

# CHAPTER 1: INTRODUCTION AND PURPOSE AND NEED

## 1.1 Introduction

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### 1.1.1 OVERVIEW

#### **Geothermal Resources**

Geothermal resources are underground reservoirs of hot water or steam that are heated by the earth. These resources can be accessed by drilling wells that enter the geothermal resource. The hot water or steam can be brought to the surface through wells and used to generate electricity, space heating, food drying, or other direct uses. Geothermal resources are considered a renewable resource because all or the majority of the geothermal fluids are returned to the geothermal reservoir where they are reheated by the earth.

#### **Federal Geothermal Program**

The Federal Land Policy and Management Act (FLPMA) of 1976 encourages mineral development on federal lands. Geothermal resources development is guided by the Geothermal Steam Act as amended and supplemented by the Energy Policy Act of August 2005. New regulations to implement the Energy Policy Act of 2005 became effective June 2006 and revised the geothermal leasing process and unit agreement regulations. The Energy Policy Act provided for percentages of proceeds from royalties and lease rentals to be paid:

- 50% to the State
- 25% to the County
- 25% to the federal agencies managing the program

#### **Geothermal Development on Navy and BOR Managed Lands Near NAS Fallon**

The US Navy has considered the potential for geothermal power development on Naval Air Station (NAS) Fallon lands since the 1980s. The US Navy completed the *NAS Fallon Geothermal Energy Development Environmental Impact Statement (EIS)* in March of 1991.

No development has occurred to date at NAS Fallon for several reasons, including the economics of geothermal development in the 1990s and early 2000s and evidence that suggests the resource may be located under adjacent lands administered by the Department of the Interior's, Bureau of Reclamation (BOR).

The Navy would have oversight of development of geothermal resources on the land it administers. The geothermal resources lying under lands managed by the BOR would be administered by the Department of the Interior's Bureau of Land Management (BLM).

There are four stages of geothermal resource development within a lease, (1) exploration, (2) development, (3) production/utilization, and (4) reclamation. The proposed project is in the exploration phase.

### **Proposed Action**

Geothermal energy potential in the Carson Lake area has been estimated based on many surface and subsurface geologic investigations over the past 25 years. Data consist of geological, geophysical, petrophysical, and geochemical information in the form of gravity, thermal gradient drilling, coring, magnetics, geologic mapping, and trace element studies.

Ormat Nevada, Inc. (Ormat) has recently received authorization to drill at a site known as Fallon Observation Hole-1A (FOH-1A) on an existing pad on NAS Fallon managed lands. Ormat has already submitted a Geothermal Drilling Permit (GDP) with the BLM for this project. This well is not included in the current project as it has already been authorized.

Ormat currently proposes to conduct the Carson Lake Geothermal Exploration Project on lands managed by NAS Fallon and lands managed by the BOR, in Churchill County, Nevada. The proposed action includes constructing up to 11 well pads and associated access roads, and drilling and testing up to 3 geothermal exploration wells at each pad. Ormat prepared a Plan of Exploration (POE) in August 2007. The Navy and Ormat entered into contract N62473-06-C-3021 in 2006 to explore, develop, and utilize the geothermal resource at NAS Fallon.

This Environmental Assessment (EA) is prepared under the National Environmental Policy Act (NEPA) and addresses the environmental effects of the proposed action.

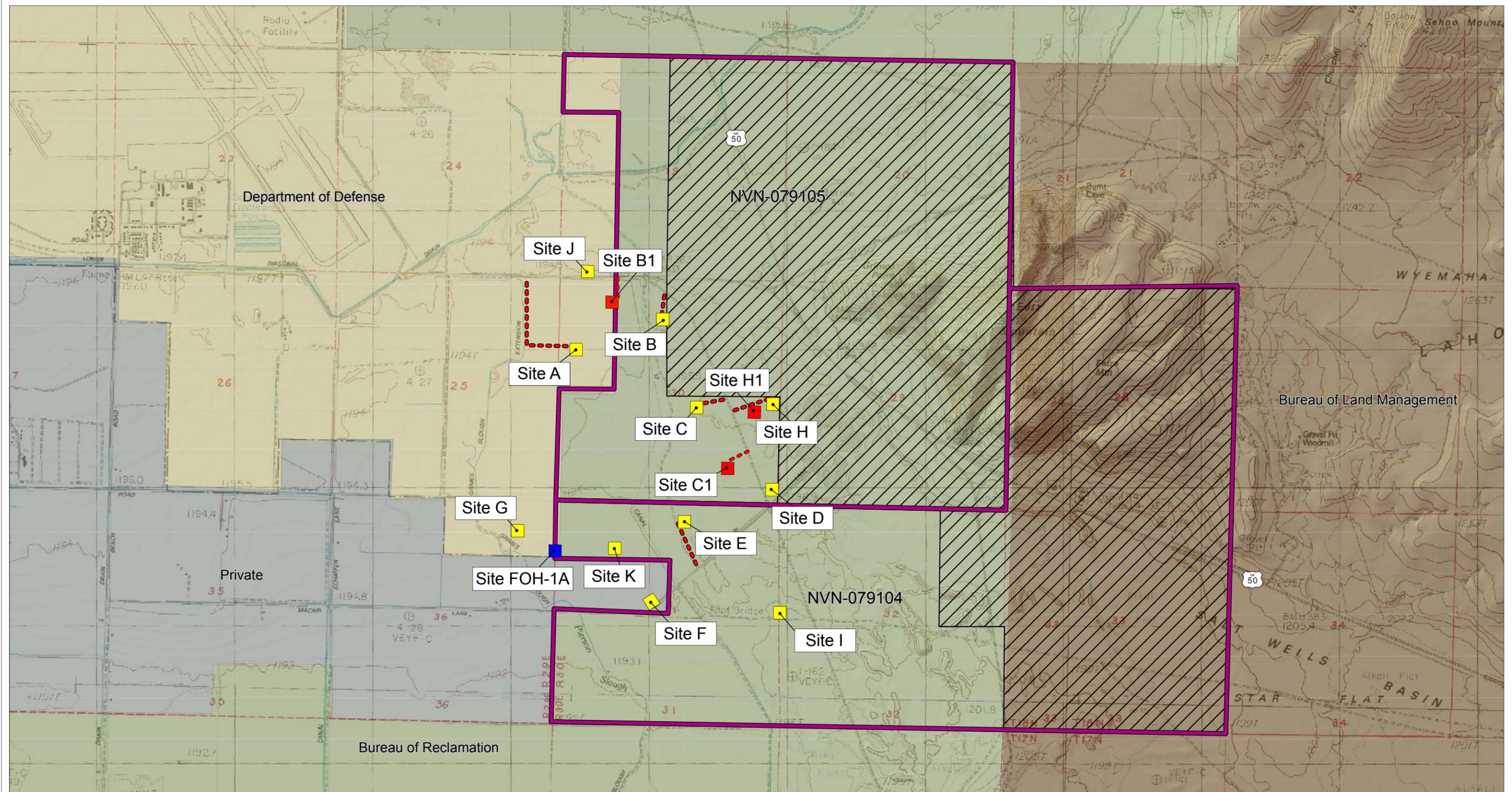
### **1.1.2 ORMAT BLM GEOTHERMAL LEASES**

Leases for geothermal resources on federal lands are managed by the BLM. The BLM has leased the geothermal resources on BOR managed lands east of NAS Fallon. These resources are leased by the BLM for geothermal development as described in the Geothermal Steam Act of 1970 (43 CFR Part 3200, et seq., as amended).

The BLM Carson City Field Office completed an Environmental Assessment (EA) in July 2006 for leasing of geothermal resources (BLM 2006) within their jurisdiction, which included those resources under BOR managed lands adjacent to NAS Fallon. Standard Operating Procedures from 2006 Geothermal Leasing EA are included in Appendix D of this document. Ormat Nevada Inc. (Ormat) was granted federal geothermal leases NVN-079104 and NVN-079105. The leases include geothermal resources under approximately 13 sections in Townships T17N R29E, T17N R30E, and T18N R30E, Mount Diablo Base and Meridian (MDB&M), located approximately seven miles southeast of Fallon, Nevada. The lease areas and surface land management is shown in Figure 1.1-1.

A geothermal lease typically grants the lessee access to geothermal resources in the lease area for a period of 10 years. The terms of the lease require the lessee to show a certain level of diligence toward developing the geothermal resources within the lease area or the lease may be

Figure 1.1-1: Land Management and Jurisdiction in the Project Area



SOURCE: USGS 1985, Ormat Nevada, Inc. 2007, and MHA Environmental Consulting 2008



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terminated. Once an area is developed for productive use of geothermal energy, the lease allows the lessee use of the resource for 40 years, with a right of renewal for another 40 years.

Geothermal exploration and production on federal land conducted through leases is subject to terms and stipulations to comply with all applicable federal and state laws pertaining to sanitation, water quality, wildlife, safety, and reclamation. Lease stipulations may be site-specific and are derived from the environmental analysis process.

### **1.1.3 ENVIRONMENTAL ANALYSIS**

The Navy and the BLM are both lead agencies under NEPA. Both agencies will consider this EA and the effects of the proposed action prior to deciding whether to authorize the Carson Lake Geothermal Exploration Project. The BOR is acting as a cooperating agency for preparation of the EA. This EA was prepared by the BLM Carson City Field Office in accordance with the requirements of NEPA and the BLM NEPA Handbook H-1790-1. This document describes the proposed exploratory program and alternative projects, and identifies mitigation measures to minimize or eliminate adverse impacts. This EA will serve as a decision-making tool to assist the agencies in their determination to approve or reject the proposed actions, consistent with requirements of NEPA.

There are four stages of geothermal resource development within a lease, (1) exploration, (2) development, (3) production/utilization, and (4) reclamation. Each of the four stages requires BLM authorization and compliance with NEPA when ground-disturbing activities are proposed. The Carson Lake Geothermal Exploration Project is of an exploratory nature and does not include development or utilization of the resource. If a successful, commercially viable resource is found during the exploration project, a separate proposal will be submitted by Ormat and additional environmental analysis will be conducted under NEPA.

## **1.2 Purpose and Need**

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### **1.2.1 PROJECT PURPOSE**

The purpose of the project is to further explore the potential for geothermal development on BLM federal geothermal leases held by Ormat and on lands managed by the Navy at NAS Fallon, pursuant to the Geothermal Steam Act of 1970.

The primary focus of the Navy contract with Ormat is on the development of geothermal resources contained within the boundary of NAS Fallon. In August of 2006, ORNI 16, LLC (a wholly owned subsidiary of Ormat Nevada, Inc.) signed a Long Term Firm Power Purchase Agreement (PPA) with Nevada Power. The Public Utility Commission of Nevada approved the PPA in January of 2007. Provisions of the PPA require Ormat to achieve commercial operation within 36 months following all necessary approvals and establish normal capacity at 24 MW, with provisions for adjustments between 20 and 30 MW with notification to Nevada Power when all drilling is completed but no later than 13 months after all approvals.

### **1.2.2 PROJECT NEED**

The need for the project is to meet the requirements of the National Energy Policy Act of 2005, the BLM's implementation strategy titled, *BLM Implementation of the National Energy Policy*, and other federal policies that encourage the use of alternative and renewable energy.

The Geothermal Steam Act of 1970, amended and supplemented by the National Energy Policy Act of 2005; the Mining and Mineral Policy Act of 1970; the Federal Land Policy and Management Act of 1976; and the National Materials and Mineral Policy, Research and Development Act of

1980 direct the federal government to foster and encourage private enterprise to develop alternative energy resources with appropriate environmental constraints.

The DOI policy, consistent with Section 2 of the Mining and Mineral Policy Act (MMPA) of 1970 and sections 102(a)(7), (8), and (12) of the Federal Land Policy and Management Act (FLPMA) of 1976, is to encourage the development of mineral resources, including geothermal resources, on federally managed lands. The Secretary of the Interior has the authority and responsibility to lease public lands and certain other federal lands, including BOR-managed lands, for geothermal development. The Secretary has delegated this responsibility to the BLM. Under the terms of the Geothermal Steam Act (and the National Energy Policy Act) and its implementing regulations, the BLM must respond to the plans and programs submitted by the lessee (or unit operator) and either approve, require modification, or deny these applications.

### **1.3 Land Use Plan Conformance Statement**

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The proposed action is consistent with the Carson City Field Office (CCFO) Consolidated Resource Management Plan (CRMP) (BLM 2001). The CRMP includes the national policy for mineral and energy development on page MIN-1, which "...encourages the development of federal mineral resources and reclamation of disturbed lands."

The CRMP also states that "Public lands in the Field Office area of jurisdiction are open to mineral and energy development activity with the following exceptions..." The proposed area in Fallon, Nevada, is not included in the excluded areas and is therefore open to geothermal prospecting, exploration, development, extraction, and other uses reasonably incident. The 400-acre Grimes Point site is an area excluded from mineral resource development. The proposed project does not fall within the 400 designated acres of Grimes Point.

Three of the proposed well sites are located on the NAS Fallon Station (Main Station) and therefore fall within the area addressed in the *Bureau of Land Management and Navy Resource Management Plan for Certain Federal Lands in Churchill County, Nevada* (BLM and Navy 2001). The plan does not restrict use of mineral resources for geothermal development on the Main Station lands.