

PMC-EF2a

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



(2.04.02)

RECIPIENT: Denver Museum of Nature &amp; Science

STATE: CO

PROJECT TITLE : DMNS ECF GSHP Demonstration Project

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-EE0000116	DE-EE0002815	GFO-0002815-003	

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.)
- B2.2 Building and equipment instrumentation** Installation of, or improvements to, building and equipment instrumentation (including, but not limited to, remote control panels, remote monitoring capability, alarm and surveillance systems, control systems to provide automatic shutdown, fire detection and protection systems, water consumption monitors and flow control systems, announcement and emergency warning systems, criticality and radiation monitors and alarms, and safeguards and security equipment).
- 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:**

The Denver Museum of Nature & Science (DMNS) proposes to design and implement a ground source heat pump (GSHP) system in the new Education and Collection Facility (ECF) currently being built at the Museum. DMNS is proposing to install a commercial scale (225 tons) GSHP system that would provide HVAC (heating/cooling) for the proposed 126,000 square foot ECF addition to the Museum located at 2001 Colorado Boulevard in Denver, Colorado. Additionally the project is intended to be a demonstration site for promoting the use of GSHP technology in commercial-scale heating/cooling applications. An outreach and project awareness program would be implemented once the project is operational, which would include the delivery of power consumption data to DOE and industry databases.

DMNS was issued a NEPA determination for Phase 1 activities by GFO-10-074 on December 23, 2009 for Feasibility and Engineering Design. This NEPA determination applies to Phase 2 and Phase 3 activities.

Details of tasks within each Phase can be found in the Statement of Project Objectives.

Phase 2: Purchase and Installation of Equipment

Phase 3: Operation, Data Collection, and Marketing

GSHP system components would be installed in the new ECF addition and water for the open loop system would be obtained from a new water line that Denver Water (DW) plans to construct. DW operates a large recycled (non-potable) water system within the Denver metro area, including City Park where the Museum is located. As part of a planned system upgrade, separate from the DMNS project, DW is planning to reconfigure it's recycle water delivery to the City Park irrigation system. In 2012 DW is planning to re-route its recycled water deliveries into City Park from an existing DW conduit located north of DMNS (along 23rd Avenue), bringing a new 6-8" line south to Ferrill Lake, the smaller of the two lakes. DMNS plans to access recycled water from this new line running north-south approx 220 feet west of the new ECF addition for the GSHP system. DMNS would discharge water back into the DW recycled water main downstream from the intake point and ensure that its discharge stream meets DW guidelines. Connection of the

DMNS ECF GSHP project to the DW recycled water main would require two sections of trenching for installation of an 8" PVC line, each approximately 100 feet long. Each trench would be four to ten feet deep with a width of two to four feet. Once the PVC line is installed, the trenches would be filled in and the area restored to its previous condition using either bluegrass or another candidate chosen by Denver Parks. The total time anticipated for construction activities for the connection is two days.

A review of existing information was conducted to identify any known historic resources that may be affected by the proposed undertaking. The proposed project would occur within the National Register-listed City Park Historic District (CPHD) to which the Museum building itself is listed as a non-contributing element.

Due to the minimal amount of surface disturbance (0.009 to 0.018 acres) within a temporary timeframe (two days) with all disturbed areas to be restored to their previous condition, DOE determined that there would be no adverse effect to the CPHD by the proposed project pursuant to Section 106 of the National Historic Preservation Act and 36 CFR Part 800. In compliance with 36 CFR Part 800.4(d)(1), the DOE asked the Colorado State Historic Preservation Officer (SHPO) for concurrence with this finding. SHPO concurred with the finding of no adverse effect in a letter dated February 17, 2012.

Phase 2 funds: \$2,275,031 DOE; \$2,314,742 Recipient; \$4,589,773 total  
Phase 3 funds: \$151,663 DOE; \$47,549 Recipient; \$199,212 total

Remaining project activities (Phase 2 and Phase 3) are composed of information gathering, data analysis, and document preparation; building and equipment instrumentation; and ground source heat pumps; therefore the DOE has categorized this proposal into Categorical Exclusions A9, B2.2, and B5.19.

**NEPA PROVISION**

DOE has made a final NEPA determination for this award

Insert the following language in the award:

Note to Specialist :

EF2a prepared by Casey Strickland

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

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

*Kusini Ke*  
NEPA Compliance Officer

Date: \_\_\_\_\_

*3/13/2012*

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

Field Office Manager

Date: \_\_\_\_\_