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 (1.08.09.13)

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



RECIPIENT: Cornell University

STATE: NY

PROJECT TITLE : A reactive tracer method for predicting EGS reservoir geometry and thermal lifetime: development and field validation

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000842	DE-EE0006764	GFO-0006764-001	

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 funding to Cornell University to develop a new tracer data inversion method, apply the new method to existing tracer data, update reservoir simulation models, and then develop recommendations for geothermal operators in order to develop a more standardized procedure for tracer testing at working geothermal fields.

The proposed project activities would be divided into two phases. Phase I activities would consist of computer modeling of tracer data, laboratory testing of chemical tracers, data analysis and field testing to validate the computer models. Phase II - Task 1 activities would consist of computer modeling and is included in this NEPA determination. Field testing in Phase I would occur at the William Miner Experimental Forest, Altona, NY for a duration of 15 to 20 days. Field testing activities would include injection of one kilogram of non-hazardous chemical tracers per 1,000 liters of hot water and discharge of the diluted solution into the target reservoir eight meters below ground surface adjacent to the well field. The wells that would be involved in this project are pre-existing Class V experimental wells. Following standard operating procedures at Altona, Cornell would obtain a written notice From the New York State Department of Environmental Conservation stating that the tracers used at the Altona site must be environmentally benign and non-hazardous to human health; therefore, a permit for field testing activities would not be required. There would be a temporary and minor increase in groundwater fluid salinity within the study area; however, the water source can be qualified as an "exempted aquifer" under 40 CFR 146.4 so no negative effects to drinking water are expected as a result of the proposed project. While the field testing activities in Phase II would be the same as those in Phase I, the

site location is currently unknown; therefore, Phase II - Tasks 2, 3, and 4 activities are prohibited until further NEPA review of the site location has been conducted. Existing Cornell University Environmental Health & Safety policies and procedures would be followed including employee training, use of personal protection equipment (PPE), engineering controls, monitoring, and internal assessments.

Based on review of the project information and the above analysis, DOE has determined the proposed project would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined that this project is consistent with actions outlined in DOE categorical exclusion A9 "information gathering" and B3.1 "site characterization" and is therefore 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:

Phase II-Task 2-4 activities

This restriction does not preclude you from:

All Phase I activities and Phase II-Task 1 activities

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.

Note to Specialist :

Review completed by Logan Sholar on 09/09/14.

This NEPA Determination requires a tailored NEPA provision.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:  Date: 9/11/2014
NEPA Compliance Officer

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: _____ Date: _____
Field Office Manager