

PMC-ND

(1.08.09.13)

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



RECIPIENT: Pagosa Verde LLC

STATE: CO

PROJECT TITLE : Recovery Act: Direct Confirmation of Commercial Geothermal Resources in Colorado using Remote Sensing and On-Site Exploration, Testing and Analysis

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
	DE-EE0002828	GFO-0002828-004	GO2828

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 Pagosa Verde LLC (Pagosa) to collect and compile geothermal resource data and analyses of an exploration area at Pagosa Springs, Colorado in anticipation of developing a geothermal resource. This award (DE-EE0002828) was transferred from Flint Geothermal LLC (Flint) to Pagosa as an award novation. Two previous NEPA Determinations (GFO-0002828-001 and -002) were completed in 2010 and 2011 for the project when it was with Flint Geothermal (now listed in the uploaded SOPO as Phase I A). A third NEPA Determination was completed on June 11, 2014 (GFO-0002828-003) for Pagosa's activities in Phase I B and Phase III. Phase II activities include fieldwork such as temperature gradient (TG) well drilling and geophysical testing followed by exploration well drilling (if TG data indicates a useable resource). There is a Go/No Go decision point after Phase II Task 3 (Temperature Gradient Wells and geophysical testing) and Phase II Tasks 4 through 7 for further exploration activities. This NEPA Determination is specific to TG well drilling and associated activities found in Phase II Task 3. Further NEPA review will be required for the remainder of Phase II if the TG wells indicate further exploration well drilling is needed and those exploration wells are sited.

As part of Phase II Task 3, Pagosa Verde is proposing to drill six TG wells ranging from depths of 1,000 to 2,000 feet, perform geophysical testing, and compile/analyze data to test the geothermal capabilities of an area near Pagosa Springs, Colorado. The geophysical testing and data compilation/analyses are comparable to the same activities reviewed as part of Phase I B in the previous NEPA Determination. The proposed project area is located approximately 1.5 miles southwest of the intersection of U.S. Highway 160 and U.S. Highway 84 in Archuleta County,

Colorado. The TG drill rig would be track mounted and capable of cross country travel. Access to the drill sites would be mainly by existing roads, but some cross-country travel would be required. A temporary use area (TUA) of 100 feet by 100 feet would be established around each TG well that would be used for laydown, drill cutting collection, and water catchment. A small 10 by 10 foot area may be used for grading and gravel fill to level the site for safe drilling at some of the locations if needed. Cross country access routes and TUAs were developed with the help of the United States Fish and Wildlife Service (USFWS) to avoid and provide a buffer to known endangered species locations. Drilling best management practices would be followed by the driller and all required State permits would be acquired prior to beginning work. Pagosa and its subcontractors would also follow all of the specific design criteria and avoidance measures that were developed as part of a required Biological Assessment (BA) to protect the endangered Pagosa skyrocket that occurs in the area (see below). Two of the proposed drill locations (1A and 4) occur near wetlands but proposed access routes and activities have been designed to use existing roadways and avoid any new disturbance within wetland areas. Proposed activities would have minimal to no effect on the wetland areas. No other resources of concern beyond those discussed below were found during the NEPA review. Specific details of the project locations, TG drilling program, design criteria, and avoidance measures can be found in the uploaded SOPO and BA (see uploaded documents pv sopo sent 5-14-14_no markup.doc and BA_BR_Pagosa_Verde_TGWells_Final_20140909_reduced.pdf).

A Class I cultural resource review was completed (see uploaded document Pagosa Verde Class I CRR.pdf) and found that at least seven previous cultural resource inventories, encompassing over 180 acres, had been conducted within 0.25 miles of the project area. Even with the significant amount of past cultural resource inventory in the vicinity of the proposed project only one cultural resource site has been recorded within one-quarter mile of the proposed project. That site has been officially assessed as non-significant and is not eligible for listing on the National Register of Historic Places. Based on the small amount of ground disturbance associated with a few of the well sites (10 by 10 feet), all drill sites being located within or adjacent to irrigated pastureland and roadways, and the findings of the Class I cultural resource review, DOE has determined that the proposed TG well drilling has "no potential to cause effects" on historic properties.

According to the USFWS, there are 11 species listed as threatened, endangered, candidate, or proposed with potential to occur in Archuleta County, Colorado. Of these 11 species, nine were assigned a "no effect" or equivalent determination due to the lack of suitable habitat in the proposed project area or the lack of project impacts to potential habitat in the area. The proposed project area for Phase II activities does contain habitat for both the endangered Pagosa skyrocket and the proposed endangered New Mexico Meadow Jumping Mouse. A survey and BA was completed (see uploaded document BA_BR_Pagosa_Verde_TGWells_Final_20140909_reduced.pdf) to determine if these species are present and if so to determine their extent. Based on the BA, DOE has determined that the proposed TG well drilling activities may affect, but are not likely to adversely affect the Pagosa skyrocket and its designated critical habitat, not likely to adversely affect the New Mexico Meadow Jumping Mouse, and not likely to adversely modify proposed critical habitat for the New Mexico Meadow Jumping Mouse. In a letter dated October 1, 2014, USFWS concurred with this determination (see uploaded document USFWS Concurrence Letter_TG drilling.pdf). The USFWS concurrence is based on the design criteria and avoidance measures developed by Ecosphere Environmental Services and described in the BA, section 7, pages 31 and 32 (see uploaded document). The information gained from the TG wells may be used to site and plan future geothermal exploration and confirmation wells in the area. If this occurs, further consultation with USFWS would be initiated at that time.

Based on review of the project information, DOE has determined that Phase II Task 3 would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined that Phase II Task 3 activities are consistent with actions contained in DOE categorical exclusions A9 "Information gathering, analysis, and dissemination," and B3.1 "Site characterization and environmental monitoring," and are 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 4 - Exploration Well Site Preparation and Mobilization

Task 5 - Exploration Well Drilling

Task 6 - Geological Data Collection and Evaluation

Task 7 - Site Reclamation / Stabilization (Plug and Abandon if Required)

This restriction does not preclude you from:

Phase II

Task 3 - Temperature Gradient Wells and Geophysical testing

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.

Insert the following language in the award:

You are required to:

Follow all design criteria and avoidance measures developed by Ecosphere Environmental Services and described in the Biological Assessment, section 7, pages 31 and 32

Note to Specialist :

Geothermal Technologies Office

This NEPA Determination requires a tailored NEPA provision.

NEPA review completed by Casey Strickland on 10/8/2014

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____



Electronically
Signed By: Lori Gray
NEPA Compliance Officer

Lori Gray

Date: 10/8/2014

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: _____