PMC-EF2a

(2.04.02)

# U.S. DEPARTMENT OF ENERGY
## EERE PROJECT MANAGEMENT CENTER
## NEPA DETERMINATION

**RECIPIENT:** Tennessee Department of Education **STATE:** TN

**PROJECT TITLE :** Recovery Act: Tennessee Energy Efficient Schools Initiative Ground Source Heat Pump Program

| Funding Opportunity Announcement Number | Procurement Instrument Number | NEPA Control Number | CID Number |
|---|---|---|---|
| | DE-EE0003007 | GFO-0003007-004 | GO3007 |

**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.) |
| **B2.1 Workplace enhancements** | Modifications within or contiguous to an existing structure, in a previously disturbed or developed area, to enhance workplace habitability (including, but not limited to, installation or improvements to lighting, radiation shielding, or heating/ventilating/air conditioning and its instrumentation, and noise reduction). |
| **B5.19 Ground source heat pumps** | The installation, modification, operation, and removal of commercially available smallscale ground source heat pumps to support operations in single facilities (such as a school or community center) or contiguous facilities (such as an office complex) (1) only where (a) major associated activities (such as drilling and discharge) are regulated, and (b) appropriate leakage and contaminant control measures would be in place (including for cross-contamination between aquifers); (2) that would not have the potential to cause significant changes in subsurface temperature; and (3) would be located within a previously disturbed or developed area. Covered actions would be in accordance with applicable requirements (such as local land use and zoning requirements) in the proposed project area and would incorporate appropriate control technologies and best management practices. |

Rational for determination:

Tennessee Energy Efficient Schools Initiative Ground Source Heat Pump (GSHP) Program proposes to install a series of GSHPs which would service up to five schools. Five schools were selected for participation (Brainerd High School, South Lawrence Elementary, Lawrence Public High School, Bolivar High School, and Middleton High School). Phase 1 for Brainerd, South Lawrence, Lawrence Public, and Bolivar was approved by GFO-10-294 on March 23, 2010. Phase 2 and 3 for two of the five schools (South Lawrence and Lawrence Public) were approved by GFO-0003007-002 on June 28, 2011. Phase 1 for Middleton High School as well as Phase 2 and 3 for Bolivar Central High School were approved by GFO-0003007-003 on September 21, 2011. This NEPA determination is specific to Phase 2 and 3 for Brainerd High School only.

Brainerd High School

Phase 2 includes the installation and commissioning of a 492.75 ton complete GSHP system in the existing 136,436 square foot single story Brainerd High School building located at 1020 North Moore Road in Chattanooga, TN 37411. The central cooling and heating system would be replaced with a distributed geothermal/hybrid heat pump system which would include the installation of boreholes for the closed-loop vertical geothermal system, cooling tower, gas fired unit heaters, direct digital controls, interior loop piping or other equipment required based on the Phase 1 feasibility study that was completed for the GSHP operating system. The closed-loop system would utilize municipal water with propylene glycol added as an antifreeze solution (20% ratio). There are no sole source aquifers or known water wells in the project area and no aquifers were encountered during the test borehole drilling.

Drilling of the borefield (126 boreholes, 25 foot spacing, to a depth of 500 feet) would occur within a previously disturbed area. The total area of the borefield is anticipated to be 88,000 square feet. Installation of the boreholes would be in accordance with IGSHPA and National Ground Water Association recommendations for closed-loop systems. All of the boreholes would be cased with thermally-enhanced bentonite grout. System leak detection would be provided by the monitoring of make-up water usage. The selected installer would be a State licensed and/or certified geothermal service contractor. The site is located within a 500-year floodplain but 500-year floodplains are unregulated by FEMA. Additionally, the installation of a GSHP system is not considered a critical action as defined in 10 CFR Part 1022; therefore no floodplain assessment is needed. There are no wetlands in the project area. Once the

installation is completed (borefield and trenching), the site would be restored to previous grade and the area would be reseeded after construction.

Phase 3 consists of data collection and project reporting.

Funds associated with Phase 2 and Phase 3: $1,411,798 (DOE); $2,708,202 (cost share)

The remaining phases of this project are composed of information gathering, analysis, and dissemination; workplace enhancement; and ground source heat pumps; therefore the DOE has categorized this proposal into Categorical Exclusions A9, B2.1, and B5.19.

**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 2 and Phase 3 for Middleton High School
This restriction does not preclude you from:
Phase 2 and Phase 3 for Brainerd High School
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 :

EF2a prepared by Casey Strickland

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

NEPA Compliance Officer Signature: _____ Date: 5/15/2012
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