

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



RECIPIENT: NREL

STATE: CO

PROJECT TITLE : NREL-24-001 Install of a test vertical borehole ground heat exchangers at West Point and Detroit Arsenal

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
	DE-AC36-08GO28308	NREL-24-001	GO28308

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:

**A11 Technical advice and assistance to organizations**

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

**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's (DOE) National Renewable Energy Laboratory (NREL) is proposing to provide technical assistance to the Federal Geothermal Partnerships Initiative (FedGeo). The purpose of FedGeo is to assist the Department of Defense (DOD) expand the deployment of geothermal heating and cooling technology at its sites. For the proposed project, NREL would assist in investigating two DOD locations, the U.S. Army Garrison Detroit Arsenal in Warren, Michigan and the U.S. Military Academy in West Point, New York.

**PROJECT DESCRIPTION**

The proposed project involves several partners that would be led by Oak Ridge National Laboratory. The other partners are: NREL, Lawrence Berkeley National Laboratory, Pacific Northwest National Laboratory, Oklahoma State University, University of Wisconsin-Madison, the Illinois State Geological Survey, and the International Ground Source Heat Pump Association (IGSHPA). NREL would co-lead the proposed project and provide data analysis, resource characterization, and geothermal heat pump system design support.

At the two DOD sites, vertical borehole heat exchangers would be installed to collect resource data. One vertical borehole heat exchanger would be installed at Detroit Arsenal and two would be installed at separate locations at West Point.

The vertical borehole heat exchangers would be installed by a subcontractor. A sonic drill rig would drill a 5-inch diameter core up to approximately 500 feet in depth. Next, a one and one quarter inch nominal size u-bend pipe would be equipped with temperature measurement instrumentation and inserted to the full depth of the borehole. The borehole would then be backfilled with a bentonite-sand mixture to prevent water intrusion and water would be circulated in the u-bend pipe. Thermal response tests would be conducted over an approximately 5-day period.

Additionally, continuous core samples of the subsurface material at Detroit Arsenal would be collected, measuring approximately 2 inches in diameter. The resulting holes would be backfilled.

#### PROJECT DURATION AND CONCLUSION

Work would begin in the winter of 2023. The ground heat exchangers would be deployed for the duration of testing, approximately 5 days, and then removed. The boreholes would remain in place after the project and preserved for future use.

#### THREATENED AND ENDANGERED SPECIES

The USFWS's iPaC tool was used to determine if any threatened and endangered species are present at either location. At the Detroit Arsenal, there are seven (7) endangered species, one (1) eagle, and seven (7) migratory birds. There is no critical habitat at this location. At West Point, there are four (4) endangered species, two (2) eagles, and fifteen (15) migratory birds. There is no critical habitat at this location.

The boreholes to be installed at both locations would have any impacts to the above species. All work would be performed in areas that are developed and underground. For this reason, DOE has determined that the proposed project would have no effect on threatened and endangered species at either location.

#### ADDITIONAL IMPACTS

Air emissions resulting from vehicles and equipment operation would be de minimis. Noise would be emitted during drilling, but the noise would be temporary and would not impact sensitive receptors. Each of the three boreholes would produce 2.5 cubic yards of subsurface drill cutting waste that would be disposed offsite.

Individuals working on this project could be exposed to physical hazards. Existing corporate health and safety policies and procedures would be followed including employee training, proper protective equipment, engineering controls, and monitoring. Additional policies and procedures would be implemented as necessary if new health and safety risks are identified.

#### NEPA PROVISION

DOE has made a final NEPA determination.

Include the following condition in the financial assistance agreement:

All required permissions shall be obtained prior to commencing project activities.

Notes:

NREL  
Nicole Serio, 11/13/2023

#### 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.

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

NEPA Compliance Officer Signature:  \_\_\_\_\_ Date: 11/13/2023  
NEPA Compliance Officer

**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: \_\_\_\_\_ Date: \_\_\_\_\_  
Field Office Manager