the project. Texas A&M would impart the training course to personnel at approximately 2-4 separate drilling rigs. Drilling sites would be selected within the continental United States, with the most likely candidates being located in western states (E.g. Arizona, Nevada, Utah, and California).

Data collection activities would include the collection of downhole data, which would be achieved via the use of tools run in conjunction with the drilling assembly. These tools would be installed in-line with the rest of the drilling assembly. Open-hole logging operations may also be performed on select wells. This would involve running a dedicated string of tools into the well to measure rock and wellbore properties. All data collection activities involving physical measurements of drilling holes would be performed on holes that have already been drilled, regardless of the project. No drilling would be performed as a result of DOE funding.

All entities with which Texas A&M would partner on this activity have established health and safety procedures for drilling operations. Personnel would adhere to all existing safety protocols when taking open-hole measurements. Some open-hole logging tools involve a radioactive source. This is a shielded source that would be handled by trained and licensed personnel. These tools are industry-standard and frequently used during drilling operations. Texas A&M and its project partners would adhere to all applicable Federal, state, and local health, safety, and environmental regulations.

## NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Geothermal Technologies Office

This NEPA determination does not require a tailored NEPA Provision.

NEPA review completed by Jonathan Hartman, 07/12/2019

## 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.

The proposed action is categorically excluded from further NEPA review.

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

NEPA Compliance Officer Signature: \_\_\_\_\_



Signed By: [Casey Strickland](#)

NEPA Compliance Officer

Date: 7/15/2019

**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: \_\_\_\_\_