PMC-EF2a
(2/16/02)

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

RECIPIENT: Ram Power, Inc. **STATE:** CA

PROJECT TITLE : New River Geothermal Research Project

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000109	DE-EE0002843	GFO-0002843-002	GO2843

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:

B3.7 Siting, construction, and operation of new infill exploratory and experimental (test) oil, gas, and geothermal wells, which are to be drilled in a geological formation that has existing operating wells.

Rational for determination:

DOE is proposing to provide federal funding to Ram Power, Inc. (Ram Power) to further develop and demonstrate geothermal resources with two new exploratory geothermal wells (one at the existing New River Geothermal Field and the other at the existing Keystone Geothermal System in Imperial County, California). Cumulatively, Ram Power plans to drill a total of eleven geothermal wells; five at the existing New River Geothermal Field, and six at the existing Keystone Geothermal Field. Two of the eleven wells would use federal funding. However, Ram Power has not identified which two wells would use the federal funding, therefore this analysis is for all eleven wells.

A previous NEPA determination GFO-10-360, signed on 4/20/2010, reviewed and approved Phase I tasks and Phase III tasks 2 and 3. Phase I consisted of data review and collection, geological/geophysical surveys (seismic, gravity, dipole) geological modeling and drilling permits. Phase III task 2 consisted of report writing and task 3 consisted of project management and reporting.

This NEPA determination applies to drilling eleven geothermal wells, down-hole sampling, logging, and flow testing the wells (Phase II tasks and task 1 of Phase III). Project activities would include the improvement, as necessary of required access roads; construction of well pads; the drilling (and re-entry or work-over, as necessary) of a geothermal resource exploration well; the flow-testing of each drilled well into portable storage tanks and/or other project geothermal wells; the continued monitoring of well pressure and other data in each well following the completion of drilling and flow-testing; and well site reclamation and well abandonment.

The New River Geothermal Field is located on approximately 902.6 acres of private lands, three miles southwest of the city of Brawley, in Imperial County, California. The proposed well sites are located in an agricultural area (approximately 16 acres total) under geothermal lease with Ram Power. The disturbed lands would be returned to agricultural use once the exploratory wells were abandoned, and the well pads reclaimed or left per landowner's request. Existing farm access roads would be utilized to access the five proposed well sites. The access roads would be maintained as needed to safely accommodate the traffic required for construction and drilling activities and to reduce fugitive dust. No new crossings of irrigation laterals or drains are proposed.

The Keystone Geothermal System is located on approximately four miles south of the city of Brawley, in Imperial County California. The private lands are under geothermal lease with Ram Power. Existing county roads would be utilized to access the six proposed well sites. The proposed well pads are located in formerly agricultural areas and fallowed lands. The disturbed lands would be returned to agricultural use once the exploratory wells were abandoned and the well pads reclaimed or left per landowner's request.

A California Environmental Quality Act (CEQA) review has been conducted for each proposed well site by the Imperial

County of California. In addition, Imperial County completed a State Environmental Review using their Environmental Checklist Form and prepared a Negative Declaration determination for both project sites. A Conditional Use Permit (CUP) has been obtained for each project site (New River Geothermal CUP #G 10-0001 dated 6/26/2010) (Keystone Geothermal System CUP #G 10-0003 dated 9/10/2010).

None of the proposed exploration sites are located within a 100-year flood plain per Federal Emergency Management Agency records. No Project activities would impede or redirect flood flows. As such, the Project has no potential to place structures within a 100-year flood hazard area that would impede or redirect flood flows. None of the proposed well sites or access roads would be located on wetland areas as defined by Section 404 of the Clean Water Act. Therefore, the Project would not have an adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act. Ram Power would be required to comply with California Regional Water Quality Control Board, Colorado River Basin Region (CRWQCB) requirements to protect water resources. No cut or fill slopes would be constructed for any of the well sites. Ram Power would use California best management practices to prevent soil erosion.

Each proposed well site would be prepared to create a level pad (400' by 350') for the drill rig and a graded surface for support equipment in existing agricultural fields. The drilling time at each well site would be about 60 days, 24 hours per day, 7 days per week with approximately 9 to18 workers on location at a given time. During drilling the top of the drill rig derrick would be much as 170' above the ground and the rig floor about 20' to 30' above the ground. Cumulatively, this proposal would create over 41 acres of surface disturbance.

Containment basins would be constructed at each site for the containment and temporary storage of drilling mud and cuttings and storm water runoff from the well sites. Each containment basin would be approximately 80' by 300' by 7' deep with a 2' freeboard with 40-mil plastic or clay liner. After the one to two weeks of geothermal testing is complete, all of the drilling and testing equipment would be removed from the site and fenced off for security purposes. All wells would be plugged and abandoned in conformance with California Division of Oil, Gas and Geothermal Resources (CDOGGR). The well site would be reclaimed or left for use by the landowner. The drilling fluid would consist of a non-toxic, temperature stable, gel-based drilling mud or gel and polymer drilling fluid to circulate the rock cuttings to the surface where they are removed from the drilling mud. The mud is then recirculated. Rock cuttings would be captured in the containment basin.

Any air, drilling mud, cuttings, and reservoir fluids brought to the surface would be diverted through a separator/muffler to separate and discharge the air and water vapor to the air and the drilling mud and cuttings to the reserve pit. The solid contents remaining in each containment basin, consisting of non-hazardous, non-toxic waste drilling mud and rock cuttings, and would be tested by CRWQCB. If authorized by the landowner and CRWQCB, these materials would be spread and dried on site, then buried on site in the containment basin. If burial on site is not authorized by the landowner or the CRWQCB, the solids would be removed and disposed of in a waste disposal facility authorized by the state. After the materials buried in the containment basins have been removed or compacted and stabilized, the containment basin would be reclaimed.

Liquids from each containment basin would be either moved to another well for drilling purposes, evaporated, pumped back down the well, or disposed of in accordance with California regulations. Excess fluids would be used as dust inhibitors on the roads if allowed by CRWQCB regulations and the landowner.

Ram Power estimates that 50,000 gallons of water per day would be needed for well drilling plus additional water for construction, road grading, and dust control. The water source would come from adjacent canals or field water under Imperial County's requirements. Cumulatively, this project would use over 33,000,000 gallons of water. Water would be loaded from the canals and delivered to the well sites using existing locations via water trucks (4,000 gallons/load).

Drilling mud and drill cuttings would be stored in the lined containment basin and disposed of at an authorized facility or mediated onsite according to CRWQCB. Solid waste material would be deposited at an authorized landfill by a contractor. Portable chemical sanitary facilities on each well site while drilling or testing would be used by all personnel, maintained by a contractor. Storm water runoff from the pad would be discharged into the well cellar and then to the containment basin. Ram Power would be required to obtain storm water permits from the CRWQCB. Surface water and groundwater pollution from drilling and testing would be prevented by steel casing cemented in the well bore below groundwater zones. The wells would be cased and cemented to prevent inter-zonal migration of fluids and reduce the possibility of blowouts. Based on the results of well previously drilled in the vicinity of the Project area, no over-pressure or gas-rich zones are expected.

Ram Power would be required to obtain an air permit from Imperial County Air Pollution Control District (ICAPCD) to flow test the exploration wells. The project would be required to comply with any ICAPCD permit conditions to abate non-condensable gas emissions, such as hydrogen sulfide from drilling. Drill rig engines and other portable engines (generators) that may be used for the project would be registered under the California Air Resources Board Portable Equipment Registration Program (PERP). Fugitive dust generation during construction and road use and well pad use would be minimized by watering as necessary. To further reduce fugitive dust emissions, vehicle traffic on unpaved roads would be held under 15 miles per hour. The drilling and construction would temporarily impact the air resources,

but mitigated due to the planned surface use and drill plans, and Imperial County Conditional Use Permits #10-0001 and #10-003.

Ram Power would be required to follow Imperial County land Use Ordinance (Title 9), Division 17 (Geothermal) requiring each geothermal operator to limit drilling noise to a sound level equivalent of Community Noise Equivalent Level (CNEL) 60 dBA, measured at the nearest human receptor site outside the parcel boundary. Drilling and construction sites would use equipment that would generate noise levels of about 83 dBA at a distance of 50 feet. Due to the well site location, the noise generated from the well pad construction, and road improvements would generate 69 dBA or less at the property boundaries, even without any special noise controls.

The New River proposal has one well (NR2) about 500 feet from the nearest residence. The Keystone proposal has one well (B) about 800 feet from the nearest residence. The noise generated from construction, drilling, and testing activities at this well pad would be expected to naturally attenuate to about 63 dBA without any special noise controls.

The Imperial Valley has a large burrowing owl population living in southern California Irrigation canals and drains commonly used as nesting habitat. The Burrowing owl is a California Department of Fish and Game (CDFG) Species of Special Concern, and a Federal Species of Concern and listed on the Migratory Bird Treaty Act. The biological surveys completed for this project were done using The CDFG Staff Report (CDFG 1995), which addresses survey and mitigation guidelines for the owl and communications with the CDFG, Bermuda Dunes, California office. Biological reports were prepared for the entire New Field and Keystone geothermal project and are uploaded in the Project Management Center. The biological reports indicate that, no threatened or endangered species were found in the surveys for the proposed project sites. Other than the burrowing owls at the proposed Keystone wells, no candidate, sensitive, or special status species have been identified in the Project area.

The Keystone report found three burrowing owls or active burrows in the proposed project area. Mitigation measures are identified in the Imperial County Conditional Use Permit #10-0003 for the protection and management of the burrowing owls. These mitigation measures are a condition of approval for this determination.

The New River report did not find any burrowing owls or active burrows in the proposed project area but identified burrowing owls adjacent to the project area. Mitigation measures are identified by Imperial County Conditional Use Permit #10-0001 for the protection, and management of the burrowing owls. These mitigation measures are a condition of approval for this determination.

An archaeological survey was completed by ASM Affiliates, Inc. on July 26, 2010 for the Keystone geothermal field development. A records search identified five cultural resource sites within one mile of the proposed action. For the site specific surveys, one cultural resource ("a trash scatter with a mixture of modern (1960's) and historic bottles consisting of household products") was identified at one of the proposed well locations; however, due to the recency of this dump, it is not eligible for listing on the National Register of Historic Places.

As required by Imperial County CUP #G 10-0003 Ram Power is required to have an archeological monitor present during construction activities that disturb the upper six feet of sediment at the NR1 well pad site. During construction activities at any of the well pad sites, Ram Power is required to monitor the grading, and drilling of the wells and if any unusual specimens of bone, stone, or ceramic are discovered during construction of the permitted facilities, all construction affecting the discovery site, shall cease until a qualified archaeologist retained by the permittee and approved by the County, reviews the specimens. The recommendations of the archaeologist shall be complied with prior to resuming drilling activities.

An archaeological survey was completed by ASM Affiliates, Inc. on July 9, 2010 for the New River geothermal field development. In summary, no cultural resources were located in the proposed project area. However, as required by Imperial County CUP #G 10-0001Ram Power is required to monitor the grading, and drilling of the wells and if any unusual specimens of bone, stone, or ceramic are discovered during construction of the permitted facilities, all construction affecting the discovery site, shall cease until a qualified archaeologist retained by the permittee and approved by the County, reviews the specimens. The recommendations of the archaeologist shall be complied with prior to resuming drilling activities.

This project comprises developing geothermal resources using site characterization, siting, construction, and operation of new terrestrial infill experimental wells; therefore DOE has categorized this project into Categorical Exclusions B3.1, and B3.7.

Budget for Phase I (Previously Released): $0 (DOE); $943,980 (cost share)
Budget for Phase II/III: $ 5,000,000 (DOE); $ 8,455,440 (cost share)

Condition of Approval: Ram Power would be required to obtain and follow any and all local state and/or federal permits, licenses, regulations, and other approvals for the proposed project. Mitigation measures as identified by Imperial County Conditional Use Permit # G 10-0001 and Conditional Use Permit #G 10-0003 for the protection, and management of burrowing owls must be complied with.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

Insert the following language in the award:

You are required to:
Ram Power would be required to obtain and follow any and all local state and/or federal permits, licenses, regulations, and other approvals for the proposed project. Mitigation measures as identified by Imperial County Conditional Use Permit # G 10-0001 and Conditional Use Permit #G 10-0003 for the protection, and management of burrowing owls must be complied with.

Note to Specialist :

This EF2A was written by Christopher Carusona II

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By Lori Gray /Lori Gray/ Date: 5/22/2012
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