# DECISION RECORD

**EA Number:** OR-050-07-075
**Title of Action:** Newberry Geothermal Exploration Project
**BLM Office:** Prineville District

## Decision

On February 12, 2007 a Plan of Exploration was submitted to this office by Northwest Geothermal Company (NGC) to conduct exploratory drilling within two current leases in order to assess the potential for geothermal resource development near the Newberry National Volcanic Monument. An Environmental Assessment titled "Newberry Geothermal Exploration Project (EA No. OR-050-07-075)" was prepared and a Finding of No Significant Impact determination made on August 31, 2007. A 30-day public review and comment period ended on October 1, 2007. After a review of the comments received, it is my decision to approve the Plan of Exploration (POE) as described in the Environmental Assessment subject to the required mitigations listed below.

## Summary of the Proposed Actions

The POE includes drilling and testing for geothermal resources on Federal Geothermal Leases OR-12437 and OR-40497 held by NGC within portions of Sections 29, 16 and 17 in Township 21 South, Range 12 East, in the Bend-Fort Rock District of the Deschutes National Forest, Deschutes County, Oregon. NGC proposes the following activities as part of the project: the improvement of required Forest Service access roads; construction of three well pad sites, including drilling pads and a reserve pit for the storage of waste drilling mud and fluid; the drilling (and redrilling, as may be necessary) of up to nine geothermal resource exploration wells; testing of each drilled well; and the continued monitoring of well pressure and other data in each well.

The locations of the proposed exploration well pads are based on the results of geophysical surveys that measure compositional variations below the surface of the earth. The sites were also selected with a preference for previously disturbed ground, such as logged areas. With the exception of a ½ mile segment of temporary road construction, each well pad will be accessed using existing roads. No new system roads are planned.

Once a well is drilled and there are indications of water or steam at high temperatures, the well would be "flow tested" to evaluate the fluids and determine the potential for production as a viable geothermal energy resource. Flow testing involves specialized equipment and results in a controlled venting of steam from the well for up to 30 to 45 days on a continuing basis. This is done under the supervision of technical specialists, engineers, and BLM and State geothermal specialists. The equipment on the wellhead includes a series of valves, blowout prevention equipment, and other specialized equipment to ensure a safe testing process.

If a producible geothermal resource is not found, and/or it is determined by the BLM and Forest Service that a well pad or road segment constructed specifically for the Project is no longer needed, those sites will be restored. Wells will be properly plugged and abandoned, all equipment and materials will be removed, sites will be recontoured to their original configuration, and disturbed areas will be restored and revegetated to conform to the surrounding landscape.

Restoration and revegetation will be completed by the applicant, in accordance with BLM and Forest Service direction and specifications at the time restoration is needed. Any temporary roads constructed for the Project would be subject to restoration, but existing Forest roads would remain for other Forest uses.

**Rationale for my Decision**

I have reviewed the public and agency comment letters received by this office during the NEPA process. Where appropriate, the EA and mitigation measures were modified based on the comments received. These modifications do not change the Finding of No Significant Impact determination made for the proposed Newberry Geothermal Exploration Project Environmental Assessment No. OR-050-07-075 signed on August 31, 2007.

Rationale for my decision includes:

A. This decision is consistent with the purpose for which lands were leased by the United States of America to NGC, and which conveyed to NGC, the "exclusive right and privilege to drill for, extract, produce, remove, utilize, sell, and dispose of geothermal steam and associated geothermal resources." To maintain this right, NGC must "diligently explore the leased lands for geothermal resources until there is production in commercial quantities" applicable to each of these leases.

B. This decision is consistent with surface use stipulations that were made part of the Leases OR-12437 and OR-40497.

C. The exploration of the geothermal resource is consistent with initiatives of the National Energy Policy Act and supports the National Renewable Energy Initiative by providing more information about the energy production from geothermal resources.

D. No impacts were identified in the subject EA which cannot be adequately mitigated and that would justify denial of the applicant's rights granted under the existing lease. Potential impacts include ground water, recreation use, noise, Sharp-shinned hawk, soil compaction, reclamation of the site and geothermal liquids. These potential impacts are addressed as follows:

**Ground water:** BLM and Oregon Water Resource Department stipulations on well casing design will seal off any shallow cold ground water encountered and maintain ground water quality. Additionally, BLM will monitor the drilling procedures and

adherence to the mitigation measures prepared in the BLM approved Geothermal Drilling Permit (GDP) and Geothermal Sundry Notices (GSN).

**Recreation Use:** The Forest Service and members of the public expressed concern about impacts to the recreational opportunities, especially to the snow mobile route in the area during the scoping period. The snow mobile route that will be impacted by the snow plowing of the roads to the drilling pads will be relocated for the duration of this project.

**Noise:** I have reviewed the potential noise impacts and have determined that the noise levels from drilling activities should not exceed levels already experienced in the area. There are no noise sensitive properties, such as where people sleep or gather, in or near the project area. The proposed well pad sites are more than 4 miles from Paulina Peak and 2½ miles from Paulina Lake Campground, which would be the closest developed recreation sites. Generally, any Forest management activities would not be heard unless someone is in the immediate area. Activities that have or may occur in the area tend to be those that produce noise, such as timber harvest, firewood cutting, snowmobile use, and vehicle travel. Well testing equipment would be properly maintained and muffled to minimize the sounds associated with well testing and keep them within regulatory levels.

**Sharp-shinned hawk:** One known, potentially active, Sharp-shinned hawk nest was identified during the field evaluation phase. To eliminate the potential impacts to the Sharp-shinned hawk, drill holes were relocated, and mitigations were established to protect the Sharp-shinned hawk during critical nesting periods. I have reviewed the mitigations and determined that there should be no residual effects to this nest.

**Soil Compaction:** Soil compaction and successful reclamation of the sites were identified during scoping and during review of the EA as a concern to members of the public. In addition to overall concerns on this matter, the heavy equipment using roads that have previously been used by logging operations were of particular concern I feel confident with the road standards being implemented by the Forest Service, as well as past history and success of scarifying these roads in the past, soil compaction will not be a concern. During drill pad construction, top soil will be collected and saved for reclamation purposes. In addition to bonds collected by the BLM for reclamation, the Oregon Department of Geology and Minerals requires a bond to be posted to cover the cost of these activities if the company abandons the site before acceptable reclamation is completed.

**Geothermal Liquids:** The components of the geothermal liquids were identified as a concern by members of the public. I have reviewed the potential components of these liquids and I am assured that precautions will be in place that avoids release to the air or ground water. The entire drilling hole is incased in cement to avoid any contamination of the ground water and water table. Non-combustible gases are captured and reinjected into a disposal well and most of the steam evaporates. Hydrogen sulfide, if present, is treated with one or more chemicals and reduced to elemental sulfur.

**Mitigation Measures:**

The following mitigation measures will be required as part of my decision and were compiled from mitigations in the Environmental Assessment for the Newberry Geothermal Exploration drilling project, public agency, and public comment letters.

**Geology and Soils**

- All grading of the sites will result in a balanced cut and fill, with no soil import or export required.
- Topsoil will be stockpiled, where practical, for later restoration efforts.
- Cut and fill slopes will be engineered and terraced according to height and compacted and maintained to minimize erosion and provide slope stability.
- Surface disturbance will be minimized by limiting operations to designated areas approved by Forest Service or BLM.
- Project construction will include culverts, berms, and ditches to direct runoff and minimize erosion potential.
- Facilities will be located near or within existing clear-cut or previously disturbed areas when practical.
- Upon site abandonment, grades will be contoured and revegetated to conform to the nearby surroundings.
- Aggregate or other road materials necessary for maintenance or repair of existing roads or construction sites will be obtained from existing road material pits, with concurrence of the Forest Service.

**Water Resources**

- All water withdrawal requirements (e.g., water for drilling activities, watering roadways) will be coordinated with and subject to approval by the Oregon Department of Water Resources.
- Temporary above-ground pipelines will be laid along existing roads or other appropriate routes, from the well to the drill site, and between drill sites, to minimize surface disturbance.
- If a sump is filled to capacity during drilling, drilling will be suspended until additional fluids can be properly disposed of.
- Portable sanitary facilities will be used during construction and operations.
- Drilling wastes will be confined to steel tanks or contained in sumps lined with clay to prevent seepage.
- Pads will be designed to direct drainage to sumps and to contain any spills on site.
- All tanks containing materials such as diesel fuel, lubricating oils, scaling and corrosive control chemicals, cleansers, solvents, and any other hazardous substances or chemicals will be installed above ground and provided with secondary containment (such as curbs or berms around tanks). The secondary containment will have a capacity equal to 100 to 150 percent of the maximum spill volume.
- All drilling fluids will be formulated from non-toxic components and drilling effluent will be below the EPA end-of-pipe toxicity limit.

- An Emergency Contingency Plan will be established for accidental spills or discharges. It will be submitted to the ODEQ for review and approval. All of the required measures from this plan will be in place during operations.
- Fresh water wells will be properly permitted and regulated by the State of Oregon.
- Geothermal wells are incased in cement to prevent contamination of ground water

**Geothermal Resources**

- Proper well drilling, casing programs, and blowout prevention equipment will be used to minimize the potential for uncontrolled blowouts in accordance with nationally accepted practices.

**Climate and Air Quality**

- Construction site watering, road watering, and dust abatement of facilities will reduce fugitive dust emissions. With the approval of the authorized officer, produced fluids will be used for dust control.
- Well testing (with visible geothermal steam emissions) will occur over the minimum time necessary to gather the required data on geothermal steam and noncondensable gas constituents.

**Scenic Resources**

- Shielded night lighting will be required to reduce potential visual impacts and to prevent light pollution of the night sky. Exterior lights will be an indirect light source designed to create safe working conditions and security of the facilities.

**Noise**

- Mufflers will be installed on exhaust stacks of all diesel or gas-driven vehicles.
- Noise levels will not exceed 65 DBA at the lease boundary, or ½ mile from the source, whichever is greater (in compliance with 43 CFR 3262.11(a)(4).
- Well testing equipment will be properly maintained and muffled to minimize the sounds associated with well testing and to keep noise within regulatory levels.

**Land Use**

- Project characteristics will be consistent with the Deschutes National Forest Land and Resource Management Plan and Newberry National Volcanic Monument Management Plan.
- Project implementation will be overseen and monitored by the BLM and Forest Service to assure compliance with the NEPA decision and to assure that effects of implementation are consistent with those described in this EA.

**Recreational Resources**

- Interpretive exhibits will be developed in partnership with the Forest Service to provide information to the local population and visitors to the area about the geothermal resource at Newberry, the geothermal Project, and the

management of geothermal resources on the Deschutes National Forest.

- Eight miles of existing snow mobile trail will be relocated for the duration of this project to other existing roads and 2 miles of new trail will be created by brushing a cross country route.

- The applicant will coordinate with Forest Service recreation and information specialists throughout the Project, through a designated Forest Service point of contact.

**Traffic and Transportation**

- To the extent practicable, well pads will be located along existing National Forest system roads.
- A road use permit will required from the Deschutes National Forest for maintenance, construction, and reconstruction of off-lease transportation systems.
- Roads will be located on approved slope and land types.
- Temporary roads will be restored to a natural setting according to Forest Service standards once the Project is decommissioned or if individual roads are deemed unnecessary
- Roads will be maintained only to the extent needed to provide safe transportation of vehicles and equipment associated with the Project; road maintenance will be done to Forest Service standards.
- Snow plowing during the winter will be coordinated with Forest Service to ensure that it conforms to Forest Service standards and is coordinated with other uses that may be occurring in the area.
- Access roads that are approved by the Forest Service may be gated, posted and temporarily closed to public travel during well testing procedures, movement of equipment, or for other specific activities to eliminate the risks associated with unauthorized visitors.
- Vehicular traffic will be restricted to roads and designated areas to minimize erosion

**Vegetation**

- To avoid conflict with scheduled timber harvests, exploration activities will be coordinated through the Forest Service.
- Mixed conifer stands will be avoided wherever possible.
- Restoration and revegetation will be completed by the applicant, in accordance with BLM and Forest Service direction and specifications at the time restoration is needed.
- Well pad siting will avoid larger trees and minimize disturbance to vegetation as much as possible.
- Any merchantable material removed as a result of this project will be accounted for (species, size/volume) and sold following Forest Service procedures.
- Brush, small trees, and debris will be buried, chipped, removed, or otherwise disposed of according to direction from the BLM and the Deschutes National Forest.
- All live standing trees 8 inches and larger in diameter (as measured at 4 ½ feet

above ground on the high side of the tree) shall be yarded to an approved decking area. Any portions of trees which break during felling or yarding, or that currently exist within the clearing area, and that are 5 inches or larger in diameter on the small end, and 8 feet or longer in length, shall also be yarded to an approved landing.

- Trees and portions of trees that are 5 inches or larger in diameter on the small end, and 8 feet or longer in length shall be limbed and piled in decks with pieces placed parallel to each other. Decks shall be compact and free of noncombustible material and shall be located on the flat surface (maximum slope of 4%) of the approved landing.
- Decks shall be located on landings, adjacent to roads. Decks shall not be placed in such a manner as to interfere with vehicle travel on roads or the functioning of drainage structures and ditches.
- Machinery involved in vegetation removal and land clearing activities will be washed prior to entering the National Forest to ensure they are free of dirt, grease, debris, and materials that may harbor noxious weed parts and seeds.
- All gravel and rock brought to the project site will come from certified sources and will be certified as weed free by the Forest Service.
- The applicant will conduct annual weed monitoring visits every June after the Project is initiated to ensure that weeds do not become established within any portion of the project, including roads, well pads, and especially at those areas where rock source material has been placed or stockpiled. If weeds are found, the applicant will hand-pull and bag them if flowers or seeds are present. Until a Forest Service invasive plant EIS is completed, only hand-pulling is allowed in this area.
- The applicant will provide the Forest Service with an Annual Weed Monitoring Report that shows compliance with the weed monitoring mitigation, and will include descriptions of where and when they monitored, what weed species, if any, were found, and how sites were treated. Also, as part of the annual report, the applicant will include a map showing locations where rock source material was placed. The annual weed monitoring report will be due no later than September 30 of each year. It will be sent to the Forest's Geothermal Coordinator and the Bend-Ft. Rock District Botanist.
- When timber harvest and vegetation treatments of the Lava Cast Project are implemented, the Forest Service will coordinate activities to avoid any potential conflicts in road use or any other site specific situations within project areas that may overlap

**Wildlife**

- Sumps will be monitored for wildlife access and fenced if necessary to keep wildlife from contacting toxic substances.
- Active raptor nests located during exploration will be protected in compliance with LRMP guidelines.
- Monitoring will be performed during exploration to determine location of active nests, to track nesting success, and to protect nests from disturbance.
- The applicant will monitor sumps and other project features and activities to ensure wildlife are not adversely affected; any wildlife observations will be documented.

- In order to partially offset future snag replacement removal within flammulated owl habitat, the applicant will create 50 snags within the watershed where the proposed project is located. Snag creation trees to be selected by a Deschutes National Forest biologist within the watersheds affected by the proposed Newberry geothermal project.
- Project activities within ¼-mile of any active raptor nests found during project operations would be evaluated and could be subject to seasonal or other operating restrictions to reduce disturbance to nesting birds.
- In order to avoid changing nest stand characteristics, do not construct well pads or temporary roads within a 25 acre buffer around known goshawk nest sites prior to consulting a biologist from the Bend-Fort Rock District of the Deschutes National Forest.
- In order to avoid disturbance to active raptor nest sites, do not conduct temporary road construction, road maintenance, well pad construction or well drilling operations within ¼ mile of a known active goshawk nests between March 1 and August 31.
- If an active red-tailed hawk nest is found, protect the nest by maintaining the forested character of the nest stand by providing a buffer of at least 300 feet in radius around the nest.
- In order to avoid changing nest stand characteristics, do not construct well pads or temporary roads within a 10 acre buffer around known sharp-shinned hawk nest sites prior to consulting a biologist from the Bend-Fort Rock District of the Deschutes National Forest.
- In order to avoid changing nest stand characteristics, do not construct well pads or re-construct roads within a 15 acre buffer around known Cooper's hawk nest sites prior to consulting a biologist from the Bend-Fort Rock District of the Deschutes National Forest.
- To compensate for the loss of future snag replacement trees and the lack of down woody material in areas where proposed project activity wood occur, leave 5 slash piles (approximately 100 square feet each) for each 5 acre well pad site to provide habitat for course woody material dependant wildlife species.

**Cultural Resources**

- Well pads, roads, or other surface disturbance will avoid any identified cultural resource sites. If previously undocumented sites are discovered during construction, activities will be halted until the resources are examined by a professional archaeologist and direction is given on how to proceed.
- Cultural resources are local and limited in size, thus impacts will be avoided by considering known cultural resource locations during project design and by incorporating monitors where subsurface deposits are expected.

**Human Health and Safety**

- Wellhead cellars will be covered and appropriately secured in accordance with state requirements.
- All drilling operations will be conducted in compliance with federal GRO Orders No. 1-5.

- All wells will have hydrogen sulfide detection equipment and alarms to protect drilling personnel.
- Hazardous materials will be handled according to all applicable regulations and requirements to minimize hazards to workers and the environment.
- A hazardous materials plan will be prepared and approved by the agencies and ODEQ.
- Spark arresters will be used on all potential spark-emitting equipment.
- The project proponent will provide and maintain fire-fighting equipment at the project site.
- Fire extinguishers and tools will be on site at all times and in each vehicle, and water will be stored and available for fire use at each pad; operations will follow Forest Service industrial fire prevention standards and requirements.
- Restricted areas (e.g., hard hat areas) will be identified throughout the project site.
- Prior to final well pad sump reclamation, the contents of the sumps, including clay liners, will be tested for hazardous materials. If contents are found to be hazardous then the material will be disposed of at an approved landfill.
- The proponent will obtain all required State, County, or local permits necessary for project implementation.
- Communication will be maintained at the project, and emergency services will be contacted in the event of any emergencies.
- The well pads and a 50-foot buffer area around the pads will be kept free of vegetation and debris to provide a suitable defensible space for fire precaution.
- Visitors will be allowed by advance permission only, and will wear hard hats around equipment and active operations.
- During hunting seasons, the applicant will post signs on the road leading to the project to let hunters know that industrial operations are taking place; project employees will consider wearing orange vests while working during these times.
- During the winter season, signs will be posted at appropriate sites to notify snowmobilers that operations are occurring.
- Snowmobile activities and winter trail use will be managed by the Forest Service and coordinated with the applicant to ensure this activity does not conflict with the Project or create unsafe situations for either party.
- CB radios will be used by project vehicles to alert others of ingress and egress. The CB channel will be posted along the roadway for the public's use.
- An approved camp plan will be submitted for the temporary camp that includes the type and duration of living quarters and plan for garbage and sanitary disposal. The plan will be jointly approved by the BLM and FS and will become part of the "Conditions of Approval" in the Geothermal Drilling Permit.

**Appealing the Decision Record to the Interior Board of Land Appeals:**

This decision may be appealed to the Interior Board of Land Appeals, Office of the Secretary, in accordance with the regulations contained in 43 CFR 3265.1, 43 CFR, Part 4 and Form 1842-1. If an appeal is filed, your notice of appeal must be received in the Prineville District Office, 3050 NE Third Street, Prineville OR 97754 within 30 days of receipt of the decision but no later than December 1, 2007. The appellant has the burden of showing the decision appealed is in error.

This geothermal management decision is issued under 43 CFR Part 3265.1 and is immediately effective and will remain in effect while appeals are pending unless a stay is granted in accordance with § 4.21(b) of this title. If you wish to file a petition, pursuant to regulation 43 CFR 4.21, for a stay of the effectiveness of this decision during the time your appeal is being reviewed by the Board, the petition for stay must accompany your notice of appeal. A petition for stay is required to show sufficient justification based on the standards listed below. Copies of the notice of appeal and petition for a stay must also be submitted to each party named in this decision and to the Interior Board of Land Appeals and to the appropriate Office of the Solicitor (see 43 CFR 4.413) at the same time the original documents are filed with this office. If you request a stay, you have the burden of proof to demonstrate that a stay should be granted.

**Standards for Obtaining a Stay**

Except as otherwise provided by law or other pertinent regulation, a petition for a stay of a decision pending appeal shall show sufficient justification based on the following standards:

1. The relative harm to the parties if the stay is granted or denied.
2. The likelihood of the appellant's success on the merits.
3. The likelihood of immediate and irreparable harm if the stay is not granted.
4. Whether or not the public interest favors granting the stay.

Approved:

Debbie Norton 10/26/07

**Deborah Henderson-Norton**
**District Manager**

## Comments and Responses:

A total of two public comment letters and one phone call were received during the 30-day notice and comment period. Each letter was numbered and evaluated for comment content.

## Sierra Club letter received October 1, 2007

1.1 **Comment:** There is a significant need for additional adequate public notification, including public hearings & provisions to ensure all affected citizens and communities are notified and their comments and concerns are assessed and incorporated.

**Response:** To conduct scoping pursuant to 40 C.F.R. § 1501.7, BLM sent scoping letters to 157 individuals, organizations, agencies, and central Oregon Tribes in June, 2007 to notify potentially interested parties about the proposed action and to provide an opportunity to submit comments for BLM to consider in the environmental analysis. In addition there have been three articles in central Oregon's Bend Bulletin newspaper which have described the project and provided a name and phone number of a BLM contact to receive comments.

1.2 **Comment:** A review of the 1994 Geothermal EIS reveals that many of the public, conservation, and scientific research controversy and concerns noted in our comments regarding geothermal energy exploration and production impacts were not adequately addressed.

**Response:** The effects analysis in the 1994 Geothermal EIS was referenced in the Newberry Geothermal Exploration Project EA where applicable. If additional information was needed, or where effects were different, the EA analyzes and describes those as appropriate.

1.3 **Comment:** Additionally, there has been considerable new public and scientific information on geothermal energy exploration and production impacts during the ensuing 13 years since the 1994 EIS was completed. Lastly, promises made within the EIS concerning reclamation of abandoned sites have been circumvented by both the federal agencies and by the exploration leaseholder, by putting that project into "suspension" for many years. The Newberry EA fails to address similar possibilities regarding promised reclamation of the Davenport Power/Newberry Geothermal exploration sites, nor does it disclose information addressing reclamation responsibility and completion should the lease holding company become bankrupt or financially insolvable during subsequent years. The failed track record of the responsible federal agency to require and satisfactorily complete needed reclamation on abandoned sites (including "suspended" sites that are in effect abandoned on the landscape) violates federal laws and provisions of the 1994 EIS. The failure to disclose and address this in the Newberry EA deprives the public and decision-maker of important information necessary to assessing the full potential impacts of this project. These failures violate NEPA and land use laws and responsibilities.

**Response:** If a producible geothermal resource is not found, and/or it is determined by the BLM and Forest Service that a well pad or road segment constructed specifically for the Project is no longer needed, those sites will be restored. Wells will be properly plugged and abandoned, all equipment and materials will be removed, sites will be recontoured to their original positions, and disturbed areas will be restored and revegetated to conform to the surrounding landscape.

Restoration and revegetation will be completed by the applicant, in accordance with the direction, conditions, stipulations and specifications developed by the BLM and Forest Service and contained in the "Conditions of Approval" portion of the Geothermal Drilling Permit. A bond is posted with the BLM and/ or State to cover the cost of rehabilitation if the site was to be abandoned by the company.

The pads that were developed as a result of the 1994 EIS are subject to rehabilitation. The BLM is working with the current lease holder to reclaim and restore the pads in accordance with the provisions found in the mitigation section of the 1994 EIS.

1.4 **Comment:** The "Purpose and Need" for this project fails the objective requirements of the NEPA. It is arbitrarily and capriciously contrived so that only the selected of one or two proposed geothermal actions can be selected. Legally, the purpose and need is required to be worded in such a way as the decision-maker is not predisposed towards the selection of any action alternative.

**Response:** The BLM is responding to a proposed Plan of Exploration for geothermal resources located on the Bend Fort Rock Ranger District of the Deschutes National Forest from a company holding two existing federal geothermal leases. The purpose and need is to determine whether to deny or approve the proposal. In considering whether to deny or approve the proposal, BLM will consider how well the alternatives including the No Action Alternative would meet the objectives from the National Energy Policy Act (May 2001); the Geothermal Steam Act; the BLM Upper Deschutes Resource Management Plan (2005) and the Deschutes National Forest Land and Resource Management Plan (1990) that have been identified in the Environmental Assessment.

1.5 **Comment:** The EA fails to disclose ongoing scientific debate, research, and controversy exists calling into significant question whether geothermal energy is truly renewable or sustainable. Despite current politically contrived classifications of geothermal as renewable, NEPA mandates that NEPA processes be based upon scientific accuracy, including the disclosure of scientific controversy. This is in part to prevent contrived and often inaccurate political assumptions and social climates from subverting objective informed analysis. Federal laws require that the decision-maker and the public be fully informed of all applicable scientific conclusions, recommendations, and controversy pertinent to proposed actions. The EA as such fails the requirements of the NEPA and must be withdrawn.

**Response:** The EA analyzes potential impacts of implementing a proposed Plan of Exploration to assess geothermal resources on existing geothermal leases. Whether geothermal resources are sustainable or renewable is beyond the scope of this analysis.

1.6 **Comment:** The Newberry study concerning energy potential noted on page 9 of the EA, is by admission of Davenport's geologist, excessively inflated and inaccurate. The NEPA requires accurate disclosures and analysis based upon these disclosures, not mere parroting of outdated or industry contrived speculation. The EA fails to conduct this analysis, fails to disclose the name of this study or who commissioned the study (including conflict of interest issues), and as such violates the NEPA.

**Response:** The exact quote from Davenport's geologist, Al Waibel, is that USGS Circular 7-90 excessively inflated the potential of Newberry concerning energy potential. His own finding, from extensive testing of the area, has found a high likelihood of a successful economic resource. The exploration being proposed is intended to better ascertain the geothermal resource potential of the area.

1.7 **Comment:** No disclosures are made concerning seismic activity in the area and scientific research on geothermal exploration and production impacts has concluded that these actions result in increasing and inducing seismic activity.

**Response:** This EA incorporates by reference the Newberry Geothermal EIS of 1994 which showed that seismic activity in the area is very low. In addition the main cause of seismic activity is shear stress which is also low. An earthquake did occur in Colorado while geothermal wastes were being reinjected into a deep hole under high pressure; this was in an area of high shear stress and does not conclude this is a common occurrence with geothermal exploration.

1.8 **Comment:** Simply pretending that since the area has already been degraded, additional degradation is somehow acceptable fails to incorporate expert scientific research conclusions to the contrary.

**Response:** The pads and roadways used for access were suggested to be located in areas that were previously developed or harvested to minimize the impact to larger trees and to minimize the disturbance on the landscape.

1.9 **Comment:** Heavy equipment operating on so-called "temporary" roads, in the number of vehicles and runs necessary for this project, will permanently compact forest soils under these new "temporary" road beds. Failure to accurately disclose and address these impacts and issues violates the NEPA, and implementation would violate the NFMA.

**Response:** All road construction will be done to Forest Service standards, including the temporary roads. These standards are in place to insure resource protection, including avoiding soil compaction. Once the temporary road is no longer needed, the road surface will be scarified, recontoured and replanted with appropriate vegetation to reduce the amount of soil compaction.

**1.10 Comment:** The cutting of large trees, proximity to viable wildlife habitat and riparian systems, and unsuitability of proposed exploration site S-17 is not disclosed in the EA. The failure to accurately disclose site-specific conditions and concerns, and address impacts violates the NEPA, and implementation would violate NFMA.

**Response:** There is not a riparian system close to the proposed location of pad S-17. The Sharp-shined hawk nest location was taken into consideration when placing pad S-17 and the cutting of trees over the size of 21 inches dbh will be minimized

**1.11 Comment:** The EA fails to disclose or assess possible impacts to the area's water table and aquifer, and consequent impacts to biodiverse native species that may result from drilling and using water wells on each geothermal exploration site. This failure violates the NEPA, and implementation may violate the NFMA. There is insufficient information and assessment of this significant issue for a legal decision to be made under this EA.

**Response:** Thank you for pointing this out. Additional information has been added to the EA about the effects to the water table. A copy of the water permit issued from the Oregon Water Resource Department has been added as well. Calculations are made from formulas derived from the Upper Deschutes Ground water study, which is the basis of the decision by the Water Resource Department to issue a permit. This decision reflects that there is not a significant impact to the area aquifers. In addition all geothermal wells are cased in cement to ensure the water tables are not affected by the geothermal steam/fluids.

**1.12 Comment:** Impacts to wildlife and the recreating public, as well as on area residents, are not sufficiently identified, disclosed, or addressed concerning incessant noise resulting from 50 consecutive days of ceaseless well drilling, the combined drilling of multiple wells, including wells for water, or the ongoing operation of exploration activities including heavy vehicular traffic on area roads, FS roads, and highways. These analysis deficiencies violate the NEPA. The EA makes no mention of noise restrictions during seasonal nesting and fledging periods for affected raptors and avian species, in violation of the NEPA and NFMA.

**Response:** There are several mitigation measures that speak to timing restrictions and buffers from the operation for wildlife and are included in the answer to 1.18. On pages 4-64 - 4-71 in the 1994 EIS, there is an extensive discussion on noise and regulation of noise by the State of Oregon. There are no noise sensitive properties, such as where people sleep or gather, in or near the project area. The proposed well pad sites are more than 4 miles from Paulina Peak and 2½ miles from Paulina Lake Campground, which would be the closest developed recreation sites. Generally, any Forest management activities would not be heard unless someone is in the immediate area. Activities that have or may occur in the area tend to be those that produce noise, such as timber harvest, firewood cutting, snowmobile use, and vehicle travel. Well testing equipment would be properly maintained and muffled to minimize the sounds associated with well testing and keep them within regulatory levels.

**1.13 Comment:** The EA mentions that "controlled venting" of geothermal steam would occur with this exploration project. The EA briefly notes that hydrogen sulfide is a harmful component of such steam but fails to disclose or address this issue, or related environmental and human health issues arising from the venting of geothermal steams and brines. During scoping we provided the agency with an article, again included as part of these comments below "*Tapping Earth's Geothermal Energy: "Green" Panacea or Pandora's Box?,*" that notes significant adverse environmental and harmful human health impacts from geothermal exploration and production. The EA's continued failure to disclose or address these scientifically documented concerns violates the NEPA. This legally deficient EA must be withdrawn, and the proposal abandoned until these issues are disclosed to the public and the decision maker and meaningfully addressed.

**Response:** Hydrogen sulfide, if present, is an extremely small part of the geothermal steam chemical component. It represents 2.0 to 3.0 ppm of the liquids discharged from steam wells. Two treatments are available to convert the hydrogen sulfide to elemental sulfur or SiO2. Hydrogen sulfide is treated well before it reaches critical levels for worker safely and to protect the drilling equipment.

The above reference article has not been peer reviewed nor does it include scientific citations sufficient to be considered new scientifically documented information.

1.14 **Comment:** The 1994 Geothermal EIS noted that fire incidences would increase due to exploration and production, specifically noting that 8 fires could be expected. While this exploration proposal is initially smaller, it could result in a proposal for production, which is inextricably connected to this project (and must be addressed in an EIS as such). Consequently, increased fire risk and probability would occur from this project. Since 1994 climatic conditions have resulted in increased fire risk overall, and more severe fires. The proximity to Newberry Monument, combined with increased seasonally climatic fire risk in the overall area, exacerbate the significance of increased fire risk resulting from this proposal. The EA fails to sufficiently address or disclose this issue, and must be withdrawn with a new EIS fully assessing fire risk issues. As fire severity risk reduction is a major focus of Deschutes NF and BLM projects, it is contrary to agency objectives to increase fire risks, especially so near to the Newberry Monument. The agency must disclose and address this issue, and incorporate reasonable and effective measures insuring fire risk does not result in harms to adjoining forests, including the ecologically irreplaceable Monument area. Provisions for effectively halting a fire should one occur must also be addressed, as must evacuation routes for Newberry visitors and area communities. Fiscal responsibility for damages and fire fighting costs from a fire arising from exploration activities must also be addressed and disclosed, in a new EIS for this project.

**Response:** As noted the 8 expected fires were from exploration drilling and production of a power plant and transmission lines. As this project is exploratory drilling only, the mitigations measures that will be in effect should reduce or remove all fire danger. These include a 50 feet fire break of clear vegetation around all pads and constant compliance reviews by the Forest Service and BLM. In addition fire extinguishers and tools will be on site at all times and in each vehicle, and water will

be stored and available for fire use at each pad; operations will follow Forest Service industrial fire prevention standards and requirements.

1.15 **Comment:** The EA states that exploration sites would be restored and recontoured, (page 16), however fails to address the reality of attempting to vegetate and restore sites compacted by repeated frequent trips and long-term use by heavy machinery and vehicles. The EA fails to address cleanup of toxic spills, including petroleum fluids as well as geothermal brines, and fails to note that other sites have yet to be reclaimed. Failure to address this significant issue violates the NEPA.

**Response:** There is a successful history of rehabilitation of previously rocked gravel pads. This includes stock piling all top soil to re-use at the completion of the project. The Plan of Operations submitted by the company elaborates on all contingency plans for clean–up, including accidental spills. In addition the State of Oregon, Department of Environmental Quality has stringent policies that must be followed. A bond will also be posted with either the BLM or the State of Oregon Department of Geology and Minerals to cover the cost of rehabilitation if the sites are to be abandoned.

1.16 **Comment:** The 1983 lease was issued in a different era, with different ecological concerns and priorities. This lease must be re-assessed, incorporating scientific research and conservation objectives, and if no longer compatible with agency goals and community desires, the lease should be rescinded (which given the weight of all applicable issues, we highly recommend at this time).

**Response:** In its cumulative effects analysis, the BLM considered the impact of the proposed action in light of its interaction with the effects of past, current, and reasonably foreseeable future projects. The 1983 lease, a past action, had no effect on the human environment. It is beyond the scope of the present action to reconsider the issuance of a lease in 1983.

1.17 **Comment:** BLM failed to disclose and consider a range of reasonable alternatives concerning this proposal. Only two action alternatives were selected for development. The EA fails to disclose what other alternatives were discussed, and not selected, and fails to develop other potential alternatives – including approving only one site, looking at other suitable sites elsewhere in Oregon, or prohibiting exploration and rescinding the leases. All of these should have been within the range of developed alternatives, again underscoring the need for an EIS.

**Response:** The Environment Assessment (EA) analyzed two alternatives, the No Action Alternative and the Proposed Action Alternative. The obligation to consider alternatives is less under an EA than it is for an Environmental Impact Statement (EIS) *see Native Ecosystems Council v. U.S. Forest Service*. The issue is not whether suitable sites for geothermal exploration exist elsewhere in Oregon but, rather, whether this particular proposal should be denied or approved. The 1990 Deschutes Forest Plan already determined that geothermal exploration and development would be an appropriate use of particular portions of the Bend Fort Rock Ranger District of the Deschutes National Forest. The 1994 EIS analyzed the effects of geothermal exploration and development in portions of the Deschutes National Forest. Since the

lands were identified as available for geothermal leasing and the leases have already been issued, the purpose and need of this particular EA is to determine whether to deny or approve the proposed Plan of Operation for geothermal exploration from the company holding the leases within this area in the Deschutes National Forest. The No Action Alternative analyzes in detail the denial of the proposal which, if selected, would result in no geothermal exploration in this area. For each of the proposed sites, the effects of not allowing implementation of the exploration proposal under the No Action Alternative would be the same as not allowing it under a "less than all sites" alternative and an "elsewhere in the state" alternative. Additionally, alternatives are developed where there is "unresolved conflict concerning uses of resources" (National Environmental Policy Act Section 102(2) (D)). As determined for this analysis, there are no "unresolved conflicts" warranting analysis of alternatives that approve various combinations of the three sites. Therefore, the No Action Alternative and the Proposed Action Alternative are a reasonable range of alternatives.

**1.18 Comment:** Impacts are likely to wildlife species from this project, especially from the location of site 62-17. The EA's brief dismissal of potential impacts fails the requirements of the NEPA and the NFMA.

**Response:** The pad for site 62-17 is being selected from within the 40 acre study area with the input of a wildlife biologist and silviculturist which will minimize the effects to wildlife. In addition the following mitigations will be required to protect the wildlife.

- Well pad siting will avoid larger trees and minimize disturbance to vegetation as much as possible.

- The applicant will monitor sumps and other project features and activities to ensure wildlife are not adversely affected; any wildlife observations will be documented.

- In order to partially offset future snag replacement removal within flammulated owl habitat, the applicant will create 50 snags within the watershed where the proposed project is located. Snag creation trees to be selected by a Deschutes National Forest biologist within the watersheds affected by the proposed Newberry geothermal project.

- Project activities within ¼-mile of any active raptor nests found during project operations would be evaluated and could be subject to seasonal or other operating restrictions to reduce disturbance to nesting birds.

- In order to avoid changing nest stand characteristics, do not construct well pads or temporary roads within a 25 acre buffer around known goshawk nest sites prior to consulting a biologist from the Bend-Fort Rock District of the Deschutes National Forest.

- In order to avoid disturbance to active raptor nest sites, do not conduct temporary road construction, road maintenance, well pad construction or well drilling operations within ¼ mile of a known active goshawk nests between March 1 and August 31.

- If an active red-tailed hawk nest is found, protect the nest by maintaining the forested character of the nest stand by providing a buffer of at least 300 feet in radius around the nest.

- In order to avoid changing nest stand characteristics, do not construct well pads or temporary roads within a 10 acre buffer around known sharp-shinned hawk nest sites prior to consulting a biologist from the Bend-Fort Rock District of the Deschutes National Forest.

- In order to avoid changing nest stand characteristics, do not construct well pads or re-construct roads within a 15 acre buffer around known Cooper's hawk nest sites prior to consulting a biologist from the Bend-Fort Rock District of the Deschutes National Forest.

- To compensate for the loss of future snag replacement trees and the lack of down woody material in areas where proposed project activity wood occur, leave 5 slash piles (approximately 100 square feet each) for each 5 acre well pad site to provide habitat for course woody material dependant wildlife species.

1.19 **Comment:** The EA fails to accurately and adequately address cumulative impacts likely to result from this action. A new EIS is necessary to address these significant issues.

**Response:** The EA adequately assesses the cumulative effects likely to result from the Proposed Action and the No Action (EA, Section 4). As discussed in the EA, the 1994 Geothermal EIS, specifically sections 3 and 4, for which resource study areas evaluated an encompassed extended areas including the NCG lease areas has been incorporated those findings by reference into this EA where they are the same for the location, activity and/or effects. The mitigation measures from the 1994 Geothermal EIS have also been incorporated as appropriate (EA, Section 4.18).

**Oregon Wild – letter received September 26, 2007**

2.1 **Comment:** Before proceeding with the exploration and testing the public has a right to know the potential "overall footprint" and the environmental impacts of the entire project: including all roads, drill pads, powerplants, and powerlines.

- We want to know the full impacts of the 60MW development on all wildlife species.
- We want to know the full impacts on the hunting opportunities for the area.
- We want to know the entire Road system proposed.
- We want to know the full impacts on visual management and the mitigation for visual impacts.

**Response:** The proposal being analyzed in this EA is a proposal for a permit to conduct exploration drilling to determine whether geothermal resources exist. This is not, however, a proposal for full-scale development nor is it a proposal that would commit the resource to full development. The scope of analysis for this EA per CEQ 1508.16 will include connected actions. Because the potential authorization of a permit to conduct exploratory drilling for geothermal resources does not automatically trigger the authorization to develop geothermal energy, the two are not "connected actions" as defined by the NEPA regulations. 40 C.F.R. § 1508.25. The BLM and USFS retain discretion to approve/deny any future proposals for full-scale development of geothermal resources.

2.2 **Comments:** We want to know the water use needs if there is a dry steam production well discovered. The EA discusses the possibility of obtaining fresh water from non-geothermal wells (~1,000'), but the EA does not explain whether water rights have been obtained and what the impacts of this may be.

**Response:** If a dry well goes into production the water needs would be addressed through the process that is most appropriate and consistent with applicable laws and regulations at the time. Fresh water is required during exploration for drilling purposes and the company has received a water permit from the Oregon Water Resource Department to drill up to four wells. Before issuing a permit, the Department uses the data derived from the Upper Deschutes Ground Water Study to assess ground water impacts. The Department can also require the applicant to purchase water as mitigation measure. A permit would not be issued if there is an effect to the ground water system from these requested wells.

2.3 **Comments:** We want to know the noise impacts and mitigation of the project.

**Response:** There are no noise sensitive properties, such as where people sleep or gather, in or near the project area. The proposed well pad sites are more than 4 miles from Paulina Peak and 2½ miles from Paulina Lake Campground, which would be the closest developed recreation sites. Generally, any management activities would not be heard

unless someone is in the immediate area. Activities that have or may occur in the area tend to be those that produce noise, such as timber harvest, firewood cutting, snowmobile use, and vehicle travel. Well testing equipment would be properly maintained and muffled to minimize the sounds associated with well testing and keep them within regulatory levels. If these levels are exceeded operations could be shut down or modified and additional mitigation measures required.

**Klamath Tribe – phone call received September 19 and Field Trip October 12, 2007**

3.1 **Comment**: The Klamath Tribe cannot support any geothermal exploration within our homelands because of the impacts to Mother Earth and the destruction that is required not only to explore for steam but also to build the facilities that harness the steam.

**Response:** The required mitigations are intended to minimize resource impacts. To the extent possible, project features associated with the exploration activities will use existing or previously disturbed sites. Once a project feature is no longer needed it will be restored to its original configuration and revegetated to conform to the surroundings. Any wells that are not needed will be capped. Facilities to turn geothermal liquids into electricity are not being proposed at this time, this proposal is for exploratory drilling only.

3.2 **Comment:** The Klamath Tribe is concerned the Cal Energy Pads have not been rehabilitated and has the same concern for this project.

**Response:** The BLM is in initial stages of requesting Cal Energy to clean up and rehabilitate their existing drill pads. A large bond has been posted that will be withheld until the rehabilitation work has been accomplished. This drilling proposal has requirements' by the Forest Service, BLM and State of Oregon to rehabilitate these drilling pads as soon as they are no longer needed. This includes a bond posted to the BLM and or State of Oregon that covers the cost of the rehabilitation.

**Supplemental Information to the Environmental Assessment for Newberry Geothermal Exploration Project**

These are additions or corrections to the Environmental Assessment that resulted from internal and external review and comments.

**Sec. 2.3 Connected Actions**

Davenport will not acquire road rock from the National Forest rock pit but will be hauling rock from a certified weed free private rock pit off of National Forest.

**Sec. 3.10 Geology, Soils and Minerals**

2nd para, 1st line, typo: change to "ash-flow deposits"

**Sec. 4.6 Water Resources**

Davenport has applied and received a limited license water use permit from Oregon Water Resource Department. This permit is for up to four water wells and to pump up to 58 acre feet a year. Davenport plans to drill a water well at each pad site and have a contingency well if any of these do not produce water.

**Sec. 4.11 Noise**

The EA references GRO Orders in several places; this is the first occurrence. The GRO Orders are no longer valid references. Those requirements were incorporated into BLM regulations when those regulations were revised and published as final rules in the Federal Register (September 30, 1998). The new reference for noise regulations is 43 CFR 3262.11(a)(4).

**Sec. 4.18 Required Mitigation**

Water Resources, 3rd item: "If a sump is filled to capacity during drilling, drilling will be suspended until the fluid level in the sump is lowed to a safe working level and excess sump fluid is removed and properly disposed of.

Noise, 2nd item: The specified noise level from GRO Order 4 is no longer in effect. Refer to the general noise limitation in the regulations (43 CFR 3211(a)(4).

Vegetation: reclamation includes revegetation.

Human Health and Safety, 2nd item: There are no GRO Orders. Drilling operations requirements are found in both 43 CFR 3250 Exploration Operations, and in 43 CFR 3260 Geothermal Drilling Operations.

**Sec. 4.19 Additional Required Mitigation**

9th item: "…and will wear appropriate personal protective equipment which may include hard hats, boots, safety glasses, and ear protection.

Item 19 (annual weed monitoring visits): "…every June until the site has been reclaimed successfully."

Item 31 (subsurface freshwater zones): clarify that the casing of fresh water zones will be through the casing of the geothermal exploratory wells.

**Chapter VII**

Mollie Chaudet: Litigation Coordinator, Provincial Advisory Committee Liaison, Upper Deschutes Wild and Scenic River Coordinator
Deschutes National Forest