

PMC-EF2a

(2.04.02)

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



RECIPIENT: Magma Energy (U.S.) Corp

STATE: NV

PROJECT TITLE : Recovery Act: Application of a New Structural Model and Exploration Technologies to Define a Blind Geothermal System: A Viable Alternative to Grid-Drilling for Geothermal Exploration: McCoy, Churchill County, NV

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
0000109	DE-EE0002831	GFO-10-202-001	0

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:

- B3.1** Onsite and offsite site characterization and environmental monitoring, including siting, construction (or modification), operation, and dismantlement or closing (abandonment) 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. Activities covered include, but are not limited to, site characterization and environmental monitoring under CERCLA and RCRA. Specific activities include, but are not limited to:
- A9** Information gathering (including, but not limited to, literature surveys, inventories, audits), data analysis (including computer modeling), document preparation (such as conceptual design or feasibility studies, analytical energy supply and demand studies), and dissemination (including, but not limited to, document mailings, publication, and distribution; and classroom training and informational programs), but not including site characterization or environmental monitoring.

Rational for determination:

Magma Energy (U.S.) Corporation (Magma) would demonstrate the potential geothermal resource at the McCoy geothermal area in Churchill County, Nevada. This project was previously approved with GFO-10-202 on March 29, 2010 with a CX A9 and B3.1. However, an additional task (1.2 soil tests) was added to the project, therefore another NEPA review was needed. In Phase I (exploration geophysics), Magma would collect and interpret resistivity data from both Magnetotelluric (MT) and Controlled-Source Audio-Magnetotelluric (CSAMT) electrical surveys, and conduct detailed geologic mapping. Once collected, data would be integrated into MEC's geographic information system (GIS). This data would be used by Magma to target the thermal gradient and production wells to be drilled in Phase II. This analysis is Phase I only. The project would be divided into Phase I with multiple tasks:

Phase I – Resource Evaluation and Pre-Drilling Activities

Task 1.0 Pre-Drilling Activities and Geophysical Surveys

Prior to drilling activities, Magma would complete reconnaissance geological mapping, and CSAMT and MT surveys. New data along with the previously acquired geologic data would provide a database for testing and refining the dike-buttress structural model proposed for McCoy geothermal area. This data would be the basis for site selection for the deep, angle thermal gradient wells and production-capable, reservoir tests.

Subtask 1.1 Permitting –Geophysical surveys: Magma submitted a Notice of Intent (which was withdrawn by Magma March 2010) with the Bureau of Land Management (BLM) Stillwater Field Office to conduct exploration activities at the McCoy geothermal area in August 2009, followed by a BLM Environmental Assessment (EA) application. Magma believes Phase I activities are considered casual use by BLM.

Subtask 1.2 Acquisition and Analysis of Soil Gas data: Variations in soil gas compositions, including concentrations of sulfur gases, CO₂, organic compounds, and mercury, help characterize discriminating zones of thermal upflow from areas of shallow thermal outflow.

Subtask 1.3 Reconnaissance Geological Mapping: Ten days of field investigations and regional syntheses are planned to evaluate and interpret the results of detailed mapping of the McCoy geothermal area (Adams, 1982) in terms of modern tectonics and evolution of Quaternary Basin and Range structure. The objective is to identify potential structural and formational hosts for geothermal reservoirs at depth.

Sample locations would be accessed by 1/2 ton pick-up truck, ATV or by foot, depending upon the length of the traverse, topography and access to existing roads. At each sample location, a one-meter soil probe would be hammered into the ground to allow a 10 ml gas sample to be withdrawn using a glass and Teflon gas-tight syringe.

Sampling locations would be identified by GPS and weather conditions with temperature, atmospheric pressure, and wind speed recorded at each location.

Syringes would be placed in a small cooler immediately after soil gas collection to minimize temperature variations between sampling and analysis that result in gas pressure changes (per $PV = nRT$) that could potentially compromise syringe integrity. Multi-gas geochemistry is characterized by ICP-MS within 24 hours of collection.

Subtask 1.4 Electrical Survey(s): Magma would contract CSAMT and MT surveys to improve understanding of the linkage between shallow and deep electrically resistive-low anomalies and identify deep thermal targets. The CSAMT (100 meter continuous electric dipoles) and MT (30 stations) surveys would cover four 6 km east-west lines across the northern and southern thermal anomaly areas totaling 24 line-km.

Subtask 1.5 Data Integration: The data obtained from the preceding tasks would be integrated together in the Magma Geographic Information System (GIS) to facilitate visualization of interrelationships among the data and build conceptual geologic and/or geothermal reservoir models and define drilling targets.

Subtask 1.6 Review Meeting: The stakeholders in the project would meet to review the results from the previous work phase and proceed going forward.

Phase II and III are not Categorical Excludable since the geothermal well locations have not been identified and therefore cannot be analyzed at this time.

Phase II – Drilling

Phase III – Well Testing and Assessment

According to Magma, safety protocols are in place for the proposed work by a Health and Safety officer that meet or exceed state and federal requirements.

At this time, the locations of drilling the geothermal wells have not been identified, and therefore cannot be analyzed. Therefore, Phase II and III are not authorized. Phase II and III would be analyzed once the locations of the geothermal wells are identified and submitted to the DOE.

Condition of Approval: Allowable: Phase I contingent upon Bureau of Land Management Notice of Intent review and concurrence; Prohibited: Phase II and III. This proposal comprises research, data analysis, and onsite characterization actions to promote the research and development of geothermal resources; therefore this project is categorized as CX A9 and B3.1.

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 effect on the environment or limit the choice of reasonable alternatives prior to DOE/NSA providing either a NEPA clearance or a final NEPA decision regarding the project.

Prohibited actions include:

Phase II and III

This restriction does not preclude you from:

Phase I contingent upon Bureau of Land Management Notice of Intent and concurrence

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 :

Phase I contingent upon Bureau of Land Management Notice of Intent review and concurrence

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____

NEPA Compliance Officer

Date: _____