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Proposed west-Fallon survey description

The purpose of the survey

The purpose of the experiment will be to gather passive data at the same location as a 2010 active survey, to assess whether passive seismic surveys are producing the same results as active seismic surveys. We have developed methods of processing the seismic ambient noise which could diminish or eliminate the need for active seismic surveys. In addition, a larger (~ 4 km) aperture array of instruments will be installed around the line, to gather lower resolution velocity model information. This project is purely scientific research and is not part of an exploration project. No induced seismicity and no vibroseis trucks will be used.

Start date and end date

The start date and end dates will be **October 1'st, 2012 and November 1'st 2012.**

Legal land description Meridian Township Range Section (MTRS)

The land is located in NV21, (T20N, R27E, T20, R28E, T19N, R27E and T19N, R28E (Figure 1) and the experiment location (Churchill County, Nevada) is shown in Figure 2. The red lines show the boundaries of T20N,R27E (left) and of T20, R28E (right).

Relationships to Statues, Regulations, and Other Plans

The project will not interfere with the industrial or private activities in the area. The proposed project is also consistent with State of Nevada and Churchill County ordinances, policies and plans. The proposed passive survey is consistent with the National Energy Policy which encourages the development of energy resources including geothermal resources on federally

managed lands. Magma Energy and the Soda Lake power plant owners, personnel and operators are not affiliated with the proposed project in regards to permitting, and have no proposed activity liabilities.

Project area setting

The project area is located five miles northwest of Fallon, Nevada, in the west-central part of the Carson Desert, at an elevation of approximately 3,960 feet above mean sea level. The Carson Desert is a broad, flat, northeastward trending inter-montane basin approximately 60 miles long and ranging from 8 to 30 miles wide. It is bounded on the east by the Lahontan and Stillwater Mountains, on the west by Hot Springs and the West Humboldt Ranges, and on the south by the Dead Camel, Desert, Blow Sand, and Cocoon Mountains. Local topography is characterized as relatively flat with some small undulating hills rising no more than about 10 feet in most areas.

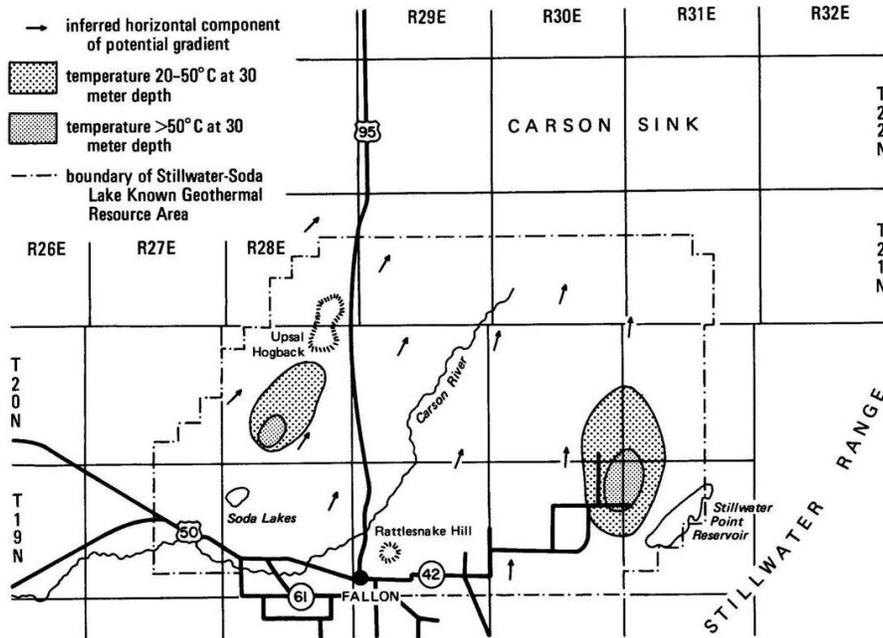


Figure 1. Location of the study area in northwest Fallon.

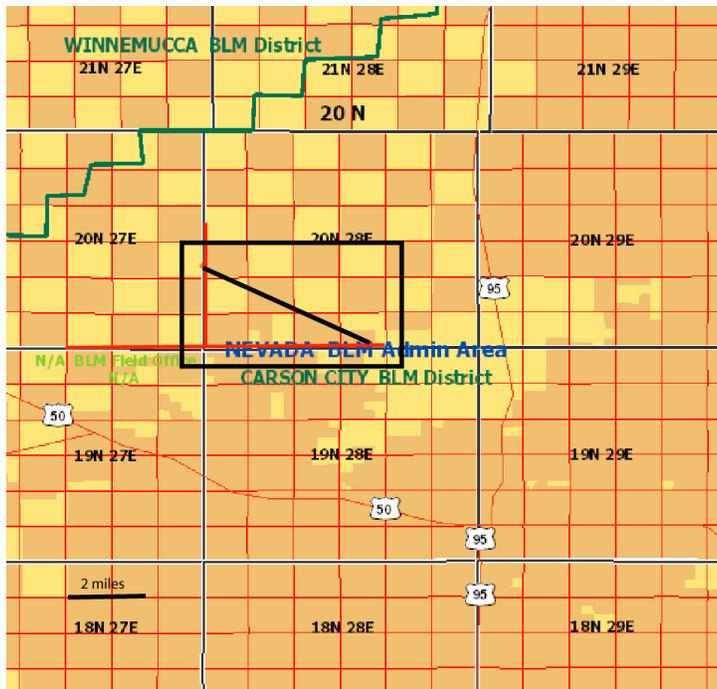


Figure 2. The black rectangle shows the proposed larger array (LA) deployment area and the line connects the end points of the proposed passive seismic line. Some of the land areas are private and permission will be obtained to install sensors on these lands, otherwise sensors would be installed around the property boundaries.

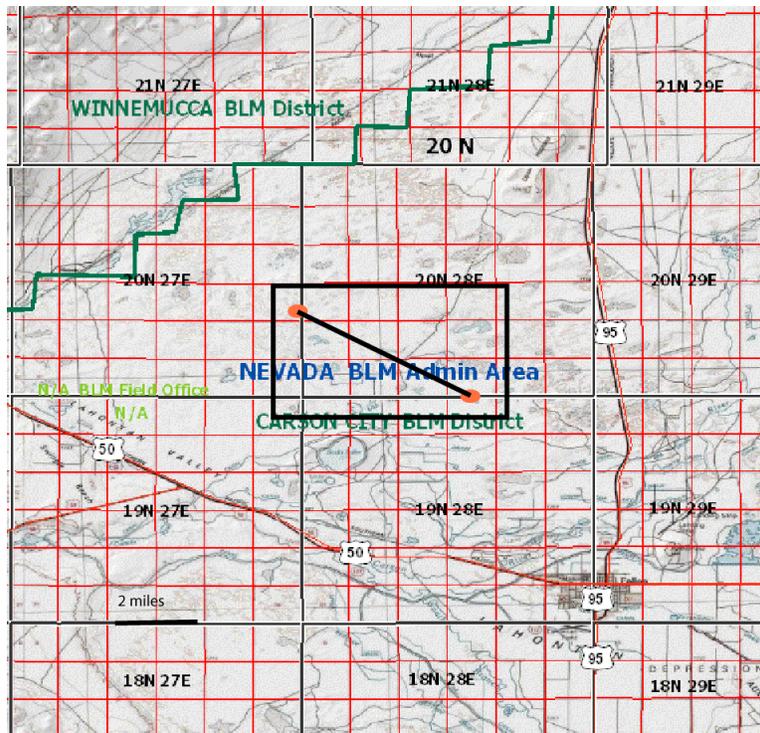


Figure 3. Another view of the study area.



Figure 4. A view of the active seismic Line 1 along which we will deploy our sensors. Approximately 100 geophones with Texan digitizers will be deployed at equal distance (minimum 15 ft) along this line. The dots on this line are 100 ft from each other.

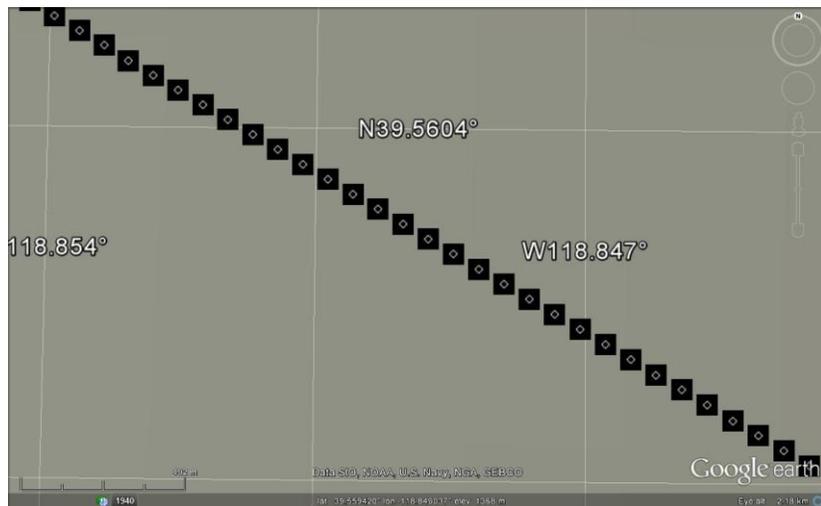


Figure 5. A close view of the line in Figure 4.



Figure 6 shows the study area with the country roads and blue pipelines. This area is shown as a black rectangle in Figures 2 and 3. Two lines are shown in this figure, however, we will only duplicate the NW-SE line, which is also shown in Figures 4 and 5.

Surface ownership including other surface management agencies

BLM manages the subsurface geothermal resources and the Bureau of Reclamation, Lahontan Area Basin (Reclamation) is the surface management agency. The project area is located in Churchill County, Nevada, on public and private land. The BLM Carson City District, Stillwater Field Office manages the subsurface geothermal resources and Reclamation is the surface management agency (Figure 2).

Detailed description of equipment to be used including size and weight of vehicles. Description of staging, and lay down areas.

The vehicles we intend to use are: truck Ford 150 and another UNR field truck (same dimensions as the Ford 150).

Staging area All the equipment will be transported in vehicles. No sensors or boxes will be stored on the ground. UNR will rent a unit in Fallon for overnight storage of the equipment.

The stations will be deployed as two arrays:

- A. Seismic pseudo-reflection line (named like this because it does not use an active source) from now on named SL, with sensors spaced at ~ 30 ft (Figures 4 and 5);
- B. Large Aperture (~4 km) from now on named LA with sensors spaced at ~ 200 m or more, depending on obtaining private land use permissions (Figure 6).

Lay-down areas will be every 15 ft along a line shown in Figures 4 and 5 and every 200-400 m in a grid covering the surface in Figure 6.

Length and width of access roads

There are approximately 20 miles of existing dirt and gravel roads within the study area (Figure 6). Assuming the roads are 15 feet wide, existing roads within the study area account for 58 acres of disturbance (46.8 acres public and 11.2 acres private). These roads are devoid of vegetation and do not provide productive soils and do not provide habitat for plant and wildlife species.

The LA stations will be accessed for deployment, for data collection once and for deployment dismantling (estimated 3-4 times). The SL stations will be accessed over 10 trips, because of the need to change Texan batteries. We will access the stations from the existing roads such that UNR will not interfere with existing industrial installations.

Photographs of the equipment to be used and photos of the disturbance created by the equipment.

The deployment will include:

- 1) 150 Vertical 4.5Hz geophones and 300 Texan digitizers (so as to swap for 150 Vertical Geophone/texan sites)
- 2) ~ 30 3-component stations:
30 3-component sensors (4.5Hz)
30 Reftek RT130 dataloggers (and 30 BIHO boxes)



Figure 7. Shows a deployed station, with the battery and digitizer on the ground and a buried short-period sensor.

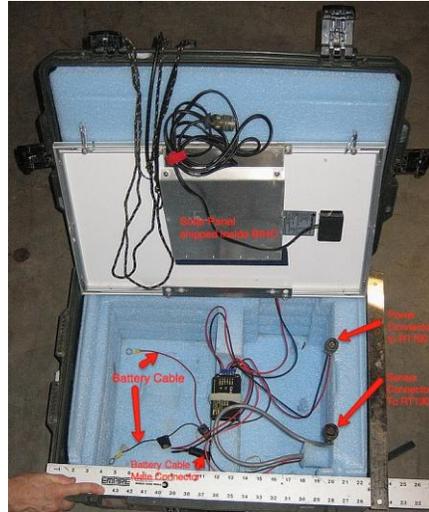


Figure 8 shows the BIHO box in Figure 7 and its content.



Figure 9 shows the BIHO box and a short-period sensor larger than the one we would use.

Estimate of acres to be disturbed, including dimension of disturbance.

The experiment area will be 1.8 x 1.8 miles which is approximately 2010 acres. The geophones have needle-like metallic parts about 3 inches long which stick in the ground, and for the short period sensors ~6 inches deep and ~12 inches in diameter would be dug.

Environmental protection measures and best management practices

Air Quality Prudent speed limits would be observed on unpaved roads throughout the project area in order to reduce dust emissions.

Cultural Resources UNR will limit vehicle and equipment travel to previously-identified established roads and to paths agreed upon with the land owners or administrators. Any unplanned discovery of cultural resources, items of cultural patrimony, sacred objects or funerary items requires

that all activity in the vicinity of the find ceases, and the Field Manager, Stillwater Field Office, 5665 Morgan Mill Road Carson City, Nevada 89701, be notified immediately by phone (775-885-6000) with written confirmation to follow. The location of the find would not be publicly disclosed, and any human remains must be secured and preserved in the place until a Notice to Proceed is issued by the authorized officer.

Wildlife Trash and other waste products would be properly managed and UNR would control garbage that could attract wildlife. All trash would be removed from the sites and disposed of at an authorized landfill. Reclamation of the disturbed areas would be completed in order to return these areas to a productive wildlife habitat.

Noxious Weeds, Invasive, and Non-Native Species Because the cars will be used only on existing roads, the probability of vehicle contamination with noxious weed populations will be very low, close to zero.

Affected environment and environmental consequences

This section describes the affected environment in the vicinity of the proposed passive survey and the potential impacts from implementation of the proposed passive survey. The project area lies at the north end of the Lahontan Valley, southeast of the Hot Springs Mountains and northwest of Fallon in Churchill County, Nevada (Figures 1 and 2). It is situated northwest of the Highway 95 and Highway 50 intersection. The elevation varies between 3,955 and 3,990 feet above mean sea level (see reference DOI-BLM-NV-C010-2010-0008-EA).

The following resources may be present and potentially impacted by the proposed passive survey:

- Cultural Resources;
- Invasive, Non-Native and Noxious Species;
- Migratory Birds;
- Native American Religious Concerns;
- Soils;
- Vegetation;
- Wildlife;

Cultural resources The projects would be approved by the BLM and Reclamation prior to project initiation, thereby avoiding or mitigating adverse effects on identified cultural sites. The activities would avoid or mitigate, to the extent possible, all known and discovered resources. No incremental cumulative effects would occur to cultural resources as a result of the proposed passive survey.

Invasive, non-native and noxious weed species The proposed passive survey does not have the potential to create conditions favorable for the invasion of invasive, non-native, and noxious species.

Migratory birds Habitat within the study area supports low abundance and nesting density for migratory birds. Disturbance from the proposed passive survey, may displace birds into adjacent habitat, of which there is an abundance; therefore impacts to species stemming from resource competition (food, forage, cover) should be minimal. Impacts to migratory birds from dispersed recreation within the study area, as well as in areas of the proposed passive survey that do not realize further development, should be temporary. Consequently, minimal incremental

cumulative impacts would occur to migratory birds from the proposed passive survey.

Native american religious concerns There are no Native American Religious concerns relative to this project.

Soil Soil disturbance within the study area from the activities would be minimal, with no increased potential for erosion of soils.

Vegetation The project would impact vegetation resources by the removal of vegetation. Cumulative impacts to vegetation will be minimized by installing the stations at locations without vegetation.

Wildlife Wildlife would be minimally affected by a temporary increase in traffic, however a very small area will be disturbed, thus having a negligible contribution to cumulative effects.

Methods to reclaim the surface.

The geophones will be pulled out and the 3 inch hole with 1/2 inch diameter will be filled. Each 6 inch deep short-period sensor hole with ~12 inch diameter will be filled.

References

ENVIRONMENTAL ASSESSMENT, Magma Energy (U.S.) Corp., Soda Lake Geothermal Exploration Project , DOI-BLM-NV-C010-2010-0008-EA