PLAN OF DEVELOPMENT

NVN 084465

PSI Amargosa PV Solar Project

Nye County, Nevada

Submitted by:

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c/o Iberdrola Renewables
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Submitted to:

Bureau of Land Management
Las Vegas Field Office
4701 North Torrey Pines Dr.
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December 2009

FORWARD

In November 2007, Pacific Solar Investments (PSI) submitted a Right-of-Way (ROW) application (Serial Number NVN 084465) and draft Plan of Development (POD) to construct a solar energy facility. On May 1, 2008, PSI was acquired as a wholly owned subsidiary of Iberdrola Renewables (IBR). On November 13, 2008, PSI received a letter from the Bureau of Land Management (BLM) with an updated POD template requesting PSI to revise its previously submitted POD. In an amended POD submitted on January 28, 2009, PSI requested BLM's authorization for a ROW for site access and clearance for construction of the solar energy project and connecting transmission line. This revised POD is being submitted in response to comments received from BLM on February 20, 2009, regarding the amended POD, to address comments received from the Engineering Review of the POD in August 2009 and to incorporate the changes specified in the amended ROW application submitted in December 2009.

The POD is a dynamic document and we expect it to be refined as we learn more about the project site design and layout. PSI looks forward to evolving the POD based on discussions with BLM and surrounding landowners, environmental analysis, and the project's transmission/ interconnection requirements. More comprehensive studies are in progress, and will be completed as part of the project-level National Environmental Policy Act (NEPA) review that was initiated during late 2009.

About the Company

PSI is a wholly-owned subsidiary of IBR. IBR is a leader in the renewable industry in the United States. Within its power business, IBR is focused on the development and marketing of clean fuel sources, including in particular wind, as well as solar, biomass, and natural gas-fired generation. Through direct ownership or power purchase agreements, IBR controls over 3,000 MW of wind generation (currently in operation or under construction) and then integrates and markets the output from these projects into the wholesale power market. IBR has wind projects under construction across the United States and recently embarked on an ambitious program to increase its supply of wind generation and environmental attributes to 3,500 MW by 2010. IBR's U.S. headquarters are located in Portland, Oregon.

In wind generation, IBR has developed a vertically integrated capability to reliably and cost-effectively deliver wind power products ideally suited to meet its customer's needs. IBR is leveraging its experience in wind to build its solar business. This capability includes the following:

1. **Development**: IBR is the second largest wind developer in the United States, pursuing greenfield projects, repowering projects, and acquisitions. It currently has more than 25,000 MW of both wind and solar projects under active development
2. **Operations**: IBR's experienced, highly trained, safety conscious O&M group currently oversees the operations of over 2,000 MW of installed wind power capacity in the US. IBR also has 24-hour remote operational capability for its projects.
3. **Forecasting and Resource Analysis**: IBR leads the market in its ability to predict wind generation through sophisticated forecasting techniques. Also, IBR's large meteorology group is responsible for placing sophisticated wind, solar and other climatological measurement tools on project sites and analyzing data to better predict project generation.
4. **Trading**: IBR has established robust systems, including its 24-hour real-time and day-ahead desks, to manage renewable energy into short-term markets.

5. **Origination**: IBR consistently tailors energy supply contracts to best suit customer's needs, and, as a result, approximately 80% of IBR's controlled wind is sold under long-term contracts. IBR was also the first company to sell renewable energy into the merchant market and considers its ability to sell power into liquid markets as a competitive advantage, enabling it to bring projects to operation without long term PPAs in place.

In addition to direct ownership of the energy and environmental attributes from its wind energy portfolio, one of IBR's primary competitive advantages is the capability to develop and provide customized physical and financial power supply arrangements utilizing strategic generation and contract resources. IBR has experienced and skilled personnel in the areas of long-term structured power sales and purchases, power scheduling and dispatch, asset management and optimization, fuels procurement, and renewable energy – all of which translates to greater value for our customers. IBR has a proven track record of completing key transactions and delivering upon contractual obligations after execution. IBR regularly structures products in response to the needs of large wholesale customers including attributes alone, bundled energy and attributes, and shaped energy products.

IBR regularly carries out power supply transactions with over 50 counterparties in the Western Electricity Coordinating Council region, including public utility districts, investor owned utilities, electric cooperatives, and federal power marketing administrations.

PSI enjoys the resources of its international corporate parent, Iberdrola Renovables, S.A., publicly listed on the Madrid stock exchange and a world leader in the development of renewable power. Credit support for PSI is provided through Iberdrola Renewables Holdings, Inc. which enjoys a corporate credit rating of A- from rating agency Standard & Poor's. IBR finances all of its projects on balance sheet and does not rely on capital markets to provide financing for its projects. This access to capital provides IBR with a strong competitive advantage during this current economic environment.

Iberdrola Renovables, S.A.'s financial statements can be accessed at the following location:

http://www.iberdrola.es/webibd/corporativa/iberdrola?IDPAG=ENWEBACCINVERSOR&codCache=2327345986628072\

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ABBREVIATIONS AND ACRONYMS

AC	alternating current
ACEC	Area of Critical Environmental Concern
afy	acre-feet per year
ASP	PSI Amargosa PV Solar Project
ARPA	Archaeological Resources Protection Act
BLM	Bureau of Land Management
BMP	best management practices
BWPC	Nevada Division of Environmental Protection (NDEP) Bureau of Water Pollution Control
CAA	Clean Air Act
CFR	Code of Federal Regulations
CSP	Concentrated solar power
CWA	Clean Water Act
DC	direct current
DOD	Department of Defense
ESA	Endangered Species Act
EH&S	environmental health and safety
EIS	Environmental Impact Statement
FCR	Field Contact Representative
IBR	Iberdrola Renewables
IEEE	Institute of Electrical and Electronic Engineers
kV	kilovolt
KW	Kilowatt
MSDS	Material Safety Data Sheet
MW	megawatt
NAAQS	National Ambient Air Quality Standards
NDOT	Nevada Department of Transportation
NEPA	National Environmental Policy Act
NFWO	Nevada Fish and Wildlife Office
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System

NRHP	National Register of Historic Places
NSOE	Nevada State Office of Energy
O&M	operation and maintenance
OHV	Off-highway vehicle
ORV	Off-road vehicle
PLC	programmable logic controller
PMP	preventive maintenance program
POD	Plan of Development
PPA	Power Purchase Agreement
PSD	Prevention of Significant Deterioration
PSI	Pacific Solar Investments (now a wholly owned subsidiary of Iberdrola Renewables)
PUCN	Public Utilities Commission of Nevada
PV	photovoltaic
RAS	Remedial Action Scheme
ROD	Record of Decision
ROW	right-of-way
SHPO	State Historic Preservation Office
SPCC	Spill Prevention, Control and Countermeasure (Plan)
SPREHL	Scottish Power Renewable Energy Holdings
SWPPP	Stormwater Pollution Prevention Plan
TUP	Temporary Use Permit
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VEA	Valley Electric Association
V	volt

1 INTRODUCTION

Pacific Solar Investments (PSI or Applicant) is proposing to construct the 150 megawatt (MW) PSI Amargosa PV Solar Project (ASP) in Nye County, Nevada as shown in Figure 1 in Appendix A. The project will be constructed exclusively on lands that are managed by the Bureau of Land Management (BLM). This Plan of Development (POD) has been updated to change the proposed solar technology from that included in the prior POD (concentrated solar power [CSP], parabolic trough technology) to a photovoltaic (PV) technology, and also to respond to comments on the prior POD received from the BLM on December 30, 2008.

The proposed technology and facility arrangement for this project reflect the Applicant's preliminary assessment of the technology and project site at this time. As new information is obtained, the technology and arrangement may be adjusted to reflect the rapid changes in the technology. Such changes will be reflected in future revisions to this POD. Adjustments and changes may also be necessary as additional details are determined about the ASP site.

1.1 Type of Facility

PSI is currently proposing to use a thin film PV system for the ASP. PV technology uses panels consisting of rows of photoelectric cells which convert the sunlight striking the cells directly into low voltage direct current (DC) electricity. Photoelectric cells are mounted in rows onto panels, and covered with a protective coating that protects the cells from the elements, but allows sunlight to pass through. The panels are mounted in arrays that are connected to a voltage inverter that converts the DC current into alternating current (AC) electricity. The AC current output from a number of inverters then is passed through a transformer which increases the AC voltage.

Thin-film PV arrays will be mounted in rows attached to fixed support systems. The arrays are stationary and are oriented along an east-west axis. The arrays are fixed at an angle of 25 degrees, tilted towards the south. This tilt angle is chosen in order to maintain the most favorable angle between the panel and the sun over the course of the operating period.

PV facilities are not constrained by the minimum capacities or incremental sizes of mechanical systems (such as steam turbines, generators, or similar equipment) that are required in other technologies including CSP. PV systems can be installed in different increments that fit with the existing site constraints. The ASP, as currently planned, will consist of three, 50-MW phases that when fully installed will provide the overall 150 MW capacity.

1.2 Purpose and Need for the Facilities

Solar energy is a clean source of electricity that provides benefits on both a local and national level. It is also an inexhaustible, domestic resource that helps reduce our dependence on imports of natural gas, oil and other fuels. California and Nevada's large desert areas offer some of the highest solar power potential in the country, and most of this resource is still untapped.

Nevada possesses a wealth of potential sites for renewable energy – more than sufficient to satisfy its own needs. Currently, Nevada imports more than 50 percent of its electrical energy at critical peak times, much of it at high and volatile prices. (Source: Energy Nevada). To help Nevada take advantage of its renewable resource to meet its growing energy needs, the State has put several energy policies into place to encourage the growth of a renewable energy industry. In 1997, Nevada enacted a renewable portfolio standard. Under the

standard, the state's two investor-owned utilities -- Nevada Power and Sierra Pacific Power -- must use eligible renewable energy resources to supply a minimum percentage of the total electricity they sell. The portfolio requirement requires an increase by 3 percent every two years, to achieve 20 percent of retail sales by 2015. At least 5 percent of the standard must be generated, acquired, or saved from solar energy systems. (Source: Database of State Incentives for Renewables and Efficiency).

The Governor is also engaged in bringing renewable energy to the State of Nevada through the Nevada State Office of Energy (NSOE). The group is dedicated to improving the energy infrastructure, diversifying the sources of energy produced and used, and encouraging the efficient use of energy to enhance the energy security of Nevada. One goal in support of this mission is to encourage and support the further diversification of Nevada's electricity supply, which is accomplished by developing renewable energy projects to complement existing fossil fuel generation.

Nevada is already home to one of the largest PV projects in the United States, located at Nellis Air Force Base. The 14.2-MW project produces enough electricity to meet an average of 25 percent of the Base's electricity requirements. The Nellis project reduces the Base's carbon dioxide emissions by 24,000 tons annually, equivalent to planting 260,000 trees or removing 185,000 cars from the roadway. (Source: Nevada Renewable Energy and Energy Conservation Task Force). Additionally, the PV project used local companies to build the facility and employed more than 95 union electricians and 35 union iron workers during construction.

In addition to Nevada power needs, neighboring states also need power to meet energy demands. By locating projects in Nevada for energy export to other states, the state receives the economic development benefits. The Blue-Green Alliance, the partnership of the Sierra Club and the United Steelworkers, recently commissioned a series of new reports highlighting the economic opportunities that could come from investing in renewable energy. The reports detail exactly how many jobs could be created at existing firms capable of manufacturing components for renewable energy equipment. The report concludes that there are more than 200 existing firms in Nevada that could move into the renewable energy sector, creating 932 jobs in the solar energy industry alone. When other renewable resources are considered, including wind and geothermal, the potential amount of new jobs in Nevada for solar construction and manufacturing increases to 3,000. (Source: The Blue-Green Alliance)

The BLM offices in Nevada are in a critical position to assist the growth of a renewable energy industry by working with developers to site renewable energy projects on BLM lands. In October 20, 2004, BLM issued an Instruction Memorandum declaring solar energy as part of an overall strategy to develop a diverse portfolio of domestic energy supplies for the future. This memorandum notes that continued growth in solar energy development is important for delivering larger supplies of clean, domestic power for America's growing economy. In addition, Executive Order 13212, issued in early 2008, directed that executive departments and agencies take appropriate actions "to expedite projects that will increase the production, transmission, or conservation of energy." The recently initiated Solar Energy Development Programmatic Environmental Impact Statement (EIS) will lay the groundwork for solar development on BLM lands. In January 2009, the Secretary of the Interior, recognizing the need to support renewable energy projects, issued a Secretarial Order that authorizes the BLM to establish coordination offices that will expedite the permitting of wind, solar, biomass, and geothermal projects, along with needed electrical transmission facilities, on BLM-managed lands.

1.3 Alternatives to the Project

The Applicant considered both PV and CSP technology options for the Amargosa sites, and concluded that PV has advantages on these specific sites given their particular environmental conditions. Table 1 provides a general comparison of PV and CSP technologies and discusses suitability for the Amargosa site.

Table 1: Comparison of Alternatives for ASP

Factor	CSP Technology Criteria	PV Technology Criteria	Amargosa Site Suitability
Acreage	10– 12 acres per MW	5 – 8 acres per MW	Sufficient land for both technologies, however CSP requires much larger project sizes (150-250 MW) to capture economies of scale.
Location and Layout	Stringent requirements for minimal slope (1 percent or less) across solar collection field.	Minimal slope impact below about 5 degrees due to flexibility with mounting structures.	Site is suitable for CSP or PV. CSP could require substantial grading and cut/fill to achieve required slope. Initial estimate is cut/fill of approximately 6 million cubic yards of soil. PV requires grading in limited areas – primarily project roads, some limited grading may be necessary along some PV arrays.
Water Consumption	Process water: 2,600 – 3,500 acre-feet of water per year based on an annual operating profile.	Minimal requirements for panel washing and dust control. If necessary, water can be trucked in from offsite.	Amargosa site has limited water resources which makes PV the better alternative.
Permitting	Greater permitting complexity due to higher water and grading requirements.	Greater flexibility in permitting considering lower water and grading requirements.	PV can have lower site impact than CSP due to minimal site grading and water requirements.
Transmission	Connection to local transmission system. Voltage of interconnect and utility system upgrades to be determined by interconnect utility.	Connection to local transmission system. Voltage of interconnect and utility system upgrades to be determined by interconnect utility.	No difference between CSP and PV alternatives for the same size facility. Transmission is a limiting factor for a 150 MW Phase I CSP plant at the Amargosa site. However, the first 50 MW phase of PV can be built and connected to the existing transmission line before any system upgrades are required.

Table 1: Comparison of Alternatives for ASP

Factor	CSP Technology Criteria	PV Technology Criteria	Amargosa Site Suitability
Time to COD	36-45 months of design development, engineering, procurement and construction time. Long lead time also due to procurement time for steam turbine.	18-24 months of design development, engineering, procurement and construction time.	Neutral impact that depends primarily on market conditions.
Technology Adaptability	Required to build in 150-250 MW phases to achieve economies of scale.	Modular, can increase size of project phases to correspond with market evolution.	PV allows greater flexibility to increase facility size as market evolves.

Note: CSP system comparison based on parabolic trough system with wet cooling and storage

1.4 Project Schedule

The facility size and specific site layout will depend on environmental and market conditions. At this time, PSI expects to build three phases of up to 50 MW each on an annual basis, with a total capacity of 150 MW.

The project schedule (for the first phase of 50 MW) is anticipated to require up to 18 months for the permitting, followed by approximately 18-months for design, construction and start-up (36 months total duration for first phase.) Each subsequent 50-MW phase of the project is anticipated to require approximately 12-months to install and bring on-line. A preliminary project schedule for the ASP is shown in Figure 2 in Appendix A.

1.5 Potential Conflicting Land Uses

A review of the BLM Legacy Rehost 2000 (LR2000) database was made to identify other, potentially conflicting, claims to the PSI ROW application. Tables 2 and 3 describe the authorized and pending ROW grants (respectively) from BLM for the ASP site, as shown in the LR2000 database as of March 4, 2009. The LR2000 data does not cover grazing permits, which may also impact the project. A listing of the LR2000 data is included in Appendix B.

Table 2. Authorized ROW Grants

Serial Number	ROW Holder	Meridian Township Range Section(s)	Acreage within Case file	Land Use
NVCC 0018078	NV Dept of Trans	21 0140S 0480E Sections 29, 30, 32, 33, 34; 21 0150S 0480E Section 3	2,052.02	Hwy 95
NVN 029793	Valley Electric Association	21 0140S 0480E Sections 29, 30, 32, 33; 21 0150S 0480E Section 3	381.70	Lathrop Wells-Beatty Transmission Line; Switching Substation
NVN 062848	Nye Cnty Nuc Wst Repos	21 0140S 0480E Sections 29, 32, 33	27.37	22 Monitoring Wells for Groundwater Quality
NVN 073706	Nevada Bell	21 0140S 0480E Sections 29, 30, 33, 34; 21 0150S 0480E Sections 3, 10, 15	797.74	Telephone Lines
NVN 0066289	Valley Electric Association	21 0140S 0480E Sections 29, 30, 32, 33, 34; 21 0150S 0480E Section 3	377.90	Valley Electric South Distribution Lines

Table 3. Pending ROW Grants

Serial Number	ROW Applicant	Meridian Township Range Section(s)	Acreage within Case file	Intended Land Use
NVN 074682	Allied Building Materials	21 0140S 0480E Section 31	181.90	Stockpiling Cinder
NVN 083979	BLM	21 0150S 0480E Sections 8, 9	944,373.00	Mineral Potential
NVN 084465	Pacific Solar Investments Inc	21 0140S 0480E Sections 29, 30, 31, 32, 33, 34; 21 0150S 0480E Sections 3, 4, 5, 6, 7, 8, 9, 10, 15	7,500.00	Amargosa PV Solar Plant
NVN 086784	BLM	21 0150S 0480E Sections 3, 4, 5, 6, 7, 8, 9, 10, 15	2.00	Film – Still Photo at Big Dune

During the review, two active mining claims were found in Meridian 21, Township 14 South, Range 48 East, Section 29. Although the pending ROW for ASP includes the same Section, the ROW aliquot affected do not coincide with the active mining claim areas. Claim Amargosa No 1 (NCM824854) appears to be north of the PSI ROW request. The second claim, Amargosa No 2, (NCM8248855) is listed as being in the NW SW Quadrant. This should not overlap or conflict with the PSI ROW request, which is for the SESW, W2SW and SWSE aliquot of Section 29. The LR2000 mining claim report information is included in Appendix B.

Additional information about the project location is provided in Section 2.1.

1.6 Solar Insolation Testing

PSI applied for a permit to conduct solar monitoring, using Form 2920, and received permission from BLM to install a solar monitoring station at the Amargosa project site in July 2009. PSI subsequently installed the solar monitoring equipment on July 9, 2009 to measure the solar insolation at the Amargosa project site. The solar monitoring equipment includes a standard RSR2 shadowband radiometer and anemometer. The RSR2 is a self-contained data logging system that includes a head unit, a mounting pole and yoke, a data logger enclosure and a solar photovoltaic panel. The head unit is supported by a U-shaped yoke. Inside the enclosure is the data logger, the RSR2 motor controller, a 33 Amp-hour sealed battery and battery charge controller. The radiometer is supported on a 6-foot tripod. The separate 10-foot (3-meter) tall corrosion-resistant anemometer instrument includes one mast, one ground rod, and four guy anchors.

2 General Facility Description and Design

2.1 Project Location

The ASP site is located in rural Nye County, Nevada, south of the North Valley View Road exit off of State Route 95, south of Amargosa Valley in the Amargosa Desert. The Site is situated between the Yucca Mountains to the north and the Sand Hill and Funeral Mountains to the south.

The ASP site is north of the Amargosa South Solar Project (ASSP) site (NVN 084466). The Amargosa South project is to be developed at a later stage by PSI. Two small hills and the sandy base of Big Dune are in the southwest corner of the Site. Big Dune and Death Valley National Monument are located south of the study area, and open desert is located east and west of the study area. The elevations of the Site range from approximately 2,450 to 2,600 feet above mean sea level.

The current land use is limited to cattle grazing and off highway vehicle (OHV) use. Transmission lines, graded access roads, and the route for the Best in the Desert, Vegas to Reno Off Road Vehicle (ORV) race route are also located within the study area.

The ASP is located entirely within federal lands administered under the jurisdiction of the BLM. The specific location of the project area is detailed in Table 4. The general site layout is shown in Figure 4 in Appendix A. This arrangement was selected to reduce grading and minimize the potential impacts from the existing storm drainage paths on the project, following a review of the topography and hydrologic constraints. (These constraints are discussed and shown on Figure 11 of Appendix L.)

Table 4. Amargosa North ROW Area

Township 14 South, Range 48 East	Section 29 (partial), 30 (partial), 31, 32, 33 (partial), and 34 (partial)
Township 15 South, Range 48 East	Section 3 (partial), 4, 5, 6, 8 (partial), 9 (partial), and 10 (partial)
The Sections described above contain the project area where the PV arrays and related facilities would be located. An interconnecting transmission line is needed in addition to the project area and would be contained within a 500 foot wide strip within the following Sections:	
Township 15 South, Range 48 East	Section 2 (partial), 11 (partial), and 12 (partial)
Township 15 South, Range 49 East	Section 7 (partial), 8 (partial), 9 (partial), 10 (partial), 11 (partial), and 12 (partial)
Township 15 South, Range 50 East	Section 7 (partial), 8 (partial), 9 (partial), 4 (partial), 3 (partial), and 2 (partial)
Township 14 South, Range 50 East	Section 35 (partial), and 36 (partial)
Township 14 South, Range 51 East	Section 31 (partial), 32 (partial), 29 (partial), 28 (partial), and 27 (partial)

2.2 Facility Size and Dimensions

The facility size and specific site layout will depend on environmental and market conditions as the project is implemented. At this time, PSI expects to build three phases of up to 50 MW each, resulting in a total capacity of 150 MW.

To minimize overall land disturbance, Phase 1 of the project will be constructed at the southern end of the site, as shown on Figure 4 in Appendix A. Phase 2 and 3 will be constructed sequentially northward towards Highway 95 from Phase 1. This will allow all construction activities to occur within the overall footprint shown on Figure 4 in Appendix A. The overall footprint of the final ASP facilities is estimated to be approximately 1,232 acres, and the interconnecting transmission line and substation is approximately 1,124 acres. Table 5 provides a summary of the estimated acreage for the different ASP facilities. Figures 5A and 5B in Appendix A show the proposed route for an interconnecting transmission line between the ASP project substation and the Nevada Power Transmission lines. The final layout of the facility and interconnection may change as additional information becomes available and the design work proceeds.

Table 5. Estimated Project Aerial Extent

Component	Estimated Aerial Extent (acres)
Phase 1 (1)	412
Phase 2	391
Phase 3	389
Alternate Development Area (2)	420
Project substation (1)	5
Temporary laydown, parking areas (1)	15
Other Facilities (O&M Building and parking, transmission line poles, etc.) (1)	20
Transmission Line and Utility Substation (3)	1,124
Total Estimated Area for ASP (2):	2,356

Notes:

1. The area for Phase 1 indicated on Figure 4 (452 acres) includes the project substation, temporary laydown, parking areas and other facilities required for Phase 1.

2. The alternate development area is identified as possible substitute land area should problems be identified, through field surveys, with any of the areas included in Phase 1, 2, or 3. As such, it is not included in the total area for the final facility footprint because it would replace any land removed from the three identified phases of this project."

3. The transmission line will be located entirely on land under federal jurisdiction.

2.3 Project Components

The ASP will consist of the following components, which are described in more detail in the following sections:

- Solar fields (PV arrays with inverters and transformers)
- An operations and maintenance building
- Project substation, underground and overhead interconnecting electrical lines
- Primary transmission line from the switching station to the existing high voltage transmission line and utility substation at that interconnection point
- Communication and security components

2.3.1 Solar Field (PV Arrays) Arrangement

At the current time, PSI is planning to construct a 150-MW, thin film PV system, built in three, 50-MW phases. Solar energy technologies are advancing at a rapid rate and as a result, the exact arrangement and nature of the PV systems may vary in the final design. Each phase will include the installation of 50-MW of capacity, currently consisting of fifty pairs of 500-kilowatt (kW) subsystems. Each pair of 500-kW subsystems consists of two sets of PV arrays, the electrical cabling network (both DC and AC), two voltage inverters and one step-up transformer. Approximately 600 gallons of oil is contained in each step-up transformer.

The DC current from each pair of arrays is transmitted to the associated voltage inverter through underground DC electrical cables. The resulting AC current from each individual inverter is then routed through underground AC cables to the corresponding, oil-filled, step-up transformer. The output voltage from the inverter (315 V) is increased to the desired substation feed voltage (34.5 kV) by the transformer. The output from the individual step-up transformers are routed through underground electrical cables to the project substation where the voltage is again increased by another oil-filled step-up, substation transformer as described in Section 2.3.4. All transformers will only use non-polychlorinated biphenyl (non-PCB) oils. Depending on the equipment supplier/manufacturer selected, the cabling and interconnection of the components will vary. These details will be developed as the contract with the equipment supplier is completed and the detailed design proceeds. Generally, project wiring (DC cables, control and communication cables, low voltage and medium voltage AC cables will be buried. Depending on the final design, some cables may be combined into fewer larger cables in a linear fashion.

The minimum trench depth for DC cables, control and communication cables, and low voltage AC cables will be 24 inches. Trenches for medium voltage AC cables will be a minimum of 48 inches deep. Four to six inches of bedding material will be placed in the bottom of the trench and then the medium voltage AC cables will be placed in the trench so that the minimum depth of the cables is 42 inches. Native soil removed during the trenching process will be used as backfill where possible. If the native soil is not suitable as backfill, medium size sand or sand-silt will be used.

The PV panels are mounted to a fixed support system consisting of posts and brackets. Posts are either driven or placed in holes and grouted in place, depending on soil conditions. The posts are oriented in an east-west orientation. After the posts are placed, a bracket system is installed to accept the PV panels, with the brackets holding the panels at a fixed angle of 25 degrees tilt towards the south. Figure 6 in Appendix A provides examples of several typical installations of PV arrays.

2.3.2 Operations and Maintenance Building

The ASP will include an operation and maintenance (O&M) facility, housed in an approximately 2,000 square foot building. The building will be located adjacent to the access road with a 24-foot wide security gate, and the ultimate area of Phase 3 of PV installation. This O&M building will support all three phases. The O&M facility will include a foundation, with electrical and heating, ventilation, and air conditioning systems. The O&M facility will also include a number of portable toilets for workers. The portable toilets will be serviced on a regular basis, based on usage. Drinking water will be supplied for the workers at the facility. A separate guard shack will also be located at the entrance of the facility during the construction phase.

2.3.3 Access Roads

Two alternative access roads are under consideration. The primary access would be off of Valley View Road, south of the intersection with Highway 95. This access road would extend approximately 1.25 miles, along the existing transmission line maintenance road. Minimal improvements beyond grading are anticipated. Use of this road is contingent upon approval of the transmission line utility. An alternate access road would be off of Highway 95 and extend south approximately 1,500 feet. Both access roads will end at the security gate into the site. The primary access road mentioned above would also be used to provide access to the utility substation.

Access roads within the ASP facility will be unpaved (dirt), and approximately 12 feet wide. Any new access roads will follow natural contours and minimize side hill cuts to the extent possible.

2.3.4 Substations

There are two new substations associated with the project: one project substation and a utility substation to interconnect with the transmission line. The utility substation is described in Section 2.3.6.

The project substation will be located adjacent to the existing transmission lines and the northern section of PV arrays as shown in Figure 4 in Appendix A. The project substation is estimated to be approximately 5-acres in size.

The project substation consists of electrical switching and control equipment, and a main power step-up transformer. A one-line diagram for the project substation is shown in Figure 7 in Appendix A. The output from the individual step-up transformers (Section 2.3.1) is routed through underground electrical cables to the project substation, where the voltage is increased by the oil-filled step-up, substation transformer. The substation transformer provides step-up of the plant distribution voltage from the PV transformers to transmission voltage so that power produced by the project can be conveyed into the utility substation transmission system.

Approximately 9,700 gallons of non-PCB-containing oil is contained in the substation transformer. A secondary containment system that will contain the entire volume of transformer oil is included with the transformer. In all cases the facilities will conform to applicable BLM and state utility regulations and standards.

The ASP transmission line will be supported on steel poles adjacent to the Valley Electric Association (VEA) transmission line that runs parallel to Highway 95 along the north side of the site, as shown on Figure 4 in Appendix A. These poles are installed by augering a hole approximately 48 to 60 inches in diameter and 15 to 20 feet in depth, placing of a cage of

reinforcing steel in the augered hole, and filling the hole with high-strength concrete to the appropriate elevation. The transmission lines will be insulated from the poles using porcelain insulators engineered for safe and reliable operation. Shield wires will be included along the length of the lines to protect against lightning strikes. Final transmission structure design including tangent, angle, dead end, and pull-off structures and associated hardware will be determined during the final engineering of the facility.

2.3.5 Transmission Facilities

The new transmission line will be routed along the existing VEA transmission line approximately 12 miles to the point where the VEA line connects to the existing substation that is located northeast of Amargosa Valley. The new transmission line will continue northeast approximately 8 miles towards the Nevada Power transmission line. The project transmission line will connect to the Nevada Power system through a new utility substation that will be built on federal land, as shown on Figure 5B in Appendix A.

The new transmission line corridor will be finalized once the discussions about the interconnection to the electrical grid are completed. This ROW is tentatively anticipated to be 500 feet wide (250 feet on either side of the new transmission line) for field investigations and environmental studies on the route, and the final ROW would extend 100 feet on either side of the transmission line. The existing ASP ROW request has been amended to include the land associated with the transmission line corridor and will be finalized once the environmental studies are completed.

The interconnection transmission line will use an H-frame pole construction, similar to the existing VEA line, from the ASP site to the tie-in point with the new utility substation. Examples of this type of transmission support structures are shown in Figure 8 in Appendix A.

PSI is in discussions with Sierra Pacific/Nevada Power about the interconnection of the ASP to the existing Nevada Power transmission line. The current and future transmission line voltage and capacity are under review and will be clarified in the EIS for the project.

2.3.6 Utility Substation

There will be a new utility substation associated with the interconnection of the ASP transmission line with the Nevada Power transmission line, located adjacent to the interconnection point, as shown in Figure 5B in Appendix A. The substation is estimated to be approximately 5-acres in size, and Nevada Power will be responsible for the design requirements of the substation.

2.3.7 Aviation Lighting (Transmission Poles)

The new transmission line poles are anticipated to be the same height or shorter than the existing supports for the utility transmission line. These poles, which will be the highest component on the ASP, are not expected to require any Federal Aviation Administration notifications or approvals.

However, the Applicant will consult with the Federal Aviation Administration regarding any height or lighting requirements for the transmission structures.

2.3.8 Gas Pipeline Facilities

No natural gas will be used at this facility.

2.3.9 Communication Systems

During construction activities, external communications will be handled in three primary methods. Cell phones, phone/data off of the Nevada Bell fiber optic system and satellite based internet service will be the normal methods of information transfer. The Applicant's conversations with Nevada Bell indicate that the best approach will be to use the Nevada Bell fiber system between Las Vegas and Reno. This system parallels Highway 95 on the north side, and a remote terminal will be created for the project by tapping this system. The new fiber optic line will be placed in an underground conduit beneath Highway 95 and will intercept a utility pole approximately 200 feet from Highway 95 within the Valley View Road county road right of way. From there the fiber optic line will be installed on wood poles along Valley View Road to the project road, and along the project road to the project yard where construction trailers are located, as shown in Figure 4 in Appendix A.

During operations, external communications will also be handled with cell phones and the fiber optic line. It is unlikely that satellite based internet service will be used during operations. The fiber optic line will terminate at the O&M facility for normal office functions as well as remote telemetry. Additionally, the fiber optic line will extend to the project substation for telemetry, RAS (Remedial Action Scheme) and voice communications.

2.3.10 Security

Site security will be provided during both the construction and operation of the ASP facility. The construction contractor will provide 24-hour security during construction of each phase.

In addition, the Applicant proposes to secure the site with perimeter fencing to ensure public safety, security and to prevent liability. Chain link security fencing will be installed around the ASP facility boundary, substations and other areas requiring controlled access. Controlled access gates will be located at the entrance to the facility and at locations where access between the eastern and western sections is provided. The security fencing will be coordinated with the installation of each PV phase, so that the fenced area will gradually expand as the three phases are installed, rather than enclosing the entire area immediately.

Disturbance along the fence line during construction will be limited to the drilling of post holes, approximately 10-foot apart, to a depth of 3 to 4 feet. Metal fence supports will be installed and grouted in place within the post holes to support the chain link fence.

Appropriate protection measures will be incorporated into the site security and fencing design to accommodate and protect local sensitive species. If the wildlife surveys indicate the presence of desert tortoise in the project vicinity, special fencing, designed to protect the tortoise will be used.

Additional security will be provided by the use of closed circuit video surveillance cameras and intrusion systems as required for protection of the power production facility.

2.3.11 Project Design and Control Standards

The standards for conducting land and topographic surveys will be defined prior to conducting any surveys, and such surveys will be conducted in accordance with State and federal laws and regulations.

The design standards for civil engineering, mechanical engineering, electrical and control engineering, geologic/foundation designs and structural engineering will be identified in a design basis document prior to the start of the detailed design and identified in this POD at that time.

2.3.12 Stormwater Pollution Prevention Plan (SWPPP)

PSI will develop a Construction SWPPP and post development (Industrial) SWPPP for the site to ensure compliance with applicable regulations and prevent off-site migration of contaminated storm water or increased soil erosion. Construction practices will comply with the Construction SWPPP. An Industrial SWPPP will be developed to focus on the operation of the facility.

Both SWPPPs will be developed when the detailed civil design of the project is completed, and will be available for the BLM to review prior to construction. These documents will address:

- Identification of the SWPPP coordinator with a description of the person's duties.
- Identification of the stormwater pollution prevention team that will assist in the implementation of the SWPPP during construction.
- Description of the existing site conditions will include the existing land use for the site (i.e., vehicle circulation, pavement, buildings, etc.), soil types at the site, and the location of surface waters which are located on or next to the site (wetlands, streams, washes, etc.).
- Identification of the body of water(s) which will receive runoff from the construction site, including the ultimate body of water that receives the stormwater.
- Identification of drainage areas and potential stormwater contaminants.
- Description of stormwater management controls and various best management practices (BMPs) necessary to reduce erosion, sediment, and pollutants in stormwater discharges.
- Description of the facility monitoring plan and how controls will be coordinated with construction activities.
- Description of the implementation schedule and provisions for amendment of the plan.
- Identification of other Local, State, and Federal Permits (example: Clean Water Act (CWA) Section 404 permit) associated with construction activity.

3 PROJECT CONSTRUCTION

3.1 General Construction Sequence and Timing

The construction activities for the first 50-MW phase are anticipated to require approximately 13 months, out of the 36 month schedule discussed in Section 1.4. Subsequent phases are anticipated to be initiated roughly every 12 months. A preliminary project schedule for the first phase is shown in Figure 2 in Appendix A.

3.1.1 Project Phasing

At this time, PSI expects to build three phases of 50 MW each. The first phase will include the following activities:

- Construction of the laydown and parking areas
- Construction of the O&M building (this may be constructed during a later phase)
- Installation of the Phase 1 50-MW PV arrays
- Installation of security fencing around Phase 1 PV arrays
- Construction of the project substation and associated transmission line poles
- Construction of the primary transmission line and the utility substation at the Nevada Power transmission line.

Phases 2 and 3 will follow approximately a year apart and will all be connected to the project substation. The locations of the phases are shown in Figure 4 in Appendix A.

3.1.2 Pre-Construction Activities

Pre-construction activities will be limited to home-office activities, maintaining a temporary radiometer and conducting field surveys necessary to support environmental permitting requirements. PSI will not initiate any construction on BLM lands until authorized by BLM. PSI will conduct all activities within the authorized limits of the final ROW approved by the BLM.

During this period, the sources of various offsite materials, identified during the EIS process, will be finalized and contracts for these materials signed with suppliers.

3.2 Site Preparation, Vegetation Removal

Site preparation will consist of detailed surveying and staking of the locations for facility components, and limited clearing and grubbing work as required. Clearing and grubbing work will be limited to sparse vegetation that may be present in the locations where the O&M building, substations or access roads will be located on the site. Large or tall brush will need to be grubbed, however native grasses and smaller plants can remain.

PSI will develop a plan for control of noxious weeds and invasive species (Appendix C) which could occur as a result of new surface disturbance activities at the site. The plan will address monitoring, education of personnel on weed identification, the manner in which weeds spread, use of any pesticides, and methods for treating infestations. This Plan will be reviewed with the construction contractor and PSI personnel who will be onsite to ensure they understand the requirements.

There is some risk of fire on the project site during construction activities. PSI will develop a fire management strategy (Appendix G) to minimize the potential for a human-caused fire. During construction activities a water truck or other portable trailer-mounted water tank, will be kept onsite and available to workers for use in extinguishing small man-made fires.

Preparation work will also include the installation of silt fences and/or other erosion control devices that may be required in accordance with the construction SWPPP.

3.3 Grading

The site is relatively flat, with approximately a 1-percent slope from north to south. Grading will be limited, as the PV arrays can be installed over uneven ground. However, overall slope of land should be limited to 3 degrees or less.

The current arrangement of the PV arrays is designed to avoid those areas where existing stormwater channels are believed to be the most significant, and does not include stormwater protection berms, drainage channels, or other control measures. This arrangement was selected to reduce grading and minimize the potential impacts from the existing storm drainage paths on the project, following a review of the topography and hydrologic constraints. (These constraints are discussed and shown on Figure 11 of Appendix L.)

If development should occur on the land identified as the alternate development area, then stormwater control will be necessary through protection berms or other control measures. The arrangement was shifted to the southern side of the site to maintain a distance from Big Dune. As additional information, such as detailed topographic data, becomes available and the design is finalized, the specific placement of the PV arrays and site features will be re-evaluated and any necessary measures included in a future revision of this POD.

Once erosion control measures are installed in compliance with the SWPPP, grading work will begin. The primary areas where grading will be conducted will be for the footprints of the O&M building, primary access roads and substations. Limited grading may be performed within the area of each phase of PV arrays, such that the interior access roads are established. Additional information on the soils may be found in Section 6.10.

Typical construction equipment such as scrapers and backhoes will be used to clear and grade the laydown and parking areas, as well as the footprints for the O&M building, and substations. Small trenchers and/or backhoes will be used to excavate the trenches for the underground electrical cables.

During the construction work, up to 800,000 to 1,000,000 gallons of water may be required for dust control.

3.4 Installation of Facilities

As the grading is completed within the PV array area, the steel foundation piles will be staged for installation. The foundation piles will be installed and the elevations confirmed for alignment of the bracket supports. Bracket and module installation will commence following pile construction. Deliveries of materials will be staged to minimize the storage of materials and supplies onsite, and to even out the number of daily deliveries.

Electrical equipment and wiring installation will be initiated following the module installation. Final commissioning of controls and electrical systems will be completed in 500 kW sub-phases.

3.5 Laydown and Parking Areas

An approximately 5-acre temporary laydown area will be positioned adjacent to the access road near the site. Subsequent laydown areas will be established adjacent to each phase within the project area.

A temporary parking area, estimated to be approximately 10 to 15 acres will be established near the entrance to the site. The temporary parking area is part of the 20 acres referenced in Table 5. This area will provide a staging area for the project, as well as the location for construction trailers, material storage and construction storage containers (lockable roll off containers) during construction.

3.6 Installation of Transmission Facilities

The interconnection transmission line will be constructed with crews working along the ROW, with construction of the poles and towers proceeding, followed by the sequenced installation of the conductors. Transmission line construction will also include the construction of the new substation adjacent to the interconnection point to the Nevada Power line and involve the following sequence of activities:

- The transmission line work will be staged out of the construction staging area for the project at the solar facility site.
- The intent is to try and utilize the existing VEA access road where possible. Short, permanent access roads may be needed between the existing road and each of the pole locations and temporary access roads to the splice and pulling sites.
- Pole Erection: Each pole will be assembled on site, with the cross-arms and insulators installed for the transmission, lines established. Pole holes will be drilled with an auger truck, and poles will be installed by cranes and direct-buried at each location.
- Conductors will be installed, sagged, and permanently connected to the insulators using specialty tensioning rigs (large trucks with special equipment) located at intervals along the line. Where the line varies from a straight line by more than 30 degrees, a special tensioning site is required in the direction of each leg's pull, usually outside the 200-foot ROW.

During construction activities one or more water trucks or other portable trailer-mounted water tanks, will be kept onsite and available to workers for use in extinguishing small man-made fires.

3.7 Construction Waste Management

Facility construction and operation will generate wastes that require proper management and, in some cases, off-site disposal.

Non-hazardous waste streams generated during construction may include trash and debris, wood waste from wood forms used for construction, and scrap steel. Some additional wastes could include erosion control materials, such as straw bales and silt fencing, and packaging materials for equipment and parts. These materials will be collected in trash bins at the site and picked up/disposed of at a landfill permitted to receive these wastes by a local waste disposal company. Waste collection and disposal will be in accordance with applicable regulatory requirements to minimize health and safety effects.

Hazardous wastes generated during construction could include empty hazardous material containers, solvents, used oil, paint and oily rags. These types of wastes will require offsite disposal at permitted hazardous waste disposal facilities.

Construction-related waste production will be minimized through detailed estimating of materials needs, and through efficient construction practices. Any wastes generated during construction will be recycled as much as feasible. Construction of project linear facilities such as the transmission lines will generate minimal quantities of waste.

Construction equipment and work trucks will be properly maintained at all times to minimize leaks of motor oils, hydraulic fluids and fuels. All vehicular maintenance will be performed off-site at an appropriate facility. All leaks or drips from equipment will be promptly cleaned up and disposed of at appropriately permitted facilities by the construction contractor.

Portable toilets will be provided for onsite sewage handling during construction, and will be pumped and cleaned regularly by the construction contractor. All construction wastes will be disposed of at properly permitted offsite facilities.

3.8 Transportation and Access

Equipment and personnel will reach the site by way of Highway 95 and the access road described in Section 2.3.3. The ASP access road will incorporate BLM and Nevada Department of Transportation (NDOT) standards regarding road design, construction and maintenance consistent with those described in the BLM 9113 Manual (BLM 1985) and the Surface Operating Standards for Oil and Gas Exploration and Development (RMRCC 1989).

All roads will be sited and constructed to an appropriate standard no higher than necessary to accommodate the intended use. All roads will be designed, constructed, and maintained by PSI in a safe and environmentally responsible manner.

3.9 Construction Workforce

The construction of each 50 MW phase is expected to require a construction workforce of approximately 120 electricians, 60 steel workers, and 20 concrete workers with associated laborers.

Pile drivers, fork lifts, excavating equipment, dump trucks, pick up trucks, and concrete trucks will be utilized over the duration of project construction.

Workforce support issues such as housing, food, and transportation will be developed during the preparation of the EIS.

3.10 Restoration of Temporary Disturbances

The primary construction disturbance associated with the construction of the solar field and associated buildings will be contained within the fenced areas dedicated to solar energy production, and the temporary laydown and parking/staging areas immediately adjacent. The growth of disturbed vegetation within the temporary areas will be encouraged following completion of the construction activities. No vegetation will be restored or encouraged within the solar field because of the fire hazard. Construction disturbance along the transmission corridor will be associated with the installation of the towers and placement of the conductors. The growth of disturbed vegetation within the corridor will be encouraged following completion of the construction activities. These and other site restoration details will be addressed in Appendix M, as part of the Decommissioning and Site Restoration Plan, which will be developed during preparation of the EIS.

4 PROJECT OPERATIONS AND MAINTENANCE

4.1 Operations Workforce and Equipment

A 2 - 5 person full time crew will be needed to operate the system during Phase 1. Additional staff (approximately 1 - 2 persons) may be required for each additional phase. This staffing level will not create a heavy demand for drinking water and sanitary facilities.

The only capital equipment maintained onsite during operations would be general equipment such as a fork lifts, pickup trucks, a water trailer, and various hand tools for steel and electrical work. Service vehicles will be brought onsite as needed to perform any required maintenance activities beyond the facility's capabilities.

4.2 Maintenance Activities

The thin film PV system will need quarterly preventive maintenance to ensure long term operability. Generally, a maximum of only one 500kW sub-array will need to be off-line at any time for maintenance. A preventive maintenance program (PMP) will be conducted on the ASP equipment and systems. The following are key components of the PMP:

- Steel Structures
  - Inspect structure for rust and galvanization problems
  - Check for any other structural damage
- PV Modules
  - Check modules for de-lamination or browning
  - Wash panels, if required
- Electrical System
  - Check and re-torque all power and control terminations
  - Clean out any dust in all electrical enclosures
  - Check calibration of all data acquisition components
  - Inspect all transformers for signs of leaks
- Roads
  - Check roads for damage that needs to regraded

Appropriate repairs will be instituted for items identified in the PMP inspections.

4.3 Site Security and Fencing

Site security measures, including access gates and security fences, will be inspected routinely for damage or vandalism. Problem areas will be identified and repairs or corrective measures instituted. Vegetation and debris that is present along the fence line will be removed to reduce the risk of fire.

4.4 Water Use, Amounts and Sources

During operation of the ASP, water use will be limited to dust control and PV array washing. Drinking water will be supplied for workers onsite.

Available options for water supplies are currently being evaluated. These options may include the use of tanker truck deliveries, potential onsite water supply from groundwater sources, or reclaimed water from a local source. The availability of groundwater sources is discussed in more detail in Section 6.11.

The internal access roads will not be heavily traveled during normal operations, and a BLM-approved dust suppressant will be applied to control dust. Water may be used to supplement the dust suppressant in some areas on a limited basis.

The amount of water to clean all panels is estimated to be about 25,000 gallons. Panels will be cleaned only on an as needed basis, depending on site events and conditions. The amount of water used annually for panel cleaning is not expected to exceed 100,000 gallons. The water used for panel cleaning is not anticipated to require disposal due to the extremely high evaporation rate at the site.

4.5 Erosion Control and Stormwater Drainage

Ground disturbances associated with the operation of the project (such as vehicular traffic) may contribute to sedimentation and soil erosion. The use of BMPs will avoid impacts to water resources. All persons working at the site will be trained in the proper techniques for working at the site to minimize disturbances which may cause erosion.

During regular project inspections, and during normal activities, O&M staff will watch for signs of soil erosion. If the project is likely to impact waters of the United States, PSI will apply for the necessary permits prior to construction, including a National Pollutant Discharge Elimination System (NPDES) permit. The Industrial SWPPP may be modified if the operations indicate additional measures are required for stormwater control. Additional information on the soils may be found in Section 6.10.

4.6 Vegetation Treatment and Weed Management

PSI will develop a plan for control of noxious weeds and invasive species (Appendix C) which could occur as a result of new surface disturbance activities at the site. The plan will address monitoring, education of O&M personnel on weed identification, the manner in which weeds spread, use of any pesticides, and methods for treating infestations. Pesticide use will be limited to non-persistent, immobile pesticides and will only be applied in accordance with label and application permit directions and stipulations for terrestrial and aquatic applications. Any herbicide applications will be conducted within the framework of BLM and Department of Interior (DOI) policies, and will entail only the use of U.S. Environmental Protection Agency (USEPA) registered pesticides.

4.7 Facility Waste Management

Facility operation and maintenance will generate wastes that require proper management and, in some cases, off-site disposal.

Operational activities will generate both non-hazardous and small quantities of hazardous wastes. Non-hazardous wastes may include packing materials, rags used to clean equipment, adsorbent, and transformer oil. Non-hazardous wastes will be recycled, or disposed of at an appropriate waste management facility. Hazardous wastes may include

damaged panels (which may be returned/recycled with the manufacturer) and spent batteries.

PSI will develop a waste management plan (Appendix D). The waste management plan will identify waste streams that are expected to be generated at the site, hazardous waste determination procedures, waste storage locations, waste-specific management and disposal requirements, inspection procedures, and waste minimization procedures. This plan will address all solid and liquid wastes that may be generated at the site.

4.8 Spill Prevention, Control and Countermeasures Plan

At the current time, the only hazardous chemicals identified that may be stored in any quantity onsite are transformer oil and cleaning supplies. These materials will be stored inside the various pieces of equipment, and small quantities (typically several drums) will be stored in or on secondary spill containment areas within the O&M building. However, equipment used onsite will contain more than 1,320 gallons of oil, and is therefore subject to the oil pollution prevention regulatory requirements (40 CFR 112).

PSI will develop a Spill Prevention, Control and Countermeasure (SPCC) Plan (Appendix E) that meets the regulatory requirements for facilities that use or store more than 1,320 gallons of oil onsite. The SPCC Plan will identify where hazardous materials and wastes are stored onsite, spill prevention measures to be implemented, training requirements, appropriate spill response actions for each material or waste, the locations of spill response kits on site, a procedure for ensuring that the spill response kits are adequately stocked at all times, and procedures for making timely notifications to authorities. Chemicals will be stored according to applicable requirements and regulations to limit the risk of adverse effects from chemical factors.

Examples of the Material Safety Data Sheets (MSDS) of the materials that will be used onsite are contained in Appendix F.

4.9 Fire Protection

There is some risk of fire on the project site. Fires could be introduced primarily from human activity. Regular project operations, however, have a low risk of introducing fires since most electric lines within the PV arrays are buried. PSI will develop a fire management strategy (Appendix G) to minimize the potential for a human-caused fire.

The proposed transmission interconnection lines will be designed, constructed, and maintained in accordance with applicable regulations to provide necessary clearances from other man-made and natural structures as well as tree-trimming requirements to reduce/avoid fire hazards. The project will maintain the onsite portions of the transmission line route and immediate area in accordance with existing regulations and accepted industry practices. As part of the emergency response and evacuation procedures outlined in PSI's Environmental Health and Safety manual, all fires will be immediately reported to the O&M staff. The O&M building will serve as the communication center for all emergency response procedure and control measures.

4.10 Health and Safety

A health and safety program (Appendix H) will be developed to protect both workers and the general public during all phases of the project (construction, operation, and decommissioning). The program will identify all applicable federal and state occupational safety standards, such as:

- safe work practices for each task (e.g., requirements for personal protective equipment and safety harnesses)
- fire safety evacuation procedures
- safety performance standards (e.g., electrical system standards and lightning protection standards)
- hazard training and protocols for reporting serious accidents to appropriate agencies

PSI's onsite staff and contractors will carry radios in case of emergency. A list of emergency telephone numbers will be distributed to staff, and all emergencies will be immediately reported to the O&M building, the project's communication center. O&M staff will announce appropriate procedures to field staff via radio. The plant manager or designated response leader will then assess the extent of the emergency and implement appropriate procedures, meet with emergency response personnel, and lead evacuation procedures, if necessary.

Specific phone numbers for project personnel will be provided to the BLM. Operation of radio units will comply with Federal Communication Commission's rules and regulations. PSI staff will adhere to the emergency response procedures in the company's Environmental Health and Safety (EH&S) Manual. This manual is available to the field office upon request.

4.11 Road Maintenance

The main access roads will be graded to match existing terrain to minimize the need for maintenance. The internal (dirt) loop roads around both the eastern and western portions of the ASP along with the access road between the two portions will be maintained on an as-needed basis. It is expected that minor amounts of surface dragging, blading, or grading will be required after heavy rains to remove vehicle ruts, or periodically due to maintenance traffic. Any needed repairs will be completed promptly.

To mitigate against dust, road surfaces will be watered or otherwise treated with dust control measures. These treatments will occur on an as-needed basis, depending on weather conditions and the amount of traffic on the road. Any treatment substance other than water will be used only after consultation with the BLM.

5 RELATED FACILITIES AND SYSTEMS

5.1 Existing and Proposed Transmission System

There is an existing VEA transmission line that passes between the location of the PV arrays and Highway 95.

The electricity generated by the ASP will be conveyed to the existing Nevada Power transmission line located 20 miles northeast of the site by:

- One project substation
- A new overhead interconnection power line (connecting the project substation to the utility substation),
- A new utility substation, and interconnection to the Nevada Power transmission system.

As discussed in Sections 2.3 and 3.6, the new transmission line will parallel the existing VEA transmission line as it runs east from the ASP project site to an existing substation that is located northeast of Amargosa Valley, and then continue northeast approximately towards the Nevada Power transmission line. The project transmission line will connect to the Nevada Power system through a new utility substation that will be built on federal land adjacent to the Nevada Power Transmission line. The existing ASP ROW request has been amended to include the land associated with the transmission line corridor and will be finalized once the environmental studies are completed. The proposed transmission line from the ASP substation is shown on Figures 4, 5A and 5B in Appendix A.

5.2 Substations

There are two substations associated with the project: one project substation and a utility substation, as discussed in Section 2.3.

The project substation will be located on the northern edge on the project site as shown in Figure 4 in Appendix A. The utility substation will be located adjacent to the Nevada Power transmission line interconnection point as shown on Figure 5B in appendix A.

The project substation consists of electrical switching and control equipment, and two main, step up transformers. The main power transformers provide a means to step up the plant distribution voltage (34.5 kV) from the PV transformers to a transmission voltage (138 kV) so that power produced by the project can be conveyed into the utility transmission system.

The utility substation consists of electrical switching and control equipment, and provides a means to convey the power produced by the project into the utility transmission system. The transmission line owner (Nevada Power) will be responsible for the design of the new utility substation to interconnect into their transmission system.

5.3 Status of Power Purchase Agreements

PSI is actively marketing output to California, Nevada and Arizona utilities. However, PSI's energy management capabilities as well as our ability to finance projects on balance sheet allows PSI to construct and operate this facility without a Power Purchase Agreement (PPA) in place and instead sell the power directly to the market at liquid energy trading points until such time that a long term PPA is signed.

5.4 Status of Interconnect Agreement

PSI has applied for interconnection with Nevada Power. The expected point of interconnection is in between the Jackass Flats Substation and the Mercury Switching Station, northeast of Amargosa Valley. The new utility substation will be built on federal land, as shown on Figure 5B in Appendix A.

5.5 Gas Supply Systems

No gas supply is required for the ASP.

6 ENVIRONMENTAL CONSIDERATIONS

PSI will plan all aspects of this project with the intent to minimize any impacts from the project's new infrastructure and footprint as much as practicable. There are a large number of federal, state and local laws and associated regulations, permits, and approvals that are applicable to this Project. Appendix I contains a table that provides a summary of these permits and approvals and the associated requirements.

The proposed route for the interconnecting transmission line between the ASP substation and the new utility substation has been discussed in previous sections. The appropriate studies discussed in this Section will include the linear transmission corridor and utility substation ROW, and will be conducted during the EIS process.

6.1 Special or Sensitive Species and Habitats

PSI conducted reconnaissance-level biological field surveys of the Amargosa site in August 2008. These surveys were conducted by contracted biologists from CH2M Hill. The objective of the biological resources reconnaissance-level survey was to characterize: the predominant vegetation types, the potential presence of special-status species of plant and wildlife, and washes as potential waters of the United States. These surveys have not been intended as protocol-level surveys. No critical issues for this Site were identified during CH2M Hill's reconnaissance-level biological resources survey. A copy of the biological survey is included in Appendix J.

The Applicant anticipates conducting the Class III surveys in the early spring of 2010.

6.1.1 Plant Species

The Mojave Creosote Bush Scrub is the only vegetation type observed within the Site. Soils on the site vary from sandy-gravelly and consolidated sandy areas to loose and drifting sandy areas resembling small dunes. Variations in species assemblages occur throughout the Site, and in some areas associates vary based on the soil type. In sandy-gravelly soils creosote bush (Larrea tridentata) and white bursage (Ambrosia dumosa) dominate almost completely, or creosote bush is the only perennial shrub. In some cases, white bursage densities are diminished, or white bursage is absent and is replaced by saltbush (e.g. allscale [Atriplex polycarpa] or shadscale [Atriplex confertifolia]). Mormon tea (Ephedra sp.) is another common associate in these areas. Shrubs are typically well spaced with annual species occurring between them such as cryptanthas (Cryptantha spp.) or desert dandelion (Malacothrix glabrata).

6.1.2 Wildlife Species

Five special-status or sensitive wildlife species have the potential to occur on the Site: desert tortoise (Mojave Population), western burrowing owl, and three species of bat. Protocol surveys for the federal listed desert tortoise and State of Nevada protected western burrowing owl may be required. Due to the proximity of the endemic beetle species located within the Area of Critical Environmental Concern (ACEC), it will be important to address the potential effects of any adjacent development to the continued habitat function and viability of this ACEC. Coordination with the BLM regarding treatment of sensitive bat species will also be required since there is one potential roosting location at Roses Dry Well. Suitable habitat

to support other federal or state listed wildlife species is not present within the Site or the Site is outside of their known range.

The Site is located within the range of the Mojave Desert tortoise, a federally listed threatened species under Endangered Species Act (ESA). However, the Site does not lie within U. S. Fish and Wildlife Service (USFWS)-designated critical habitat for the desert tortoise. Desert tortoise, or positive evidence of their presence (e.g., scat, active burrows), was not observed during the reconnaissance-level survey. While habitat within the Site is considered suitable, NDOW expects that the listed tortoise would occur in low densities within or adjacent to the Site. The BLM also identified the desert tortoise as an issue in the Big Dunes area. The annual wildflower production in Section 2 provides an abundant source of forage that may attract seasonal visitation from tortoises on and adjacent to the Site. Tortoises have also been previously recorded from the nearby bajadas. (Refer to Appendix J for additional details.)

Prior to construction, a qualified biologist will provide environmental training and monitoring to construction and site crews. The training will address sensitive species present onsite, exclusion flagging, permit requirements, and other environmental issues. The training will also cover proper protocol for responding to dead or injured wildlife. All construction employees will be instructed to avoid harassing or disturbing wildlife, especially during reproductive (e.g., courtship and nesting) seasons. In addition, site personnel will not be allowed to have pets on site during construction. Construction and operations personnel will be required to report any injured or dead wildlife detected on the site to either: 1) the biological monitor during construction or 2) the appropriate onsite manager during operations. All construction site personnel will be required to attend the environmental training in conjunction with hazard and safety training before they can work onsite.

PSI will use an onsite manager, and will require the construction contractors to designate a Field Contact Representative (FCR). The FCR is responsible for overseeing compliance with protective measures, and coordination with the county and other regulatory agencies.

6.1.3 Wetlands and Waterways

The dry washes identified during the survey may meet the criteria of a “waters of the U.S.” A jurisdictional delineation of waters of U.S. and wetlands will be conducted during the rainy season to document wetland and wash features within the Site. Work resulting in dredge and/or fill within a wetland or wash would require a Section 404 permit (Nationwide or Individual).

The two SWPPP developed by PSI will ensure compliance with applicable regulations and prevent off-site migration of contaminated storm water or increased soil erosion.

Any new roads will be located to follow natural contours. Roads will be located away from drainage bottoms and avoid wetlands to the extent possible.

6.2 Special Land Use Designations

As noted above, while the site is outside of the Big Dune complex, the BLM has designated a 5-acre ACEC adjacent to the site.

Open OHV Management Areas are defined by the BLM as areas where all types of vehicle use would be permitted at all times, anywhere in the area. In these areas, visitors are not restricted to existing and designated roads. In the Big Dunes area, off-road activity is only prohibited within the 5-acre ACEC. Big Dunes and surrounding staging areas within the Site are heavily trafficked by recreational OHV users. A majority of the OHV use is outside the

project boundary but many tracks extend beyond designated roads and signs of camping were observed onsite. Although there are established roads into Big Dunes, they all cross the Site making public access and public/site security a concern.

PSI will work with BLM to identify how OHV roads may be redirected in areas where they are blocked by the Site.

6.3 Cultural and Historic Resource Sites and Values

PSI contracted CH2M Hill to conduct a literature search and reconnaissance field visit of the Amargosa area in August 2008.

The literature search and reconnaissance field visit did not identify any significant cultural constraints within the Amargosa North study area. There are no known National Register of Historic Places (NRHP) eligible or Nevada Register eligible cultural sites located within the study area. Some examples of environmental conditions and site types which may be considered constraints include areas near permanent water sources, areas with favorable vegetation (i.e., berries, herbs, nuts, and other edible and useful plants), areas with large amount of game and animal trails, areas with alluvial deposition, the documented presence of large complex habitation sites, densely packed smaller resource procurement or exploitation and manufacturing sites, sacred sites (traditional cultural properties), locally or nationally significant historic architectural resources, or burial sites. Based on the results of archival research and the field reconnaissance site visit, as well as a general assessment of the study areas sensitivity for cultural resources, none of these constraints have been previously documented within the study area and their potential presence is of low probability.

Extant site types noted within the Amargosa North study area include historic trash scatters and prehistoric lithic scatters. The brief field reconnaissance visit noted a previously undocumented single cobble core tool located adjacent to a wash on desert pavement. Although it is likely that similar undocumented prehistoric and historic sites exist in the Amargosa North study area, these are typically not considered significant and do not represent a constraint. The study area consists of either desert pavement or active washes, conditions that would typically contribute to a low sensitivity for the presence of buried intact cultural resources. Additionally, no permanent sources of water were observed. The nearest seasonal water source is the Amargosa River which flows during the winter months and is located just west of the study area.

The literature search revealed that less than 10 percent of the study area has been surveyed with only six cultural resources identified, inferring the likelihood of a low density of resources for the general vicinity. Given the local topography, distance to major stream drainages or other archaeologically sensitive conditions, and the limited number of previously identified resources, the sensitivity for significant archaeological resources within the Amargosa North study area is considered moderate to low.

Given the lack of a permanent water source or other potentially sensitive environmental conditions, the relatively flat terrain, and the general lack of known significant cultural resources, the presence of any significant cultural resources constraints appears unlikely within the Amargosa North study area. Based on the available literature, cultural resources are not considered to be a “fatal flaw” for this project in this location, and are unlikely to represent a substantive constraint during project implementation.

Construction monitoring by a qualified archaeologist may be required if a specific area exhibits high potential for cultural resources. A cultural resources management plan (Appendix K) will be prepared documenting how these activities will be conducted during

construction. If any culturally significant features are found during excavation or earthmoving, the proposed roadway or facilities will be relocated. If relocation of roadways or other facilities is not possible, mitigation measures will be proposed in consultation with the BLM and the State Historic Preservation Office (SHPO).

6.4 Native American Tribal Concerns

Native American Consultation will also be initiated early in the decision-making process to identify issues regarding the presence of cultural resources in the project area.

The following additional steps will be taken before and during construction to avoid impacts to cultural resources:

- For each cultural resource, a qualified archaeologist will clearly designate its boundaries with marker flags.
- The construction crew will be made aware of all archaeological site locations.
- Construction activities will avoid any flagged cultural resource sites.
- Although it is not anticipated, there is always a potential for buried cultural resources and/or human remains that were not identified during field studies to be inadvertently unearthed during ground-disturbing activities associated with the proposed action. Such an occurrence could result in the unearthing of, and disturbance or damage to, significant cultural resources or human burials. To avoid this potential impact on cultural resources or human burials, the following directives will be implemented during site construction activities:
    - Stop work if cultural resources are discovered during ground-disturbing activities. If buried cultural resources, such as chipped or ground stone, historic debris, building foundations, or nonhuman bone are inadvertently discovered during ground-disturbing activities, work will stop in that area and within 100 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures typically include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation. The construction contractor and lead contractor compliance inspector will verify that work is halted until appropriate treatment measures are implemented.
    - If human remains of Native American origin are discovered during ground-disturbing activities, it is necessary to comply with state laws relating to the disposition of Native American burials, which falls within the jurisdiction of the Native American Heritage Commission. If human remains are discovered or recognized in any location other than a dedicated cemetery, there will be no further excavation of disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until (1) the County Coroner has been informed and has determined that no investigation of the cause of death is required; and (2) if the remains are of Native American origin,
    - The descendants of the deceased Native Americans have made a recommendation to the land owner of the person responsible for the excavation work, for means of treating or disposing of, with appropriate

dignity, the human remains and any associated grave goods as provided in Pub. Res. Code Sec. 5097.98, or

- The Native American Heritage Commission was unable to identify a descendant or the descendant failed to make a recommendation within 24 hours after being notified by the commission.

6.5 Recreation and OHV Areas

The proposed project area contains some unmaintained open off-road vehicle routes. PSI will work with the BLM to minimize any impacts to OHV areas.

6.6 Visual Resources

PSI will minimize impacts to scenic views in the area to the extent possible. As part of the site layout, Site design will address visual uniformity, proportion and color. In general, PV facilities are very low profile and furthermore, a majority of the equipment onsite will be partially blocked from view by the security fencing. The O&M building, substations and transmission towers should be the only items which extend above the top of the fenceline. Commercial messages on equipment will be prohibited.

The public will be involved and informed about the project's site design as part of the project-level NEPA review that is anticipated to occur during 2009. Visual simulation photographs of the project from various vantage points will be made available, and viewshed analysis of the project will be included in the project environmental studies. Proposed facilities and roadways will be located to minimize visual impacts, where feasible. The Applicant is not aware of any specific points of interest within the ASP footprint area.

Other measures that will be incorporated into project design to assure an attractive appearance and good integration into its landscape setting include the following:

- Implementation of active dust suppression measures during the construction period to minimize the creation of dust clouds
- Placement of much of the facility's electrical collection system underground (as much as possible), minimizing the system's visual impacts
- Use of a low-reflectivity finish for the exterior of the O&M facility building to maximize its visual integration into the surrounding landscape
- Restriction of outdoor night lighting at the O&M facility and the substation to the minimum required for safety and security; sensors and switches will be used to keep lighting turned off when not required, and all lights will be hooded and directed to minimize backscatter and offsite light trespass
- Use of fencing with a dull finish to reduce the fence's contrast with the surroundings.

6.7 Air Quality

The proposed project area is outside of the Air Quality Maintenance areas. The proposed project will generate minimal emissions from construction-related activities (i.e. limited grading and construction equipment) and the limited vehicular traffic on the site during O&M activities. These will be no operating equipment (i.e. boilers, cooling towers, etc.) which could generate air emissions during normal operations at the ASP.

6.8 Geologic Hazards

Construction of the substations, O&M building, access roads, and electrical collection lines and associated poles may slightly increase the potential for soil erosion. However, BMPs would be used during construction and operation to protect topsoil and adjacent resources and to minimize soil erosion. Practices may include containing excavated material, protecting exposed soil, and stabilizing restored material.

No significant impacts on geological resources and geohazards are expected due to the project, given the following: 1) a prudent design that incorporates results of geotechnical studies that will be performed during the preparation of the EIS in 2010; and 2) implementation of BMPs, including appropriate strategies for selection of final locations of features, foundation types best suited to the site subsurface conditions, inclusion of drainage control features, and proper construction techniques.

Construction-related impacts to the geologic environment are related primarily to terrain modification (cuts, fills, and any drainage diversion measures) which are not currently planned or needed for the ASP.

Additional site geologic information may be found in the Hydro-Geomorphic Profile in Appendix L, and more detailed geotechnical studies will be prepared that address geological impacts and any potential for subsidence-related ground failure as the detailed design progresses.

6.9 Mineral and Energy Resources

PSI will ensure that the project is compatible with existing mineral and energy uses, and that any shared roads or other facilities are adequately maintained. PSI will also collaborate with any known and active mining claim owners on and surrounding the project area. Additional information on current ROW in the Project area is included in Section 1.5.

6.10 Soils

PSI will need to clear and grub the entire site where panels will be installed in order to keep vegetation away from the panels. Impacts to soils will mainly be associated with construction of new access roads and upgrade of existing access roads, construction of underground collector lines, and construction of the O&M facility and substations. These potential impacts will be minimized to the extent possible through pre-construction design. Practices may include containing excavated material, protecting exposed soil, and stabilizing restored material.

Excavations for underground cables could temporarily expose the excavated spoils to wind and water erosion during construction. These conditions will prevail for a relatively limited time period until the cables are laid, and trenches are backfilled with the spoil. In addition, construction will require removal of surface vegetation before construction in a limited number of areas, thus exposing the soil to potential for accelerated erosion.

Construction will require the limited use of heavy equipment and highway trucks to deliver aggregates, concrete, water, PV panels, cable and similar construction supplies. However, the areas where these vehicles will travel onsite will be limited and should be restricted to the construction laydown areas. The majority of the components will be moved and placed using a 4-wheel drive forklift.

Prior to construction, erosion control measures will be developed and implemented to ensure that there is minimal soil loss. Temporary and long-term erosion control measures will be

constructed and maintained, as necessary, during construction and operations. These measures may include minimizing disturbance, using water or dust suppressants in construction and laydown areas, speed control on unpaved surfaces, and using gravel at entranceways, as well as straw bales and silt fences to control runoff. A Construction SWPPP will be developed prior to construction to obtain authorization for construction discharges of stormwater in accordance with the requirements set forth by the NPDES permit.

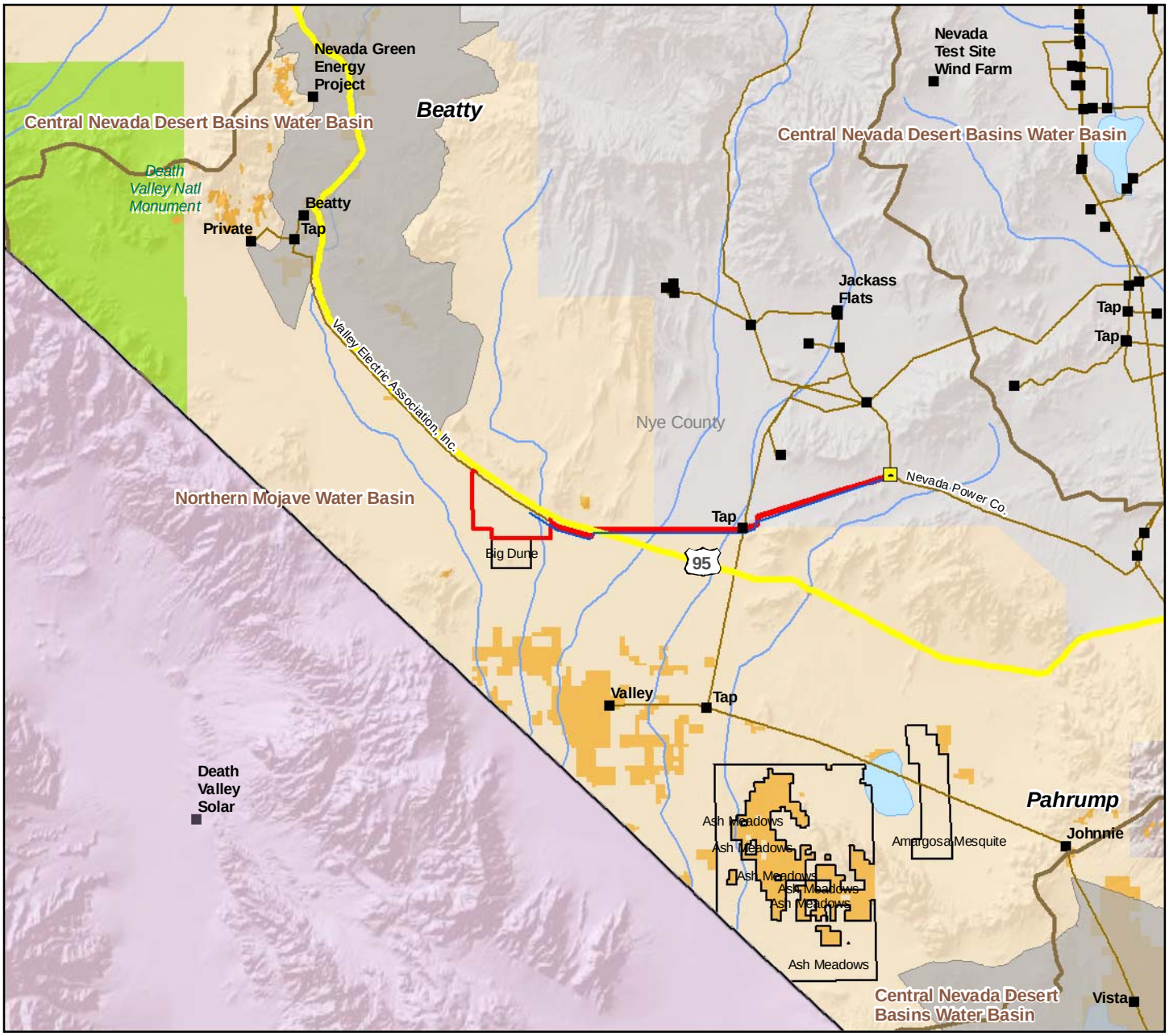
The SWPPP will function as the operator's manual to characterize construction activities, potential sources of pollutants, and site management and monitoring procedures. The SWPPP also identifies best management practices that will be used to help ensure that pollutants do not reach surface waters or groundwater.

During the ultimate decommissioning of the ASP, potential erosion hazards would be similar to those occurring during its construction. Appendix M includes a discussion about the decommissioning and site restoration plan for the ASP.

6.11 Water Supply

PSI intends to truck in water from offsite. No onsite water sources will be used.

Appendix A Figures



Legend

- Pacific Solar Investments
- Substation
- Proposed Substation
- Proposed Project Transmission Line
- Transmission Lines
- BLM ACEC

BLM Surface Management

- Bureau of Land Management
- Department of Defense
- Department of Energy
- National Park Service
- Private

Water Sources

- Stream
- Lake
- Water Basins
- Counties
- City Outlines

N

0 2.5 5

Miles

Notes:

1. Leased project area falls entirely within a 6.5 KWh/m2/day resource area
2. Site is located in BLM Las Vegas Field Office jurisdiction
3. Towns within 30 miles: Amargosa Valley, NV; Beatty, NV; Death Valley, CA
4. Nearest airport: McCarran Intl 70 miles SE near Las Vegas, NV
5. Northern project boundary is adjacent to St Hwy 95. Project is appx. 100 driving miles from I-95
6. Existing 138kV transmission line owned by Valley Electirc Association Inc. runs East/West throught the northern project area, parallel to St Hwy 95, on the Southern side
7. Nearest rail line is appx. 75 miles SE in Blue Diamond, NV

VICINITY MAP

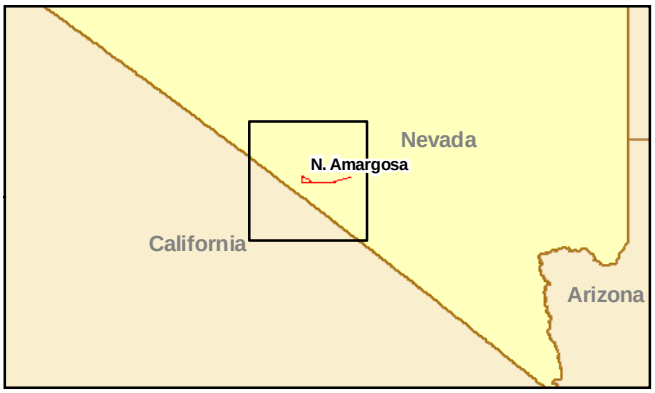
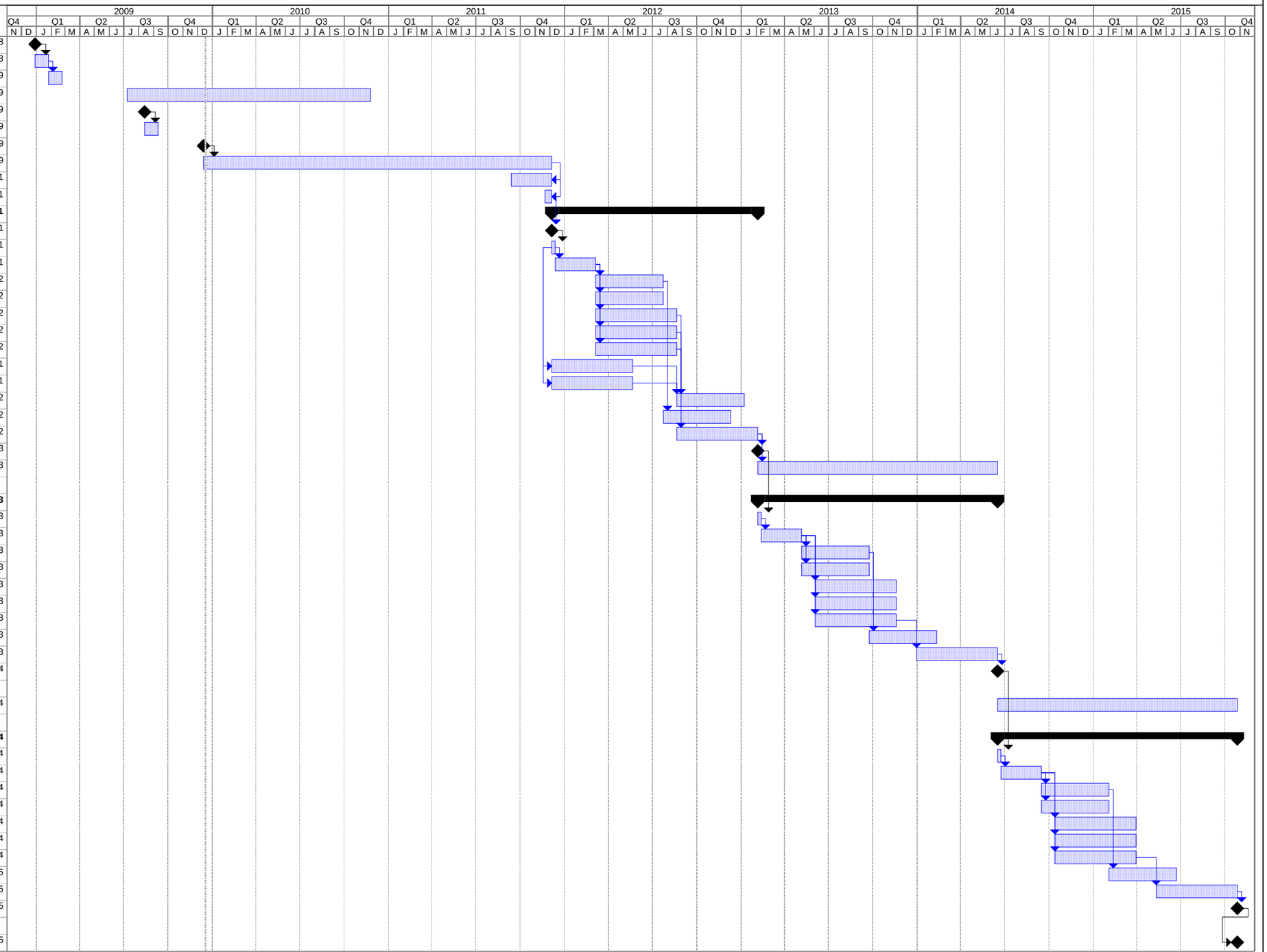


FIGURE 1
PSI Amargosa PV Solar Project
Regional Vicinity Map
Pacific Solar Investments, Inc.

PSi
Pacific Solar Investments Inc.

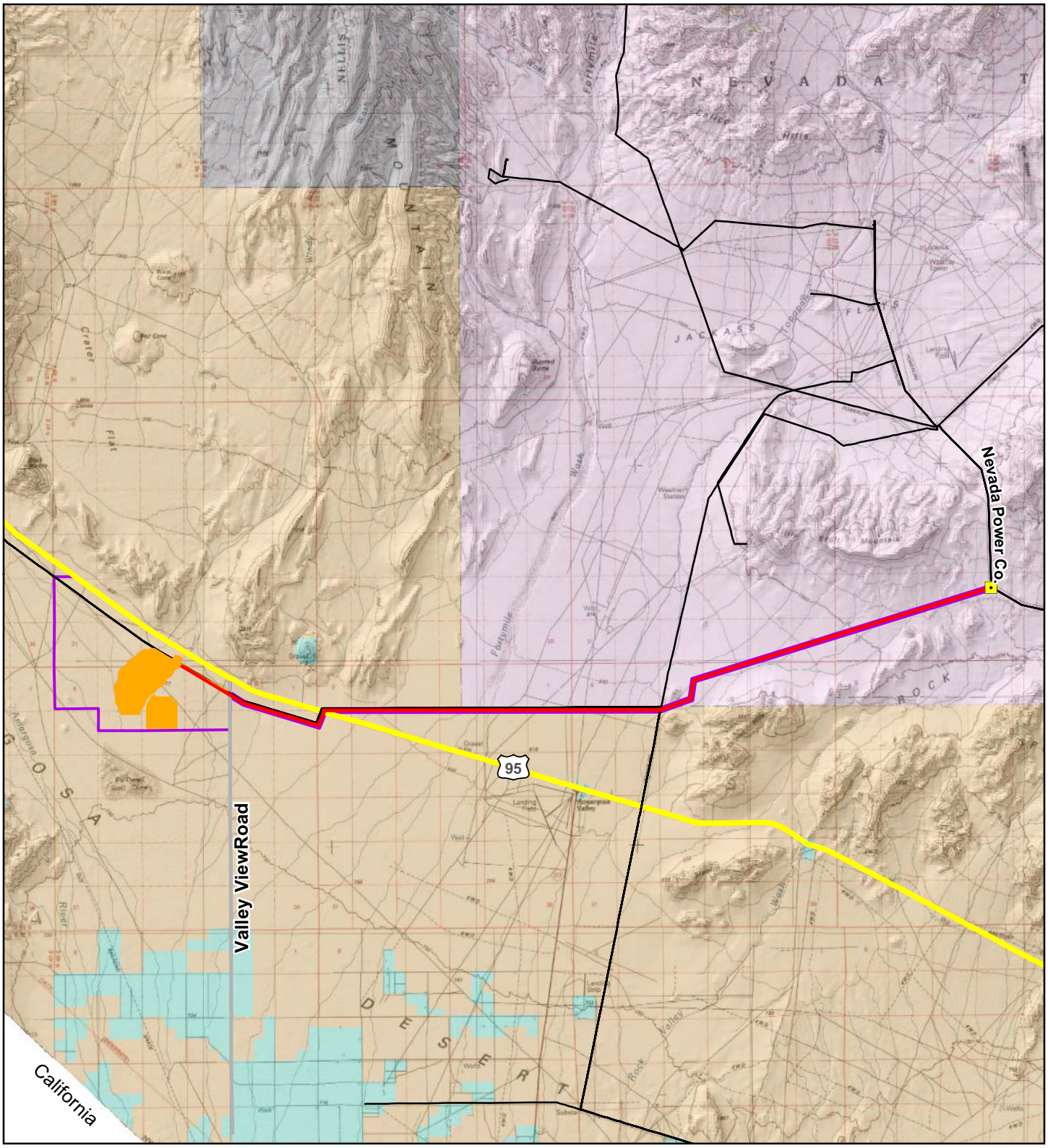
Figure 2. Project Schedule

ID	Task Name	Duration	Start
1	BLM comments on Plan of Development (POD)	0 days	Tue 12/30/08
2	Prepare and submit Revised POD	20 days	Tue 12/30/08
3	BLM Review of POD	20 days	Tue 1/27/09
4	Insolation Testing	360 days	Thu 7/9/09
5	POD Engineering Review Completed	0 days	Fri 8/14/09
6	Updated POD	20 days	Fri 8/14/09
7	BLM issues Notice of Intent (NOI)	0 days	Mon 12/14/09
8	Permitting (incl. EIS/ROD/ROW Grant)	516 days	Mon 12/14/09
9	Engineering & Design (Final)	60 days	Tue 9/13/11
10	Contracting	10 days	Tue 11/22/11
11	**Phase 1 - 50 MW**	**305 days**	**Mon 12/5/11**
12	PO in Place for Major Equipment	0 days	Mon 12/5/11
13	Mobilization to Site	5 days	Tue 12/6/11
14	Site Preparation - Grubbing/Cleaning	60 days	Tue 12/13/11
15	Operations Building Erection	100 days	Tue 3/6/12
16	Steel Foundation Work	100 days	Tue 3/6/12
17	PV Module Installation	120 days	Tue 3/6/12
18	Set Electrical Equipment	120 days	Tue 3/6/12
19	Install Distribution Wiring	120 days	Tue 3/6/12
20	Transmission Interconnect	120 days	Tue 12/6/11
21	Collection Substation	120 days	Tue 12/6/11
22	Energize Project Substation	100 days	Tue 8/21/12
23	Operations Building/Facility Completion	100 days	Tue 7/24/12
24	System Commissioning	120 days	Tue 8/21/12
25	Start up / System Operational	0 days	Mon 2/4/13
26	**Phase 1 Operations (50 MW)**	355 days	Tue 2/5/13
27			
28	**Phase 2 - 50 MW**	**355 days**	**Tue 2/5/13**
29	Mobilization to Site	5 days	Tue 2/5/13
30	Site Preparation - Grubbing/Cleaning	60 days	Tue 2/12/13
31	Operations Building Erection	100 days	Tue 5/7/13
32	Steel Foundation Work	100 days	Tue 5/7/13
33	PV Module Installation	120 days	Tue 6/4/13
34	Set Electrical Equipment	120 days	Tue 6/4/13
35	Install Distribution Wiring	120 days	Tue 6/4/13
36	Operations Building/Facility Completion	100 days	Tue 9/24/13
37	System Commissioning	120 days	Tue 12/31/13
38	Start up / System Operational	0 days	Mon 6/16/14
39			
40	**Phase 1 and 2 Operations (100 MW)**	355 days	Tue 6/17/14
41			
42	**Phase 3 - 50 MW**	**355 days**	**Tue 6/17/14**
43	Mobilization to Site	5 days	Tue 6/17/14
44	Site Preparation - Grubbing/Cleaning	60 days	Tue 6/24/14
45	Operations Building Erection	100 days	Tue 9/16/14
46	Steel Foundation Work	100 days	Tue 9/16/14
47	PV Module Installation	120 days	Tue 10/14/14
48	Set Electrical Equipment	120 days	Tue 10/14/14
49	Install Distribution Wiring	120 days	Tue 10/14/14
50	Operations Building/Facility Completion	100 days	Tue 2/3/15
51	System Commissioning	120 days	Tue 5/12/15
52	Start up / System Operational	0 days	Mon 10/26/15
53			
54	**Full 150 MW System Operations**	0 days	Mon 10/26/15



Project: Projectschedule.121609
Date: Thu 12/17/09

Task | Milestone | Rolled Up Task | Rolled Up Progress | External Tasks | Group By Summary
Progress | Summary | Rolled Up Milestone | Split | Project Summary | Deadline



Legend

- Amargosa Solar Project Site
- Solar Collection
- Transmission Line
- Proposed Project Transmission Line (North)
- Proposed Substation
- Highway
- Valley View Road

Land Ownership

- Private
- Department of Energy
- Department of Defense
- Bureau of Land Management

N

0 2.5 5

Miles

Figure 3
PSI Amargosa PV Solar Project
Site Location Map
Pacific Solar Investments, Inc.

PSi
Pacific Solar Investments Inc.

TEMPORARY LAYDOWN AREA (6 AC)

TEMPORARY PARKING TRAILER AREA (10 AC)

24' ACCESS ROAD (ALTERNATE)

HWY 95

RACE TRACK RD

ROAD TO BE CLOSED

PROJECT SUBSTATION (5 AC)

PHASE 3
50MW
AREA ~389 AC

24' ACCESS GATE

24' ACCESS ROAD (IMPROVED)

TIE-IN TO EXISTING NEVADA BELL FIBER OPTIC LINE

INTERNAL ACCESS ROAD (DIRT)

COMMUNICATION LINE

OPERATION/ MAINTENANCE BUILDING (2000 SQ FT)

SECURITY FENCE

PHASE 2
50 MW
AREA ~391 AC

PHASE 1
50MW
AREA ~452 AC

ALTERNATE DEVELOPMENT AREA ~426 AC

INTERNAL LOOP ROAD (DIRT)

SECURITY FENCE

AMARGOSA NORTH ROW (NVN 084465)

AMARGOSA SOLAR PROJECT ROW ~45,904 AC

VALLEY VIEW RD

ASP TRANSMISSION LINE ROUTE

ASP TRANSMISSION LINE ROW ~1,124 AC

VALLEY ELECTRIC 138 KV TRANSMISSION LINE

PLSS AREA CONTAINING 500' WIDE TRANSMISSION CORRIDOR

500'

BIG DUNE

TOTAL AMARGOSA SOUTH ROW ~4,500 AC

AMARGOSA SOUTH ROW (NVN 084466)

T14S R47E | T14S R48E | T14S R48E | T14S R49E

T15S R47E | T15S R48E | T15S R48E | T15S R49E

MATCH LINE - SEE FIGURE 5A

PRELIMINARY
NOT FOR CONSTRUCTION

1500 750 0 1500 3000
SCALE IN FEET

FIGURE 4

SITE LAYOUT

PSI AMARGOSA PV SOLAR PROJECT
NYE COUNTY, NEVADA

PSi
Pacific Solar Investments Inc.

P:\3811-IBERDROLA RENEWABLES\CAD\DWG\REVISED T-LINE\FIGURE 4.DWG
PLOT/UPDATE: Dec 17 2009 16:04:31

MATCH LINE – SEE FIGURE 4

MATCH LINE – SEE FIGURE 5B

T14S R49E

T14S R50E

T15S R49E

T15S R50E

VALLEY ELECTRIC 138 KV TRANSMISSION LINE

500'

ASP TRANSMISSION LINE ROW = 1,124 AC

ASP TRANSMISSION LINE ROUTE

PLSS AREA CONTAINING 500' WIDE TRANSMISSION CORRIDOR

EXISTING UTILITY SUBSTATION

VALLEY ELECTRIC TRANSMISSION LINE

AMARGOSA VALLEY

Amargosa Valley

DESERT

AMARGOSA

PRELIMINARY
NOT FOR CONSTRUCTION

1500 750 0 1500 3000
SCALE IN FEET

FIGURE 5A

TRANSMISSION LINE LAYOUT

PSI AMARGOSA PV SOLAR PROJECT
NYE COUNTY, NEVADA

PSi
Pacific Solar Investments Inc.

P:\3811-IBERDROLA RENEWABLES\CAD\DWG\REVISED T-LINE\FIGURE 5A.DWG
PLOT/UPDATE: Dec 16 2009 11:40:30

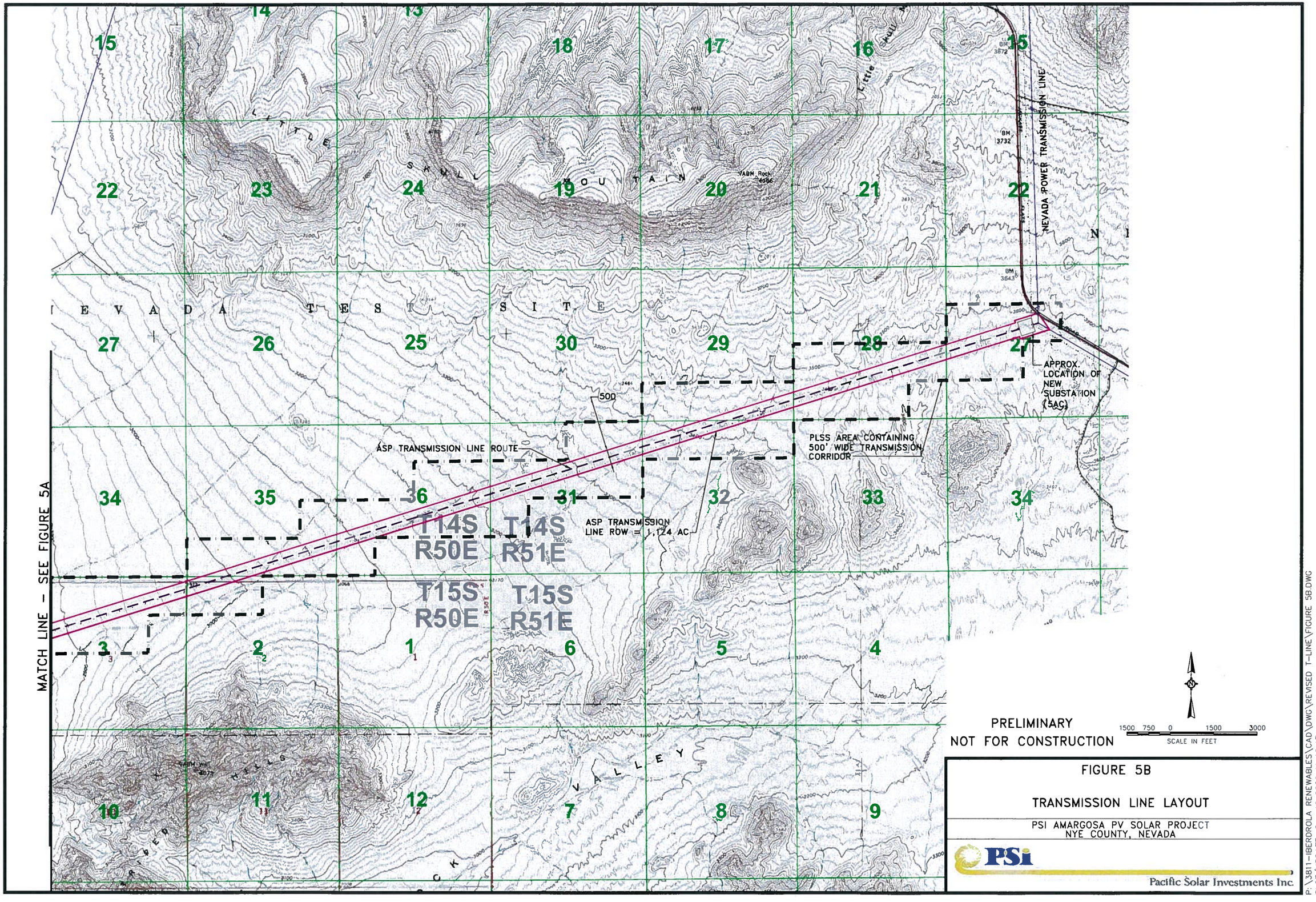


FIGURE 5B

TRANSMISSION LINE LAYOUT

PSI AMARGOSA PV SOLAR PROJECT
NYE COUNTY, NEVADA

PSi
Pacific Solar Investments Inc.

P:\3811-IBERDROLA RENEWABLES\CAD\DWG\REVISED T-LINE\FIGURE 5B.DWG
PLOT/UPDATE: Dec 16 2009 11:40:17

Figure 6. Typical Arrangements of PV Arrays

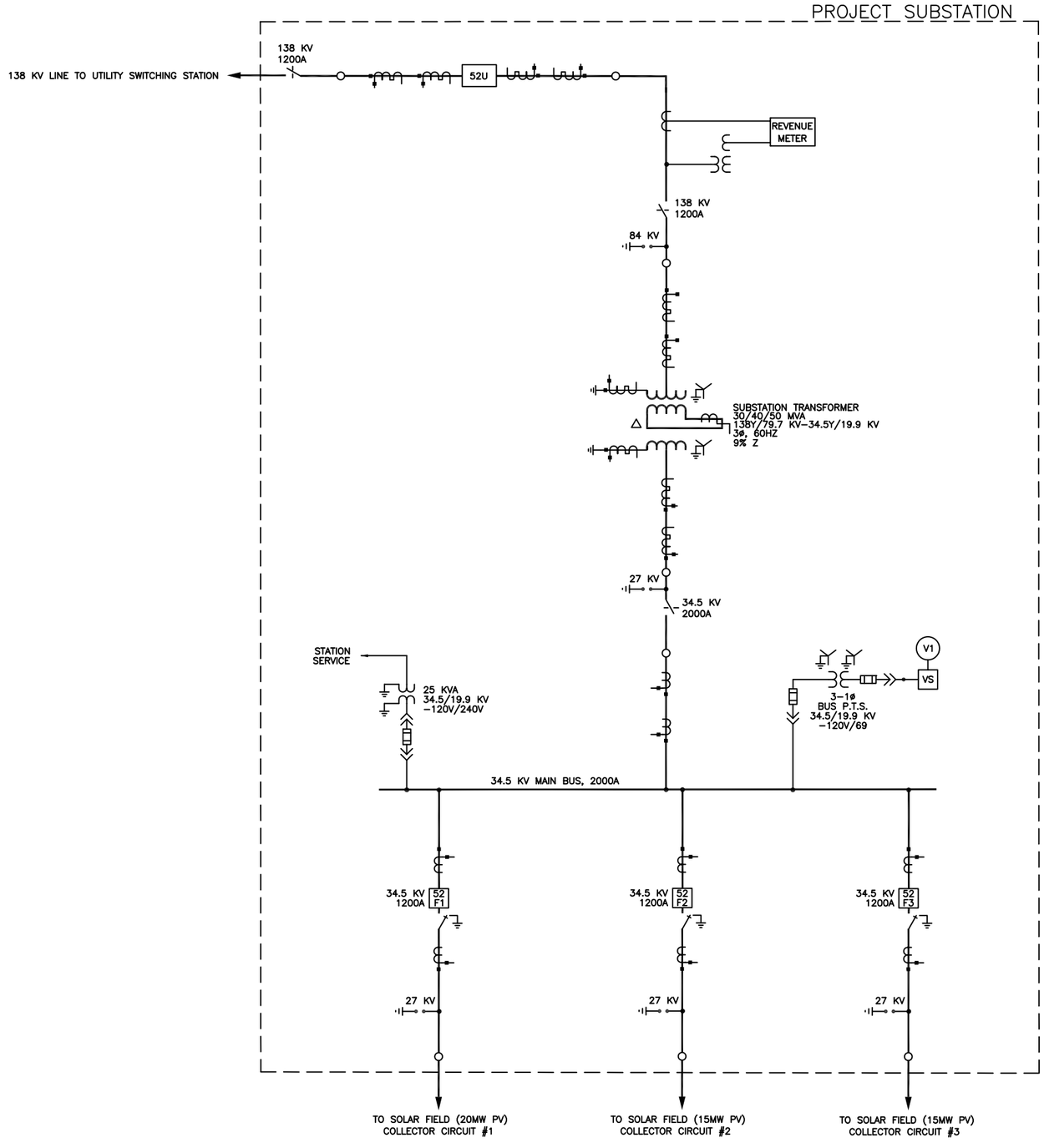


Figure 7

PRELIMINARY

NO.	REVISIONS	DATE	BY	CHK	APR	NO.	REVISIONS	DATE	BY	CHK	APR

ENGINEERING RECORD	DATE
DRAWN:	
DESIGNED:	
CHECKED:	
APPROVED:	
CADFILE: AGA-E-200-1.DWG	

AMARGOSA SOLAR PROJECT
COLLECTOR SUBSTATION
ONE LINE DIAGRAM

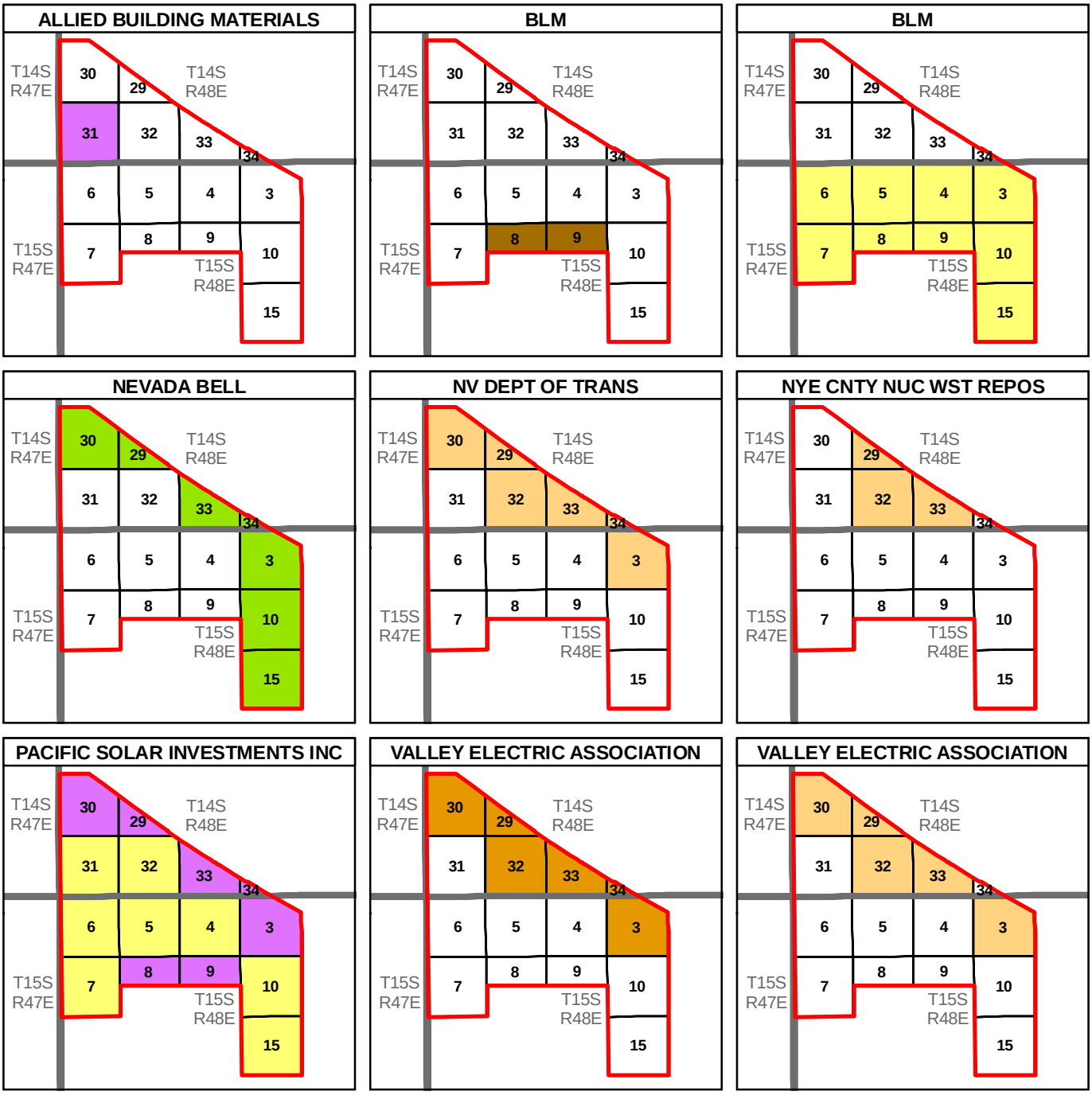
SCALE: NONE	DWG.NO. AGA-E-200	SHEET 1	REV

Figure 8. Typical Transmission Line Towers

Appendix B Right of Way Data

Right of Way Exhibit

LR2000 Data



Legend

- Site Boundary
- PLSS Section
- PLSS Township
- ROW Granted-Issued (Partial Section)
- Case Established (Partial Section)
- Auth.Amended/Modified (Partial Section)
- Post Auth.Appln. Withdrawn (Entire Section)
- Application Received (Partial Section)
- Application Received (Entire Section)

N

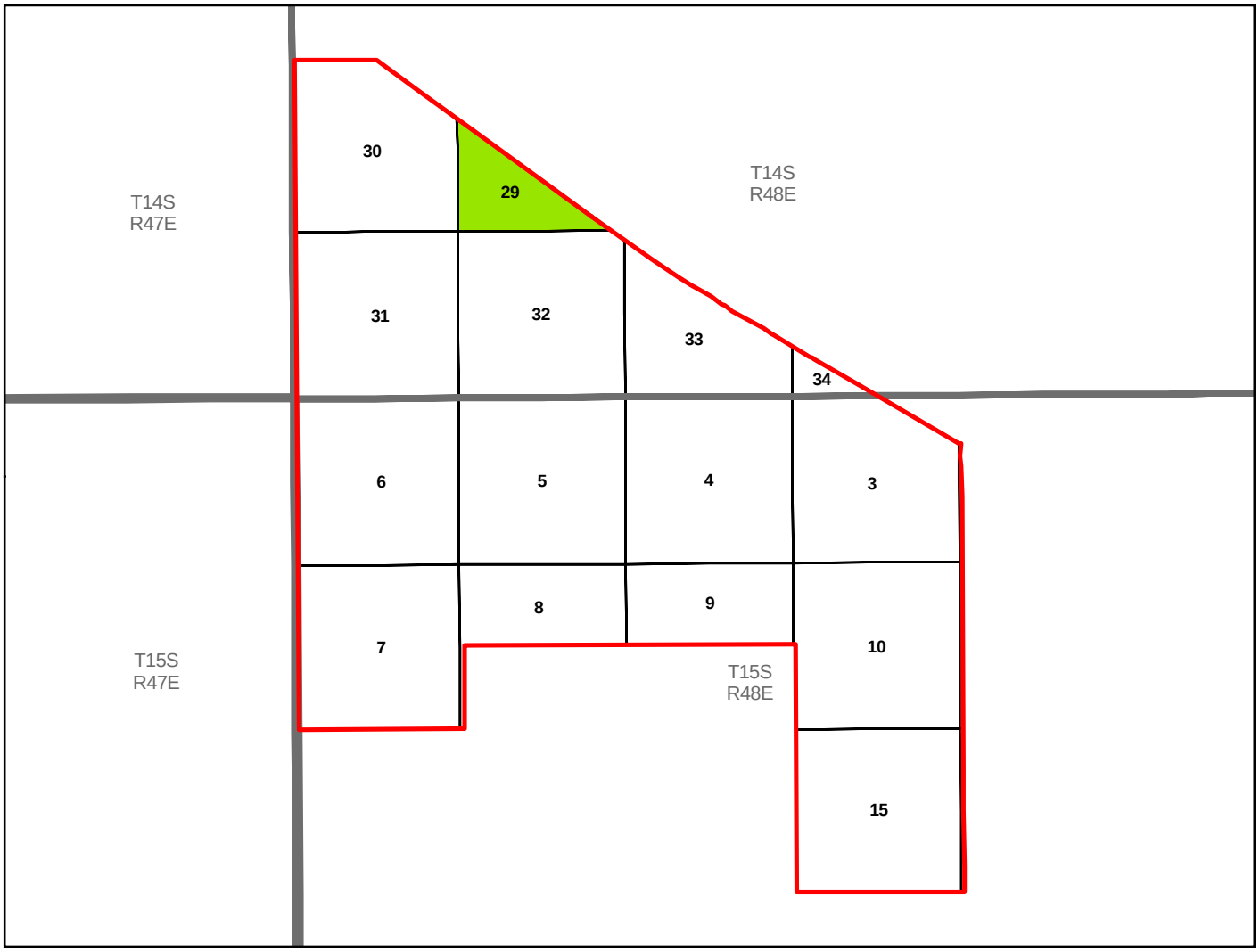
Notes:

1. **Site is located in BLM Las Vegas Field Office jurisdiction**
2. **Right of Way information effective as of 03/04/2009**

0 1.5 3
Miles

FIGURE B1
Amargosa North Site
Right of Ways by Owner

PSi
Pacific Solar Investments Inc.



Active Claims Legend

- Amargosa North Site Boundary
- Active Claims (Partial Section)
- PLSS Section
- PLSS Township

Notes:

1. **Site is located in BLM Las Vegas Field Office jurisdiction**
2. **Mining claim information effective as of 03/04/2009**

N

0 0.5 1

Miles

FIGURE B2
Amargosa North Site
Mining Claims

PSi
Pacific Solar Investments Inc.

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
CASE RECORDATION
(MASS) Serial Register Page

01 10-21-1976;090STAT2776;43USC1761
Case Type 285003: ROW-POWER TRAN-FLPMA
Commodity 975: SOLAR ENERGY FACILITIES
Case Disposition: PENDING

Total Acres	Serial Number
7,500.000	NVN--- - 084465

Serial Number: NVN--- - 084465

Name & Address			Int Rel	% Interest
PACIFIC SOLAR INVESTMENTS INC	2850 W HORIZON RIDGE PKWY #20(HENDERSON NV 89052	APPLICANT		100.000000000

Serial Number: NVN--- - 084465

Mer Twp Rng Sec	STyp	SNr Suff	Subdivision	District/Resource Area	County	Mgmt Agency
21 0140S 0480E 029	ALIQ		SESW,W2SW,SWSE;	LAS VEGAS FIELD OFFICE	NYE	BUREAU OF LAND MGMT
21 0140S 0480E 030	ALIQ		S2;	LAS VEGAS FIELD OFFICE	NYE	BUREAU OF LAND MGMT
21 0140S 0480E 031	ALL		ENTIRE SECTION	LAS VEGAS FIELD OFFICE	NYE	BUREAU OF LAND MGMT
21 0140S 0480E 032	ALL		ENTIRE SECTION	LAS VEGAS FIELD OFFICE	NYE	BUREAU OF LAND MGMT
21 0140S 0480E 033	ALIQ		W2,SWNE,SE;	LAS VEGAS FIELD OFFICE	NYE	BUREAU OF LAND MGMT
21 0140S 0480E 034	ALIQ		SW;	LAS VEGAS FIELD OFFICE	NYE	BUREAU OF LAND MGMT
21 0150S 0480E 003	ALIQ		S2;	LAS VEGAS FIELD OFFICE	NYE	BUREAU OF LAND MGMT
21 0150S 0480E 004	ALL		ENTIRE SECTION	LAS VEGAS FIELD OFFICE	NYE	BUREAU OF LAND MGMT
21 0150S 0480E 005	ALL		ENTIRE SECTION	LAS VEGAS FIELD OFFICE	NYE	BUREAU OF LAND MGMT
21 0150S 0480E 006	ALL		ENTIRE SECTION	LAS VEGAS FIELD OFFICE	NYE	BUREAU OF LAND MGMT
21 0150S 0480E 007	ALL		ENTIRE SECTION	LAS VEGAS FIELD OFFICE	NYE	BUREAU OF LAND MGMT
21 0150S 0480E 008	ALIQ		N2;	LAS VEGAS FIELD OFFICE	NYE	BUREAU OF LAND MGMT
21 0150S 0480E 009	ALIQ		N2;	LAS VEGAS FIELD OFFICE	NYE	BUREAU OF LAND MGMT
21 0150S 0480E 010	ALL		ENTIRE SECTION	LAS VEGAS FIELD OFFICE	NYE	BUREAU OF LAND MGMT
21 0150S 0480E 015	ALL		ENTIRE SECTION	LAS VEGAS FIELD OFFICE	NYE	BUREAU OF LAND MGMT

Serial Number: NVN--- - 084465

Act Date	Code	Action	Action Remarks	Pending Office
12/07/2007	103	ADDTL INFO RECD	POD	
12/07/2007	124	APLN RECD	300MW CSP TROUGH	DIVISION OF LANDS
12/07/2007	500	GEOGRAPHIC NAME	AMARGOSA NORTH;	
12/07/2007	501	REFERENCE NUMBER	NV050-5101-ER-F863;	
01/14/2008	669	LAND STATUS CHECKED		
01/22/2008	104	ADDTL INFO RQSTD		
01/22/2008	845	CAT 6 COST RECOVERY-PROC		
02/29/2008	971	COST RECOV (PROC) RECD	$17.50;1	
02/29/2008	971	COST RECOV (PROC) RECD	$50000.00;1	
03/07/2008	103	ADDTL INFO RECD	REVISED LEGALS	
07/24/2008	104	ADDTL INFO RQSTD	POD	
09/22/2008	103	ADDTL INFO RECD	EXT REQUEST/A/	
10/22/2008	103	ADDTL INFO RECD	WO SOLAR POD	
11/13/2008	247	FUTURE ACTION SUSPENSE	30-DAY EXT AUTH	
12/16/2008	103	ADDTL INFO RECD	45-DAY EXT RQST/B/	
12/22/2008	247	FUTURE ACTION SUSPENSE	30-DAY EXT AUTH	
01/28/2009	103	ADDTL INFO RECD	POD-PV	
02/20/2009	247	FUTURE ACTION SUSPENSE	30-DAY EXT AUTH	

Line Nr **Remarks** **Serial Number: NVN--- - 084465**

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
CASE RECORDATION
(MASS) Serial Register Page

01 10-21-1976;090STAT2776;43USC1761

Case Type 285003: ROW-POWER TRAN-FLPMA

Commodity 975: SOLAR ENERGY FACILITIES

Case Disposition: PENDING

Total Acres	**Serial Number**
7,500.000	**NVN--- - 084465**

0001 ROW FOR SOLAR TROUGH PLANT NAMED AMARGOSA

0002 NORTH LOCATED IN THE AMARGOSA DESERT TO THE

0003 SOUTH OF HIGHWAY 95 AND WEST OF HIGHWAY 373;

0004 T.14 S. SECS 29,30,33, SO. OF US 95

0005 T. 14 S., SEC. 34, SO. OF US 95

0006 /A/30-DAY EXT REQUEST POD FOR WO SOLAR POD

0007 /B/CHANGING TECHNOLOGY TO PHOTOVOLTAIC

Admin State: NV

Geo State: NV

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVCC 0018078	282105	AUTHORIZED	304	AUTH AMENDED/MODIFIED	07/18/2002	503-0.35;	Total Acres = 2,052.020

NV DEPT OF TRANS 1263 S STEWART ST CARSON CITY 89712 NV 100.00000 HOLDER

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	019	PROT			SW,SWSE,SWNW;
21	0140S	0480E	028	PROT			SWSW;
21	0140S	0480E	029	PROT			W2NW,SENW,NWSW,W2SE,SESE;
21	0140S	0480E	030	PROT			N2NE;
21	0140S	0480E	032	PROT			NENE;
21	0140S	0480E	033	PROT			NWNE,S2NE,N2SW,SENW,N2SE;
21	0140S	0480E	034	PROT			SW,SWSE;

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVCC 0021488	286203	CLOSED	970	CASE CLOSED	10/30/2007		Total Acres = 1,654.855

NEVADA BELL PO BOX 11010 RM C259 RENO 89502 NV 100.00000 HOLDER/BILLEE

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	019	PROT			SWNW,N2SW,SESW,SWSE;
21	0140S	0480E	028	PROT			SWSW;
21	0140S	0480E	029	PROT			W2NW,SENW,NESW,W2SE,SESE;
21	0140S	0480E	030	PROT			NENE;
21	0140S	0480E	033	PROT			S2NE,NW,NESE;
21	0140S	0480E	034	PROT			N2SW,SESW,SWSE;

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 029793	285003	AUTHORIZED	304	AUTH AMENDED/MODIFIED	11/17/1992	/A/	Total Acres = 381.700

VALLEY ELECTRIC ASSOCIATION PO BOX 237 PAHRUMP 89041 NV 100.00000 HOLDER

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	019	PROT			SWSW;
21	0140S	0480E	029	PROT			SW;
21	0140S	0480E	030	PROT			N2,NESE;
21	0140S	0480E	032	PROT			NE,NENW;
21	0140S	0480E	033	PROT			SWNW,S2;

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 039884	311111	CLOSED	970	CASE CLOSED	08/12/1988	Total Acres =	5,098.000

MARSHALL EARTH RESOURCES INC PO BOX 888 VIRGINIA CITY 89440 NV 100.00000 LESSEE

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	019	ALL			ENTIRE SECTION
21	0140S	0480E	030	PROT			ALL;
21	0140S	0480E	031	PROT			ALL;

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 046465	285003	CLOSED	970	CASE CLOSED	01/10/1989	Total Acres =	3,563.636

MUNSON GEOTHER INC 162 HUBBARD WAY #F RENO 89502 NV 100.00000 APPLICANT

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	004	PROT			E2;
21	0140S	0480E	009	PROT			E2;
21	0140S	0480E	010	PROT			SWSW;
21	0140S	0480E	015	PROT			W2;
21	0140S	0480E	022	PROT			W2,SE;
21	0140S	0480E	027	PROT			NENW,E2;
21	0140S	0480E	034	PROT			E2;
21	0140S	0480E	035	PROT			SW;

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 047748	289007	AUTHORIZED	308	ROW RENEWED	12/20/2007		Total Acres = 51,790.000

DOE (OFC OF CVL RAD WST MGT) 1551 HILLSHIRE DR LAS VEGAS 89134(NV 100.00000 HOLDER

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	001	ALL			ENTIRE SECTION
21	0140S	0480E	002	ALL			ENTIRE SECTION
21	0140S	0480E	003	ALL			ENTIRE SECTION
21	0140S	0480E	010	ALL			ENTIRE SECTION
21	0140S	0480E	011	ALL			ENTIRE SECTION
21	0140S	0480E	012	ALL			ENTIRE SECTION
21	0140S	0480E	013	ALL			ENTIRE SECTION
21	0140S	0480E	014	ALL			ENTIRE SECTION
21	0140S	0480E	015	ALL			ENTIRE SECTION
21	0140S	0480E	022	ALL			ENTIRE SECTION
21	0140S	0480E	023	ALL			ENTIRE SECTION
21	0140S	0480E	024	ALL			ENTIRE SECTION
21	0140S	0480E	025	ALL			ENTIRE SECTION
21	0140S	0480E	026	ALL			ENTIRE SECTION
21	0140S	0480E	027	ALL			ENTIRE SECTION
21	0140S	0480E	036	ALL			ENTIRE SECTION

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 048282	289001	RELINQUISHED	310	RELQ ACCEPTED	09/26/2006		Total Acres = 3.000

MIFFLIN AND ASSOCIATES 3230 E FLAMINGO RD LAS VEGAS 89121 NV 100.00000 HOLDER/BILLEE

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	035	PROT			SENE,SENW;

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 051050	289007	CLOSED	970	CASE CLOSED	10/31/1996		Total Acres = 3,840.000

DOE (YUCCA MTN SITE CHAR OFC) PO BOX 5400 ALBUQUERQUE 87185 NM 100.00000 APPLICANT

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	006	PROT			;

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 057523	289001	CLOSED	970	CASE CLOSED	04/13/2004		Total Acres = 1.923

DOE (YUCCA MTN SITE CHAR OFC) PO BOX 5400 ALBUQUERQUE 87185 NM 100.00000 HOLDER

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	006	PROT			SWNE,NENW;

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 058450	361113	PENDING	124	APLN RECD	08/21/1997		Total Acres = 640.000

CIND R LITE 3333 CINDER LN LAS VEGAS 89103 NV 100.00000 PERMITTEE

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	006	PROT			NE;

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 061313	362113	CLOSED	970	CASE CLOSED	09/29/1997		Total Acres = 60.000

NYE CNTY ROAD DEPT BOX 887 TONOPAH 89049 NV 100.00000 PERMITTEE

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	034	ALL			ENTIRE SECTION
21	0140S	0480E	035	ALL			ENTIRE SECTION

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 061872	292006	CLOSED	970	CASE CLOSED	05/26/1999		Total Acres = 10.000

MACGUFFIN FILMS 411 LAFAYETTE ST NEW YORK 10003 NY 100.00000 PERMITTEE

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	016	PROT			SW;
21	0140S	0480E	017	ALL			ENTIRE SECTION

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 062166	361113	CLOSED	970	CASE CLOSED	10/15/1999		Total Acres = 40.000

MARCHANT WILLIAM BOX 341 BEATTY 89003 NV 100.00000 PERMITTEE

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	027	PROT			W2;

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 062848	287001	AUTHORIZED	304	AUTH AMENDED/MODIFIED	12/11/2007	/G/	Total Acres = 27.370

NYE CNTY NUC WST REPOS 1210 E BASIN RD STE 6 PAHRUMP 89048 NV 100.00000 HOLDER

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	012	RSDL			SWSE;
21	0140S	0480E	013	RSDL			SWSE;
21	0140S	0480E	022	RSDL			SENW;
21	0140S	0480E	029	RSDL			SWNE;
21	0140S	0480E	032	RSDL			SENW;
21	0140S	0480E	033	RSDL			NENE;

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 062888	289001	AUTHORIZED	304	AUTH AMENDED/MODIFIED	09/22/2005	/A/	Total Acres = 0.410

UNIVERSITY OF NV RENO | BOX 60240 | RENO | 89506 NV | 100.00000 HOLDER

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	018	PROT			SWSW,SESW,SWSE;

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 062888C	286001	CLOSED	970	CASE CLOSED	05/31/2005		Total Acres = 1.000

CA INSTITUTE OF TECH | 1200 E CALIFORNIA BLVD 100-23 | PASADENA | 91125 CA | 100.00000 APPLICANT

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	018	RSDL			NWSWSE;

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 062888D	286001	CLOSED	970	CASE CLOSED	05/31/2005		Total Acres = 1.000

CA INSTITUTE OF TECH | 1200 E CALIFORNIA BLVD 100-23 | PASADENA | 91125 CA | 100.00000 APPLICANT

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	021	PROT			SESW;

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 062888E	286001	CLOSED	970	CASE CLOSED	05/31/2005		Total Acres = 1.000

CA INSTITUTE OF TECH | 1200 E CALIFORNIA BLVD 100-23 | PASADENA | 91125 CA | 100.00000 APPLICANT

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	018	PROT			SWSW;

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 066692	360413	PENDING	387	CASE ESTABLISHED	07/03/2000		Total Acres = 2,360.000

BLM	4701 N TORREY PINES DR	LAS VEGAS	89130	NV	100.00000	OWNER	

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	036	ALL			ENTIRE SECTION

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 071305	380913	CLOSED	970	CASE CLOSED	10/01/2003		Total Acres = 0.000

BARRICK BULLFROG	PO BOX 519	BEATTY	89003	NV	100.00000	CLAIMANT	

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	030	ALL			ENTIRE SECTION

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 071780	380913	CLOSED	970	CASE CLOSED	04/03/2002		Total Acres = 0.000

SAGA EXPL CO	PO BOX 6479	RENO	89513	NV	100.00000	OPERATOR	

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	007	ALL			ENTIRE SECTION
21	0140S	0480E	018	ALL			ENTIRE SECTION

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 072091	380910	PENDING	387	CASE ESTABLISHED	10/08/1993		Total Acres = 50.000

ALLIED BUILDING MATERIALS	4745 MITCHELL ST	N LAS VEGAS	89031	NV	100.00000	CLAIMANT
CIND-R-LITE BLOCK CO	3333 CINDER LN	LAS VEGAS	89103	NV	100.00000	OPERATOR

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	006	ALL			ENTIRE SECTION

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 073706	286203	AUTHORIZED	307	ROW GRANTED-ISSUED	11/20/2006		Total Acres = 797.740

NEVADA BELL	PO BOX 11010 RM C259	RENO	89502	NV	100.00000 HOLDER/BILLEE

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	019	PROT			N2SW,SESW,SWSE;
21	0140S	0480E	028	PROT			SWSW;
21	0140S	0480E	029	PROT			S2NW,NESW,W2SE,SESE;
21	0140S	0480E	030	PROT			N2NE,SENE;
21	0140S	0480E	033	PROT			S2NE,E2NW,NWNW,NESE;
21	0140S	0480E	034	PROT			W2SW,SESW,SWSE;

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 074682	292006	PENDING	124	APLN RECD	03/09/2001		Total Acres = 181.900

ALLIED BUILDING MATERIALS	4745 MITCHELL ST	N LAS VEGAS	89031	NV	APPLICANT

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	031	ALIQ			W2SW;
21	0140S	0480E	036	RSDL		01	S2N2SWSWSE,W2W2E2SW;
21	0140S	0480E	036	RSDL		02	S2SWSWSE,E2NWNE;

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 077586	289001	AUTHORIZED	307	ROW GRANTED-ISSUED	09/09/2004		Total Acres = 11.320

DOE	PO BOX 364629	N LAS VEGAS	89036	NV	100.00000 HOLDER

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	007	ALIQ			NENW;

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 084465	285003	PENDING	124	APLN RECD	12/07/2007	300MW CSP TROUGH	Total Acres = 7,500.000

PACIFIC SOLAR INVESTMENTS INC 2850 W HORIZON RIDGE PKWY #200 HENDERSON 89052 NV 100.00000 APPLICANT

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	029	ALIQ			SESW,W2SW,SWSE;
21	0140S	0480E	030	ALIQ			S2;
21	0140S	0480E	031	ALL			ENTIRE SECTION
21	0140S	0480E	032	ALL			ENTIRE SECTION
21	0140S	0480E	033	ALIQ			W2,SWNE,SE;
21	0140S	0480E	034	ALIQ			SW;

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 085656	285003	PENDING	124	APLN RECD	07/11/2008		Total Acres = 7,500.000

COGENTRIX SOLAR SERVICES LLC 9405 ARROWPOINT BLVD CHARLOTTE 28273 NC 100.00000 APPLICANT

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	029	ALIQ			SESW,W2SW,SWSE;
21	0140S	0480E	030	ALIQ			S2;
21	0140S	0480E	031	ALL			ENTIRE SECTION
21	0140S	0480E	032	ALIQ			S2;
21	0140S	0480E	033	ALIQ			S2;
21	0140S	0480E	034	ALIQ			SWSW;

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 086510	323000	PENDING	387	CASE ESTABLISHED	02/17/2009		Total Acres = 5,120.000

100.00000 APPLICANT

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	005	ALL			ENTIRE SECTION
21	0140S	0480E	006	ALL			ENTIRE SECTION
21	0140S	0480E	007	ALL			ENTIRE SECTION
21	0140S	0480E	008	ALL			ENTIRE SECTION
21	0140S	0480E	017	ALL			ENTIRE SECTION
21	0140S	0480E	018	ALL			ENTIRE SECTION

Serial Number	Casetype	Disposition	Actn Code	Actn Txt	Date	Action Remarks	
NVN 0066289	285003	AUTHORIZED	037	POST AUTH APLN WITHDRAV	03/31/2008	/E//F//G/	Total Acres = 377.900

VALLEY ELECTRIC ASSOCIATION PO BOX 237 PAHRUMP 89041 NV 100.00000 HOLDER

MER	Township	Range	Section	Typ	Sur Nr	Suff	Aliquot Part
21	0140S	0480E	019	ALL			ENTIRE SECTION
21	0140S	0480E	029	ALL			ENTIRE SECTION
21	0140S	0480E	030	ALL			ENTIRE SECTION
21	0140S	0480E	032	ALL			ENTIRE SECTION
21	0140S	0480E	033	ALL			ENTIRE SECTION
21	0140S	0480E	034	ALL			ENTIRE SECTION

UNITED STATES DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT

GEOGRAPHIC REPORT
(CASE RECORDATION, MINING CLAIM, STATUS)
By MTRS

Sys	Mer	Twn	Rng	Sec	Sur Typ	Sur Nr	Suff	Subdivision	Case Type	Serial Num	Case Disp	Disp Act Cd	Case Acres
MC	21	0140S	0480E	001				NW	384101	NMC716887	CLOSED	631	
MC	21	0140S	0480E	001				NW	384101	NMC716888	CLOSED	631	
MC	21	0140S	0480E	001				NW	384101	NMC716889	CLOSED	631	
MC	21	0140S	0480E	001				NW	384101	NMC716890	CLOSED	631	
MC	21	0140S	0480E	001				NW	384101	NMC716891	CLOSED	631	
MC	21	0140S	0480E	001				NW	384101	NMC716892	CLOSED	631	
MC	21	0140S	0480E	001				NW	384101	NMC716893	CLOSED	631	
MC	21	0140S	0480E	001				NW SW	384101	NMC716894	CLOSED	631	
MC	21	0140S	0480E	001				NW SW	384101	NMC716895	CLOSED	631	
MC	21	0140S	0480E	001				NW SW	384101	NMC716896	CLOSED	631	
MC	21	0140S	0480E	001				SW	384101	NMC716897	CLOSED	631	
MC	21	0140S	0480E	001				SW	384101	NMC716898	CLOSED	631	
MC	21	0140S	0480E	004				NW	384101	NMC768642	CLOSED	631	
MC	21	0140S	0480E	006				NE	384401	NMC381495	CLOSED	631	
MC	21	0140S	0480E	006				NW	384401	NMC381496	CLOSED	631	
MC	21	0140S	0480E	006				NE	384101	NMC469626	CLOSED	631	
MC	21	0140S	0480E	006				NE NW	384201	NMC658405	ACTIVE	188	
MC	21	0140S	0480E	006				NE NW	384201	NMC658406	ACTIVE	188	
MC	21	0140S	0480E	006				NE NW	384201	NMC658407	ACTIVE	188	
MC	21	0140S	0480E	006				NE NW	384201	NMC658408	ACTIVE	188	
MC	21	0140S	0480E	006				NW	384101	NMC886396	ACTIVE	403	
MC	21	0140S	0480E	006				NE NW	384101	NMC886397	ACTIVE	403	
MC	21	0140S	0480E	006				NE NW	384101	NMC886398	ACTIVE	403	
MC	21	0140S	0480E	006				NW	384101	NMC886399	ACTIVE	403	
MC	21	0140S	0480E	006				NE	384101	NMC886402	ACTIVE	403	
MC	21	0140S	0480E	006				NE	384101	NMC886403	ACTIVE	403	
MC	21	0140S	0480E	007				SW	384101	NMC542613	CLOSED	631	
MC	21	0140S	0480E	018				NW	384101	NMC542563	CLOSED	311	
MC	21	0140S	0480E	018				NW SW	384101	NMC542564	CLOSED	631	
MC	21	0140S	0480E	018				NW SW	384101	NMC542565	CLOSED	311	
MC	21	0140S	0480E	018				NE SE	384101	NMC542566	CLOSED	631	
MC	21	0140S	0480E	018				NW	384101	NMC542613	CLOSED	631	
MC	21	0140S	0480E	018				NW	384101	NMC542614	CLOSED	631	
MC	21	0140S	0480E	029				NE NW SW SE	384201	NMC792339	CLOSED	631	

UNITED STATES DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT

GEOGRAPHIC REPORT
(CASE RECORDATION, MINING CLAIM, STATUS)
By MTRS

Sys	Mer	Twn	Rng	Sec	Sur Typ	Sur Nr	Suff	Subdivision	Case Type	Serial Num	Case Disp	Disp Act Cd	Case Acres
MC	21	0140S	0480E	029				NE NW SW SE	384201	NMC792340	CLOSED	631	
MC	21	0140S	0480E	029				NE SE	384201	NMC824854	ACTIVE	403	
MC	21	0140S	0480E	029				NW SW	384201	NMC824855	ACTIVE	403	
MC	21	0140S	0480E	036				SE	384201	NMC126664	CLOSED	271	
MC	21	0140S	0480E	036				NE SE	384201	NMC126665	CLOSED	271	
MC	21	0140S	0480E	036				NE SE	384201	NMC126666	CLOSED	271	
MC	21	0140S	0480E	036				NE SE	384201	NMC126667	CLOSED	271	
MC	21	0140S	0480E	036				SE	384201	NMC360600	ACTIVE	188	
MC	21	0140S	0480E	036				SE	384101	NMC98310	CLOSED	271	
MC	21	0140S	0480E	036				SE	384101	NMC98311	CLOSED	271	
MC	21	0140S	0480E	036				SE	384101	NMC98312	CLOSED	271	
MC	21	0140S	0480E	036				NE SE	384101	NMC98313	CLOSED	271	
MC	21	0140S	0480E	036				SW SE	384101	NMC98317	CLOSED	631	
MC	21	0140S	0480E	036				SE	384101	NMC98318	CLOSED	631	
MC	21	0140S	0480E	036				SE	384101	NMC98319	CLOSED	631	
MC	21	0140S	0480E	036				SE	384101	NMC98320	CLOSED	631	
MC	21	0140S	0480E	036				SE	384101	NMC98321	CLOSED	631	
MC	21	0140S	0480E	036				SE	384101	NMC98323	CLOSED	631	
MC	21	0140S	0480E	036				SE	384101	NMC98324	CLOSED	631	
MC	21	0140S	0480E	036				SE	384101	NMC98325	CLOSED	631	
MC	21	0140S	0480E	036				SE	384101	NMC98326	CLOSED	631	
MC	21	0140S	0480E	036				NE SE	384101	NMC98327	CLOSED	631	
MC	21	0140S	0480E	036				NE SE	384101	NMC98328	CLOSED	631	
MC	21	0140S	0480E	036				NE SE	384101	NMC98329	CLOSED	631	
MC	21	0140S	0480E	036				NE SE	384101	NMC98330	CLOSED	631	

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MINING CLAIM GEOGRAPHIC REPORT
LIST OF MINING CLAIMS BY SECTION

MER TWP RNG SEC
21 0140S 0480E 029

Serial Num	Quad	Claim Name/Number	Claimant(s)	Lead File	Case Type	Status	Loc Dt	Last Assessment
NMC824854	NE SE	AMARGOSA NO 1	JOHNSON SHERYL	NMC824854	384201	ACTIVE	09/27/2001	2009
NMC824854	NE SE	AMARGOSA NO 1	MCCORMICK KAREN	NMC824854	384201	ACTIVE	09/27/2001	2009
NMC824854	NE SE	AMARGOSA NO 1	MCCORMICK STEVE	NMC824854	384201	ACTIVE	09/27/2001	2009
NMC824854	NE SE	AMARGOSA NO 1	TIGERT SHARON	NMC824854	384201	ACTIVE	09/27/2001	2009
NMC824855	NW SW	AMARGOSA NO 2	JOHNSON SHERYL	NMC824854	384201	ACTIVE	09/27/2001	2009
NMC824855	NW SW	AMARGOSA NO 2	MCCORMICK KAREN	NMC824854	384201	ACTIVE	09/27/2001	2009
NMC824855	NW SW	AMARGOSA NO 2	MCCORMICK STEVE	NMC824854	384201	ACTIVE	09/27/2001	2009
NMC824855	NW SW	AMARGOSA NO 2	TIGERT SHARON	NMC824854	384201	ACTIVE	09/27/2001	2009

Appendix C Vegetation Treatment and Weed Management Plan

PSI will develop a plan for control of noxious weeds and invasive species which could occur as a result of new surface disturbance activities at the site. The plan will address monitoring, education of personnel on weed identification, the manner in which weeds spread, use of any pesticides, and methods for treating infestations. Pesticide use will be limited to non-persistent, immobile pesticides and will only be applied in accordance with label and application permit directions and stipulations for terrestrial and aquatic applications. Any herbicide applications will be conducted within the framework of BLM and DOI policies, and will entail only the use of USEPA registered pesticides.

Appendix D Waste Management Plan

PSI will develop a waste management plan that identifies waste streams that are expected to be generated at the site, hazardous waste determination procedures, waste storage locations, waste-specific management and disposal requirements, inspection procedures, and waste minimization procedures. This plan will address all solid and liquid wastes that may be generated at the site.

Appendix E Spill Prevention, Control and Countermeasures Plan

PSI will develop a Spill Prevention, Control and Countermeasures (SPCC) Plan for the Project. In accordance with federal and state regulations, the Plan will provide or identify:

- an overall facility drawing, showing locations of equipment and site drainage
- where hazardous materials and wastes are stored on site,
- what spill prevention measures are to be implemented,
- employee training requirements and briefings on oil discharge prevention,
- appropriate spill response actions for each material or waste,
- the locations of spill response kits onsite,
- inspection procedures for oil-containing equipment, frequency and documentation of inspections,
- a procedure for ensuring that the spill response kits are adequately stocked at all times, and
- procedures for making timely notifications to BLM and other authorities.

Appendix F Material Safety Data Sheets

MSDS sheets for chemical similar to those that may be used on the site are provided in this document and will be updated when the actual material/supplier is identified. PSI will also include MSDS for any other hazardous materials identified as being used onsite.

SAFETY DATA SHEET

1. Identification of the Substance/Preparation and the Company/Undertaking

Product Name:	Nytro Leo I
Product Type:	Insulating Oil
Supplier:	Nynäs Naphthenics AB P. O. Box 10701 S-121 29 STOCKHOLM Sweden
Telephone No:	+46-8-602 1200 Fax: +46-8-81 62 02
Emergency Phone No:	+46-8-33 70 43

2. Composition/Information of Ingredients

Chemical Name:	CAS-No.:	EC-No.:	Weight-%	Symbols/Phrases
Hydrotreated Light Naphthenic Distillate	64742-53-6	265-156-6	98,93	
	64741-97-5	265-098-1	1	
Solvent refined light naphthenic distillate	128-37-0	204-881-4	0,07	R 51/53, N
2,6-ditertiary Butyl-4-Methyl Phenol				

3. Hazards identification

Classification:	No classification needed according to 67/548/EC and 1999/45/EC.
Human Health:	Inhalation of vapours and/or mists might irritate respiratory tract. Prolonged skin contact will cause defatting and possible irritation. Eye contact might cause irritation.
Environment:	Slow biodegradation, the product will remain for long time in the environment. Risk for contamination of earth, soil and water.
Physical and chemical	At elevated temperatures flammable vapours and decomposition

hazard:	products will be released. Risk for slippery floors if spilled out.

4. First Aid Measures

General advice:

Inhalation:	If inhalation of mists, fumes or vapours occur causing irritation, move to fresh air. If the symptoms persist, obtain medical advice.
Skin contact:	Remove immediately adhering matter and wash off with soap and plenty of water.
Eye contact:	Rinse with plenty of water.
Ingestion:	Clean mouth with water. Obtain medical advice if a large amount has been swallowed. Do not induce vomiting.

5. Fire-fighting Measures

Suitable extinguishing media:	Extinguish preferably with dry chemical, carbon dioxide (CO_2), or foam. Waterspray / mist may be used.
Extinguishing media which must not be used for safety reasons:	Water jet, unless used by authorised people.(Stain risk caused by combustion).

6. Accidental Release Measures

Personal precautions:	Suitable protection equipment should be used. In case of large spillage, the cleaning procedure should be carried out using suitable protective clothing such as overall, gloves and boots. Remove contaminated clothes as soon as possible. Smaller spillage can be wiped up with paper cloths, using protective gloves.
Environmental precautions:	Prevent spills to enter and spread to drains, sewers, water courses, and soil. Contact local safety authorities.
Methods for cleaning up:	Absorb leaking product with sand, earth or other suitable inert material and collect. Disposal according to section 13.

7. Handling and Storage

Handling:	Handle in accordance with good industrial hygiene and safety practices. If handled at elevated temperatures or with high speed

	mechanical equipment, vapours or mists might be released and require a well ventilated workplace.
Storage:	Store at ambient temperature or with lowest necessary heating as handling requires.

8. Exposure Controls/Personal Protection

Control parameters:	Exposure via the air and normal handling.
Chemical name:	Mineral oil.
Short term value:	5 mg/m^3. TLV-TWA 8 hours ACGIH (1998).
Engineering measures to reduce exposure:	Mechanical ventilation and local exhaust will reduce exposure via the air. Use oil resistant material in construction of handling equipment. Store under recommended conditions and if heated, temperature control equipment should be used to avoid overheating.

Personal protection equipment:

- Respiratory protection:	If the product is heated under manual handling, use suitable mask with filter A1P2 or A2P2. Handling in automatic production lines, with exhaust or ventilation, will not require mask.
- Hand protection:	Wear oil-resistant protective gloves if there is a risk of repeated skin contact. Suitable gloves are neoprene, nitrile- or acrylnitrilebutadiene rubber, or PVC. Take notice of CEN 420:94, CEN 374:1-3:94 and CEN 388:94.
- Eye protection:	Wear safety goggles / safe shield if splashes may occur.
- Skin and body protection:	Wear protective clothing if there is a risk of skin contact and change them frequently, or when contaminated.
Hygienic measures:	Act in accordance with good industrial hygiene and safety practice.

9. Physical and Chemical Properties

Form:	Viscous liquid
Colour:	<0.5, pale light yellow
Odour:	Odourless / light petroleum
Melting point/pour point:	-60°C
Initial boiling point:	>250°C
Density 15°C:	888 kg/m3

Flash point, PM:	140°C
Auto ignition temp.:	>270°C
Solubility in water:	Non soluble
Solubility in organic solvents:	Soluble
Decomposition temp.:	>280°C
Vapour pressure at 100°C:	160 Pascal
DMSO extractible compounds according to IP346:	< 3%
Calculated partition coefficient n-octanol/water, log P_{ow}:	>6
Viscosity at 40°C:	9 cSt
pH:	non relevant

10. Stability and Reactivity

Stability:	Stable at normal conditions. Start to decompose at 280°C or higher.
Avoid:	Excessive heating and highly oxidizing agents.
Hazardous decomposition products:	Flammable gases which might also be noxious. With air present, there is a risk for auto ignition at temperatures >270°C.

11. Toxicological Information

Acute toxicity:	Studies available indicate oral and dermal LD_{50}s of >5 000 mg/kg which is considered as low acute toxicity.
Local effects:	
- Inhalation:	Prolonged and repeated inhalation of mist or vapour generated at elevated temperatures may irritate respiratory tract.
- Oral:	May cause nausea and eventually vomiting and diarrhoea.
- Skin contact:	Prolonged or repeated exposure may lead to defatting of the skin and subsequent irritation.
- Eye contact:	May cause redness and transient pain.
- Sensitisation:	Studies indicate no evidence of sensitisation.

12. Ecological Information

Mobility:	Low, due to low water solubility.
Persistence/degradability:	The baseoil is not readily biodegradable. Substances may not meet criteria for ready biodegradability. Studies indicate inherent, primary biodegradation in the range of 20-60 % based on carbondioxide evolution.
Bio-accumulation:	Base oil has Log P_{ow} in the range >3,9-> 6,0. Log P_{ow} is used for estimating the bioacccumulation in fish. A value >3,0 indicates possible bioaccumulation. The size of the hydrocarbon molecules reduces the risk for bioaccumulation.
Ecotoxicity:	Aquatic toxicity data on base oils indicate LC_{50} values of >1 000 mg/l, which is considered as low toxicity. Chronic toxicity studies shows no long-term hazard to the aquatic environment.

13. Disposal Considerations

Residues of unused product is not regarded as hazardous waste. Residues of products/packageing must not be disposed of in the environment, but taken care of in accordance with local regulations.

Emptying instructions:

Barrels and equals: Turn the barrel upside down and tilt it approximately 10° until nondripping. Nondripping is less than one drop / minute at 15 °C. The product viscosity depends on temperature, and it is important that the emptying not is done at to low temperature. It can be necessary to scrape out highviscous products.
When the barrel is nondripping send it for recycling. If the residue volume is more than 1% send it for destruction of barrels. Empty barrels with < 1 % residue is not dangerous goods. Notify local regulations.

Bags for one way use/multiple use: Follow instructions given by the bag manufacturer. The last residues in the bag can be removed by placing the hose over the remaining residues or by lifting the bag so the product can run towards the hose.
Bottom residues; roll up the bag towards the hose to press out the oil
One way bags of polyethylene can be recycled or disposed of by incineration. Notify local regulations.

14. Transport Information

The product is not classified as hazardous goods for land, sea and air transport according to the respective regulations (ADR, IMDG, IATA-DGR).

15. Regulatory Information

Classified according to European directives on classification of hazardous substances and preparations. Not classified as hazardous. No statutory label required.

Listed in TSCA (Toxic Substances Control Act) and EINECS.

16. Other Information

The information for labelling and ecotoxicity is according to Concawe Report No. 95/59, 98/54, 05/6 and 01/54.
Classified according to the Dangerous Substance Directive, 67/548/EC up to the 29th ATP, the Dangerous Preparation Directive 1999/45/EC, and the Safety Data Sheet Directive 2001/58/EC.

The product is unclassified and have DMSO extractible compounds according to IP 346 <3%.

Classification of component with CAS no 128-37-0:
Classified as dangerous for the environment, N, according to 67/548/EC and 1999/45/EC.
R51/53: Toxic to aquatic organisms, may cause long term effects in the aquatic enviroment.

Issuing date: 2007-01-26

Nota L
The classification as a carcinogen need not apply if it can be shown that the substance contains less than 3 w%w DMSO extract as measured by IP 346. This Nota applies only to certain complex oil-derived substances in Annex 1.

Nota N
The classification as a carcinogen need not apply if the full refining history is known and it can be shown that the substance from which it was produced is not a carcinogen. This Nota applies only to certain complex oil-derived substances in Annex 1.

Material Safety Data Sheet

1. MATERIAL AND COMPANY IDENTIFICATION

Material Name : **Shell Naturelle Fluid HF-M 46**
Uses : Hydraulic oil

Manufacturer/Supplier : **SOPUS Products**
PO Box 4427
Houston, TX 77210-4427
USA
MSDS Request : 877-276-7285

Emergency Telephone Number
Spill Information : 877-242-7400
Health Information : 877-504-9351

2. COMPOSITION/INFORMATION ON INGREDIENTS

Blend of a synthetic ester, polyolefin and additives.

3. HAZARDS IDENTIFICATION

Emergency Overview

Appearance and Odour : Reddish. Liquid at room temperature. Slight hydrocarbon.

Health Hazards : High-pressure injection under the skin may cause serious damage including local necrosis.
Safety Hazards : Not classified as flammable but will burn.
Environmental Hazards : Not classified as dangerous for the environment.

Health Hazards : Not expected to be a health hazard when used under normal conditions.

Health Hazards
Inhalation : Under normal conditions of use, this is not expected to be a primary route of exposure.
Skin Contact : Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis.
Eye Contact : May cause slight irritation to eyes.
Ingestion : Low toxicity if swallowed.
Other Information : High-pressure injection under the skin may cause serious damage including local necrosis. Used oil may contain harmful impurities.
Signs and Symptoms : Local necrosis is evidenced by delayed onset of pain and tissue damage a few hours following injection. Oil acne/folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas. Ingestion may result in nausea, vomiting and/or diarrhoea.
Aggravated Medical : Pre-existing medical conditions of the following organ(s) or

Condition		organ system(s) may be aggravated by exposure to this material: Skin.
Environmental Hazards	:	Not classified as dangerous for the environment.
Additional Information	:	Under normal conditions of use or in a foreseeable emergency, this product does not meet the definition of a hazardous chemical when evaluated according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

4. FIRST AID MEASURES

General Information	:	Not expected to be a health hazard when used under normal conditions.
Inhalation	:	No treatment necessary under normal conditions of use. If symptoms persist, obtain medical advice.
Skin Contact	:	Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention. When using high pressure equipment, injection of product under the skin can occur. If high pressure injuries occur, the casualty should be sent immediately to a hospital. Do not wait for symptoms to develop. Obtain medical attention even in the absence of apparent wounds.
Eye Contact	:	Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.
Ingestion	:	In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.
Advice to Physician	:	Treat symptomatically. High pressure injection injuries require prompt surgical intervention and possibly steroid therapy, to minimise tissue damage and loss of function. Because entry wounds are small and do not reflect the seriousness of the underlying damage, surgical exploration to determine the extent of involvement may be necessary. Local anaesthetics or hot soaks should be avoided because they can contribute to swelling, vasospasm and ischaemia. Prompt surgical decompression, debridement and evacuation of foreign material should be performed under general anaesthetics, and wide exploration is essential.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

Flash point	:	Typical 256 °C / 493 °F (COC)
Upper / lower Flammability or Explosion limits	:	Typical 1 - 10 %(V)
Auto ignition temperature	:	> 320 °C / 608 °F
Specific Hazards	:	Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds.
Suitable Extinguishing	:	Foam, water spray or fog. Dry chemical powder, carbon

Media		dioxide, sand or earth may be used for small fires only.
Unsuitable Extinguishing Media	:	Do not use water in a jet.
Protective Equipment for Firefighters	:	Proper protective equipment including breathing apparatus must be worn when approaching a fire in a confined space.

6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on disposal. Observe all relevant local and international regulations.

Protective measures	:	Avoid contact with skin and eyes. Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers.
Clean Up Methods	:	Slippery when spilt. Avoid accidents, clean up immediately. Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly.
Additional Advice	:	Local authorities should be advised if significant spillages cannot be contained.

7. HANDLING AND STORAGE

General Precautions	:	Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.
Handling	:	Avoid prolonged or repeated contact with skin. Avoid inhaling vapour and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used.
Storage	:	Keep container tightly closed and in a cool, well-ventilated place. Use properly labelled and closeable containers. Storage Temperature: 0 - 50 °C / 32 - 122 °F
Recommended Materials	:	For containers or container linings, use mild steel or high density polyethylene.
Unsuitable Materials	:	PVC.
Additional Information	:	Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Contains no components with occupational exposure limit values

Exposure Controls	:	The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Adequate ventilation to control airborne concentrations. Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.
Personal Protective Equipment	:	Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.
Respiratory Protection	:	No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for combined particulate/organic gases and vapours [boiling point >65 °C (149 °F)].
Hand Protection	:	Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.
Eye Protection	:	Wear safety glasses or full face shield if splashes are likely to occur.
Protective Clothing	:	Skin protection not ordinarily required beyond standard issue work clothes.
Monitoring Methods	:	Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate.
Environmental Exposure Controls	:	Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Reddish. Liquid at room temperature.
Odour	:	Slight hydrocarbon.
pH	:	Not applicable.
Initial Boiling Point and Boiling Range	:	> 280 °C / 536 °F estimated value(s)
Pour point	:	Typical -42 °C / -44 °F
Flash point	:	Typical 256 °C / 493 °F (COC)
Upper / lower Flammability or Explosion limits	:	Typical 1 - 10 %(V)
Auto-ignition temperature	:	> 320 °C / 608 °F
Vapour pressure	:	< 0.5 Pa at 20 °C / 68 °F (estimated value(s))
Density	:	Typical 924 kg/m3 at 15 °C / 59 °F
Water solubility	:	Negligible.
n-octanol/water partition coefficient (log Pow)	:	> 6 (based on information on similar products)
Kinematic viscosity	:	Typical 42 mm2/s at 40 °C / 104 °F
Vapour density (air=1)	:	> 1 (estimated value(s))
Evaporation rate (nBuAc=1)	:	Data not available

10. STABILITY AND REACTIVITY

Stability	:	Stable.
Conditions to Avoid	:	Extremes of temperature and direct sunlight.
Materials to Avoid	:	Strong oxidising agents.
Hazardous Decomposition Products	:	Hazardous decomposition products are not expected to form during normal storage.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment	:	Information given is based on data on the components and the toxicology of similar products.
Acute Oral Toxicity	:	Expected to be of low toxicity: LD50 > 5000 mg/kg , Rat
Acute Dermal Toxicity	:	Expected to be of low toxicity: LD50 > 5000 mg/kg , Rabbit
Acute Inhalation Toxicity	:	Not considered to be an inhalation hazard under normal conditions of use.
Skin Irritation	:	Expected to be slightly irritating. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis.
Eye Irritation	:	Expected to be slightly irritating.
Respiratory Irritation	:	Inhalation of vapours or mists may cause irritation.
Sensitisation	:	Not expected to be a skin sensitiser.
Repeated Dose Toxicity	:	Not expected to be a hazard.
Mutagenicity	:	Not considered a mutagenic hazard.
Carcinogenicity	:	Components are not known to be associated with carcinogenic effects.
Reproductive and Developmental Toxicity	:	Not expected to be a hazard.
Additional Information	:	Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use and they may present risks to health and the environment on disposal. ALL used oil should be handled

with caution and skin contact avoided as far as possible. High pressure injection of product into the skin may lead to local necrosis if the product is not surgically removed.

12. ECOLOGICAL INFORMATION

Information given is based on product data, a knowledge of the components and the ecotoxicology of similar products.

Acute Toxicity	:	Poorly soluble mixture. May cause physical fouling of aquatic organisms. Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l (to aquatic organisms) (LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract).
Mobility	:	Liquid under most environmental conditions. Floats on water. If it enters soil, it will adsorb to soil particles and will not be mobile.
Persistence/degradability	:	Readily biodegradable.
Bioaccumulation	:	Contains components with the potential to bioaccumulate.
Other Adverse Effects	:	Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

13. DISPOSAL CONSIDERATIONS

Material Disposal	:	Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.
Container Disposal	:	Dispose in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.
Local Legislation	:	Disposal should be in accordance with applicable regional, national, and local laws and regulations.

14. TRANSPORT INFORMATION

US Department of Transportation Classification (49CFR)
This material is not subject to DOT regulations under 49 CFR Parts 171-180.

IMDG
This material is not classified as dangerous under IMDG regulations.

IATA (Country variations may apply)

This material is not classified as dangerous under IATA regulations.

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Federal Regulatory Status

Notification Status

DSL	All components listed.
EINECS	All components listed.
TSCA	All components listed.

SARA Hazard Categories (311/312)
No SARA 311/312 Hazards.

State Regulatory Status

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)

This material does not contain any chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

New Jersey Right-To-Know Chemical List

Ditridecyl phthalate (mixed isomers) (68515-47-9)	Listed.

Pennsylvannia Right-To-Know Chemical List

Ditridecyl phthalate (mixed isomers) (68515-47-9)	Environmental hazard. Listed.

16. OTHER INFORMATION

NFPA Rating (Health, Fire, Reactivity)	:	0, 1, 0
MSDS Version Number	:	6.0
MSDS Effective Date	:	07/02/2008
MSDS Revisions	:	A vertical bar (|) in the left margin indicates an amendment from the previous version.
MSDS Regulation	:	The content and format of this MSDS is in accordance with the

MSDS Distribution	:	OSHA Hazard Communication Standard, 29 CFR 1910.1200. The information in this document should be made available to all who may handle the product.
Disclaimer	:	The information contained herein is based on our current knowledge of the underlying data and is intended to describe the product for the purpose of health, safety and environmental requirements only. No warranty or guarantee is expressed or implied regarding the accuracy of these data or the results to be obtained from the use of the product.

Appendix G Fire Protection Plan

PSI will develop a fire management strategy to minimize the potential for a human-caused fire, and to address responses to wild fires.

Appendix H Health and Safety Plan

A health and safety program will be developed to protect both workers and the general public during all phases of the project (construction, operation, and decommissioning). The program will identify all applicable federal and state occupational safety standards, such as:

- safe work practices for each task (e.g., requirements for personal protective equipment
- fire safety evacuation procedures
- safety performance standards (e.g., electrical system standards and lightning protection standards)
- hazard training and protocols for reporting serious accidents to appropriate agencies.

Appendix I List of Permits and Authorizations

The following table shows a list of permits and authorizations that may be anticipated for the proposed project.

Regulatory Authority	Permit / Approval	Report /Permit Requirements	Comments	Start	Period
FEDERAL					
BLM	2920 Permit (temporary use permit [TUP]) for Installing Solar Insolation Monitoring Equipment	Needed to install and monitor solar insolation measuring equipment on a site; limited to 3 years.	Optional; used to confirm site-specific solar insolation rates	Completed	
BLM	Application for Transportation and Utility Systems and Facilities on Federal Lands (SF 299) (Right-of-Way Authorization Permit)	This Right-of-Way Authorization permit serves all commercial solar energy facilities per BLM Instruction Memorandum No. 2007-097, April 4, 2007 (BLM Solar Energy Development Policy).	This application starts the process to gain right-of-way on BLM land. The SF 299 has been filed already; however, additional applications may be required for the Project water pipeline(s) (if any) and transmission line.	Completed	
BLM	Plan of Development	Plan for construction and operation of solar facility must be completed prior to beginning construction. Plan provides full project description including applicant information, site location, maps, and proposed operating plan.		Submitted, in progress	
BLM – National Environmental Policy Act (NEPA)	Environmental Impact Statement (EIS)	An evaluation of the project's effects on natural and human resources to determine the potential for significant impacts.	Activities which result in the environmental effects that meet the definition of significance.	Started	12-18 month to prepare EIS and get approved.
BLM	Record of Decision (ROD)	EIS – Conformity with Resource Management Plans		At least 18 months prior to construction	18-24 months

Regulatory Authority	Permit / Approval	Report /Permit Requirements	Comments	Start	Period
BLM	National Historic Preservation Act (NHPA) Section 110; EO11593	1. Archeological contractor needs to complete Class I inventory (e.g. file search for sites within area of potential effect (APE)). 2. Archeological contractor needs to complete 100 percent Class III survey of APE. 3. If any historic structures are present, additional documentation could be needed.		Will follow EIS timeline	
BLM – National Ambient Air Quality Standards (NAAQS) and the Federal Clean Air Act (CAA)	Air Quality Conformity Analysis	Will need project description, emission sources, types, rates, and operating schedule	Will be incorporated in the EIS Process (under the Air Quality impact topic)	Will follow EIS timeline	

Regulatory Authority	Permit / Approval	Report /Permit Requirements	Comments	Start	Period
BLM to contact Nevada State Historic Preservation Office and Tribal Historic Preservation Office [as appropriate]	National Historic Preservation Act (NHPA), Section 106 Review (36 CFR 800)	The Project does not require permits. Information for Section 106 compliance would be based partly on findings of a Class III archeological survey. Contractor would prepare draft letters.	The Nevada State Historic Preservation Officer, Department of Parks and Recreation and appropriate Tribal Historic Preservation Officers must be consulted when projects are subject to review under Section 106 of the NHPA. This act requires that all federal agencies take into account the affect of their actions on historic properties (properties on or eligible for the National Register of Historic Places). Requirements of Section 106 review apply to any federal undertaking, funding, license, or permit. The Advisory Council on Historic Preservation (ACHP) must be provided an opportunity to comment.	Will follow EIS timeline	
BLM, State Office	Cultural Resource Use Permit	Permit to be obtained by archeological contractor; application includes outline of proposed work; name of institution and project principal investigator; dates of field work; type of investigations; description of site(s) with specific location information; and copy of agreement with institution where collections would be preserved.	Archeological contractor to obtain Cultural Resource Use Permit from BLM prior to beginning work. Many Contractors may already have permits.	4-8 weeks for archeological survey and report. 4-6 months for approval	

Regulatory Authority	Permit / Approval	Report /Permit Requirements	Comments	Start	Period
BLM – Local Field Office	Field Use Authorization	Holder of Cultural Resource Use Permit obtains a Field Use Authorization for the project from BLM field office. Submit reports during/after project.	Contact appropriate Field Office Archeologist. Field Authorization Form requests specific information on the location, schedule and nature of the archeological fieldwork and allows BLM to communicate specific constraints on a project type, schedule or location.	Will follow Cultural Resource Use Permit	
BLM	Archaeological Resources Protection Act (ARPA) of 1979, as amended, Section 4	Holder of Cultural Resource Use Permit, provides a research design and plan of work for the research project to obtain an ARPA permit.	This permit would be needed IF subsurface investigations are needed to identify the National Register of Historic Places significance of an identified site.	Not anticipated to be needed.	
DOD - U.S. Department of Defense	Department of Defense R-2508 Complex Sustainability Office review and approval	Review the project and its potential impact on military overflights and operations.	A letter from the DOD, stating that construction and operation of the array would not adversely affect DOD operations will be sufficient to meet this requirement; such a letter would be included in the EIS and submitted to the County Planning Department.	Will follow EIS.	
EPA - U.S. Environmental Protection Agency	Prevention of Significant Deterioration (PSD)	Will need project description, emission sources, types, rates, and operating schedule.	It is unlikely that a PSD permit will be required based on the current project description.	Submitted to USEPA concurrent with application for air quality permit.	
EPA – National Ambient Air Quality Standards (NAAQS) and the Federal Clean Air Act (CAA)	Title V Federal Operating Permit (if required)	Will need project description, emission sources, types, rates, and operating schedule.	It is unlikely that a Title V permit will be required based on the current project description.	12 months after commencing commercial operation.	

Regulatory Authority	Permit / Approval	Report /Permit Requirements	Comments	Start	Period
EPA	Oil Pollution Prevention (40 CFR 112)	Preparation of Spill Prevention, Control and Countermeasures (SPCC) Plan	SPCC plan required if over 1,320 gallons of oil is present in equipment onsite,	Must be prepared before start of operations	Until facility design changed, then must be updated with new design
EPA	EPA Identification Number	As a generator of hazardous waste, the Project will be required to obtain an EPA identification Number..		Prior to the generation and storage of hazardous waste materials onsite	
USACE - U.S. Army Corps of Engineers	Section 404 permit: Preconstruction Notification or Individual Permit	Delineation and Permit	When impacting Waters of the U.S.	At least 24 months prior to construction, recommending starting as soon as impacts are determined	12-18 months, up to 24 months for Individual Permit
Federal Energy Regulatory Commission (FERC)	Qualifying Facility/Exempt Wholesale Generator Certification	Certification required to qualify for benefits under Public Utilities Regulatory Policies Act.	Only if applicable.	60 day review for EWG	
USFWS - U.S. Fish and Wildlife Service	Biological Opinion/Incidental Take Permit	Endangered Species Act (ESA) Section 7 Consultation, Biological Assessment	If listed species are present on the project site, formal consultation with USFWS is needed to request concurrence with biological assessment to be prepared as part of EIS. Would require site surveys by qualified and certified wildlife biologists.	BLM will initiate in EIS process if potential impacts are determined	Will follow EIS timeline

Regulatory Authority	Permit / Approval	Report /Permit Requirements	Comments	Start	Period
STATE					
Public Utilities Commission of Nevada (PUCN)	UEPA (Utility Environmental Protection Act)	Similar to the EIS described above	Permit required to construct a Public Utility in Nevada. Does not apply to persons who produce energy for sale to public utilities. [NRS 704.021(4)]	Will follows EIS timeline	
Nevada Division of Environmental Protection Bureau of Air Pollution Control (NDEP BAPC)	Operating Permit Class I, II, or III depending on calculated Potential to Emit.	Will need project description, emission sources, types, rates, and operating schedule	Applications for operating permits outside of Clark County.	14 months prior to start of procurement of equipment and/or construction. Whichever comes first.	
Nevada Division of Environmental Protection Bureau of Air Pollution Control (NDEP BAPC)	Stand Alone Surface Disturbance Permit (SAD)	Will need project description, boundaries, dust control plans, and operating schedule.	Required for construction activities disturbing more than 5 acres.	Prior to start of surface disturbance.	
NDEP Bureau of Water Pollution Control	NPDES Construction Activities Storm Water General Permit	SWPPP and NOI	Required for land disturbance of greater than 1 acre. Permit application needs applicant information, project description, including size of area to be affected and other environmental permits associated with the project, as well as use of BMPs.	2 days prior to start of construction	24 hrs from submittal of NOI

Regulatory Authority	Permit / Approval	Report /Permit Requirements	Comments	Start	Period
NDEP Bureau of Water Pollution Control (BWPC)	General Storm Water Permit for Industrial Activities	Permit requires applicant information, site location information, a storm water pollution prevention plan (SWPPP), a monitoring plan, and site maps.	This is a separate SWPPP and NOI from that required for construction	NOI must be submitted at least 48 hours before a discharge of stormwater associated with industrial activity occurs. NDEP has 30 days to approve.	
Nevada Division of Environmental Protection (NDEP) Bureau of Water Pollution Control (BWPC)	Groundwater Discharge Permit	Temporary Permit ($250 fee) Narrative Description, Water Quality Analysis, Quantity of Discharge	Temporary permit needed for discharge associated with construction activities. Discharge permit not expected to be needed for operation activities.	Temporary permit may be issued for up to six months and will take 2 - 4 weeks to get	
Nevada Division of Environmental Protection (NDEP) Bureau of Water Pollution Control (BWPC)	Small Commercial Septic Systems	Submit commercial septic plan submittal form with $200 fee	Must submit two copies of drawings, plans and specifications for system(s) wet stamped by a registered Nevada professional engineer. If septic needed.	NDEP has 30 days to approve.	
Nevada Division of Environmental Protection (NDEP) Bureau of Waste Management	EPA Identification Number	Submit a complete EPA Form 8700-12 "Notification of Regulated Waste Activity" application form	Need only if Generator of Hazardous Waste (>220 lbs/month) Do not apply for EPA ID # unless actually come close to 220 lbs/month generator status	Complete forms take up to 15 days to issue number	
State Fire Marshall	Hazardous Materials Storage	Need complete details and specifications on flammable, explosive, or hazardous materials that would be onsite, along with quantities of each substance and storage and handling procedures.	Need only if quantities of hazardous materials stored onsite exceed thresholds.	Submit Application within 30 of operations.	

Regulatory Authority	Permit / Approval	Report /Permit Requirements	Comments	Start	Period
Nevada Division of Environmental Protection Bureau of Air Pollution Control (NDEP BAPC)	Nevada Chemical Accident Prevention Program (NV CAPP) Permit to Construct	Design and construction plans, process hazard analysis, emergency response plan, identify HAZMAT response capability.	CAPP applies in facilities that have select, highly hazardous substances in quantities above defined thresholds.	12 to 18 months prior to construction.	
Nevada Division of Environmental Protection Bureau of Air Pollution Control (NDEP BAPC)	Nevada Chemical Accident Prevention Program (NV CAPP) Permit to Operate	Management of change plan, pre-startup safety review plan, preventative maintenance plans, process hazard analysis plan, standard operating procedures, and training plans.	CAPP applies in facilities that have select, highly hazardous substances in quantities above defined thresholds.	Prior to Operations	
Nevada Department of Transportation (NDOT)	Nevada Department of Transportation Right-of-Way Occupancy Permit	Required when state highway ROW would be affected. Requirements are plan sheets and full description of the encroachment on state ROW.	If necessary	12 months prior to encroachment/ occupancy	Up to 12 months
Nevada Department of Transportation (NDOT)	Nevada Department of Transportation Super Load Permit	Required when Extraordinarily large or oversized equipment traveling on state roads or unusual impacts to traffic are anticipated.	If necessary	Apply at least 20 working days prior to oversize load on State highways	
Nevada Department of Conservation and Natural Resources Department of Water Resources	Water Rights	General project description, location, water requirements, maps.	Water rights will most likely need to be obtained from a private owner.	Dependant on availability. If water available 4-6 months request for permission to use.	

Regulatory Authority	Permit / Approval	Report /Permit Requirements	Comments	Start	Period
Nevada Department of Taxation	Business Tax License	Business description	Required	Upon starting business in Nevada.	
NV Industrial Relations Division	Boiler & Pressure Vessel Certificate	Pressure vessel specifications and certifications.	Pressure Vessel Installation Contractor will apply for and receive certificate.	1 week for review and approval	
NV Health Division	Drinking Water Permit	Prepare and submit application	Permit may be required if you have 25 or more employees on location for more than 60 days.	4-6 weeks permit issuance.	
Nevada Fish and Wildlife Office (NFWO)	Endangered Species Incidental Take Permit	NFWO will be invited to participate in the Section 7 consultation with USFWS by BLM regarding species protected under both the ESA and CESA. Would require site surveys by qualified and state-certified wildlife biologists	Discussions need to be initiated with NFWO regarding a Section 2081 take permit only for species listed under CESA.	CESA permitting can likely be completed at the same time as USFWS permitting/consultation	
LOCAL (Nye County)					
County Building Division	Building permits	Submit building plans	Building Permit will be needed for any structures.	Not required in Nye county outside of Pahrump.	
Nye County License	Business License	Required for Conducting business in Nye County. Administrative requirement		1 month	
Nye County Bureau of Fire Prevention	Fire Safety Compliance Certification	Building and operation fire safety		2-3 weeks review and approval	
Nye County Planning Department	Flood Damage Prevention Permit	Certification of flood zone location.	Land development within an area of special flood hazard	10 days review and approval	

Regulatory Authority	Permit / Approval	Report /Permit Requirements	Comments	Start	Period
Nye County Department of Public Works	Encroachment Permit	Type, location, duration, of encroachment.	Needed if there is encroachment onto public roadways.	2-3 weeks review and approval	
Local Publicly Owned Treatment Works (POTW)	Industrial User Discharge Permit	Details of the sewage disposal system and waste volumes.	Assumption: the solar facility would discharge wastewater via sanitary sewer connection	2 – 3 months review and approval	

Appendix J Reconnaissance-Level Biological Survey

Attached is the reconnaissance-level biological survey conducted by CH2M Hill in August 2008.

Report

Reconnaissance-Level Biological Survey of IBERDROLA RENEWABLES Solar Acquisition Amargosa North Site, Amargosa Valley, Nevada

Prepared for

IBERDROLA RENEWABLES

September 2008

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Contents

Acronyms and Abbreviations

ACEC	Area of Critical Environmental Concern
BLM	Bureau of Land Management
CNDDB	California Natural Diversity Database
ESA	Endangered Species Act
NDOW	Nevada Department of Wildlife
NNHP	Nevada Natural Heritage Program
NNPS	Nevada Native Plant Society
OHV	Off-Highway Vehicle
U.S.	United States
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

SECTION 1

Introduction

IBERDROLA RENEWABLES is evaluating 11 potential sites to construct solar facilities on lands managed by the Bureau of Land Management (BLM) in California, Nevada, Arizona, and New Mexico. This memorandum documents the results of the reconnaissance-level survey conducted on the Amargosa North site (Site) located 8 miles west of Amargosa Valley in Nye County, Nevada (Figure 1). For the purpose of this discussion, the Site was separated into two Sections to account for variation in vegetation, hydrology, and topography: Section 1 and Section 2.

The objective of the biological resources reconnaissance-level survey of the Site was to characterize and document the predominant vegetation types, the potential presence of special-status species of plant and wildlife, and evaluate washes as potential waters of the United States (U.S.). These reconnaissance–level surveys are not intended, nor do they satisfy, protocol-level surveys. Reconnaissance-level field surveys were conducted at the Site on August 23, 2008 by biologists John Cleckler/CH2M HILL, Morgan King/ CH2M HILL, and Jason Brooks/GANDA.

1.1 Methods

Several lists and queries were used to identify potential special-status species or sensitive species that could occur onsite. Special-status species are defined as those plants or animals either federal or state listed, or proposed for listing by the United States Fish and Wildlife Service (USFWS) or State of Nevada. These species also include any species from the BLM-sensitive species list and the Nevada Natural Heritage Program (NNHP). BLM-sensitive species are not included on other federal or state lists, however, it is important to note that the BLM considers all BLM-sensitive, state-listed, federal candidate, and federally-listed species to be 'Special-Status Species'. The Site is within the Las Vegas BLM Field Offices' jurisdiction.

CH2M HILL conducted a query of databases in Nevada (NNHP) and California (California Natural Diversity Database [CNDDB]), to identify the potential occurrence of special-status and sensitive plants, wildlife, and natural sensitive habitats with potential to occur at the Site (Appendix A). The NNHP query included the one U.S. Geological Survey (USGS) 7.5-minute quadrangle covered by the Site (Big Dune), as well as all adjacent quadrangles (Aston, Busted Butte, Carrara Canyon, Crater Flat, Lathrop Wells, Lees Camp, Leland, and South of Amargosa Valley). The CNDDB query included one USGS-minute quadrangle, Amargosa North. The NNHP and CNDDB queries document those special-status species known to occur in areas in which surveys have been conducted. Additional special-status species may occur beyond those listed in the NNHP or CNDDB. Sensitive species listed by the Nevada Native Plant Society (NNPS) were also included in our literature review of potential species to occur onsite (NNPS 2008).

Furthermore, preliminary discussions with a Nevada Department of Wildlife (NDOW) biologist, Tracy Kipke, were used to identify any potential species in the vicinity that may not have been identified during the database query or literature review (Pers. Comm. T. Kipke, August 2008).

1.2 Summary of Conclusions

No fatal flaws relative to biological resources were identified during reconnaissance-level surveys or during review of literature. The federally threatened, Mojave desert tortoise (*Gopherus agazzisii*), is the only special-status species with potential to occur onsite. Ten other sensitive or protected plant and wildlife species have potential to occur onsite and are discussed later in this document. However, none of these species were observed within the Site during the reconnaissance-level survey; however these surveys do not intend to nor do they satisfy agency established protocol level survey requirements.

Although the Site is outside the Big Dune complex, the BLM has designated a 5 acre Area of Critical Environmental Concern (ACEC) directly adjacent to the Site (Figure 1). The dunes are habitat for four species of sensitive invertebrates including the Big Dune Beetle (*Pseudocotalpa giulianii*) which was proposed for federal threatened status (USFWS 1994). Although off-highway vehicle (OHV) use is allowed on the dunes, BLM regulates use on potential habitat for Big Dune beetle.

The Ash Meadows National Wildlife Refuge is approximately 15 miles south of the project area. Proposed development within the Amargosa Valley would require an analysis of the additional local water use and the potential affects to the refuge. The refuge includes management for 11 federally listed and state-listed species, including fish, plants and invertebrates, which are dependent on sufficient ground and surface water.

SECTION 2

Results

2.1 Overview

The Amargosa North Site is located within the Amargosa Desert in the Amargosa Valley (Figure 1). The Amargosa Desert has extreme climatic conditions characterized by hot, dry summers and cool, dry winters. The Site is situated between the Yucca Mountains to the north and the Sand Hill and Funeral Mountains to the south. Two small hills and the sandy base of Big Dune are in the southwest corner of the Site. The Big Dune is a star dune complex formed by multi-directional winds in the Amargosa Valley which forms a pyramid rather than a wave shape. Therefore, sand from the dunes may be blown in any direction. The elevations of the Site range from approximately 2,450 to 2,600 feet.

The results of the reconnaissance-level survey are presented in Table 1 and more detail is provided in the following sections. The discussion is separated into four sections, vegetation, special-status and sensitive plant occurrence, special-status and sensitive wildlife occurrence, and waters of the United States.

TABLE 1
Summary of Key Findings by Section at the Amargosa North Site

Location	Key Findings
Section 1	
Vegetation	Mojave Creosote Bush Scrub is the only vegetation type observed within the Site. Dominant species in this vegetation type are creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*) with some areas solely dominated by creosote bush. Additional associates include: allscale (*Atriplex polycarpa*), shadscale (*A. confertifolia*) and Mormon tea (*Ephedra* sp.). Soils in Section 1 are loose and are either sandy-gravelly or consolidated sand. Most washes are characterized by the same vegetation as the surrounding areas and are dominated by creosote bush and white bursage. Occasional allscale, shadscale or Mojave indigo bush (*Psorothamnus* c.f. *arborescens*) are also present. Rose's Dry Well, as indicated on topographic maps, is a 10 foot diameter and an open shaft of undetermined depth in the northern portion of the Site. No sensitive natural plant communities were observed during the reconnaissance-level survey or are known to occur in the area. **Requirements:** Consultation with the BLM regarding native plant salvage requirements.

TABLE 1
Summary of Key Findings by Section at the Amargosa North Site

Location	Key Findings
Special-Status or Sensitive Plants	No federally listed plants are known to occur or have potential to occur in Section 1. Suitable habitat for these species is either not present or the Site is outside of their known range. Five BLM-sensitive and NNPS listed plant species have potential to occur on the Site: White bear poppy (*Arctomecon merriamii*), Pahrump Valley buckwheat (*Eriogonum bifurcatum*), Reveal's buckwheat (*Eriogonum contiguum*), White-margined beardtongue (*Penstemon albomarginatus*), and Death Valley beardtongue (*Penstemon fruticiformis* ssp. *amargosae*). Rare plant surveys were not performed during the reconnaissance-level survey so confirmation of species presence/absence was not determined. **Requirements.** A botanical survey following agency accepted protocols would be needed to determine absence of any potentially occurring special-status or sensitive plant species. Typically, this would be required from approximately mid-March through May.
Special-Status or Sensitive Wildlife	One federally listed species, desert tortoise (*Gopherus agagassizii)*(Mojave Population), has potential to occur in Section 1. Western burrowing owls (*Athene cunicularia*) are protected by State of Nevada and could burrow in hummocks near Highway 95 and forage over Section 1. Three species of bats, all BLM-sensitive species, could forage over the site. Roses Dry Well provides one location for roosting, although it is more likely that bats would roost off the Site in the surrounding mountains. **Requirements.** Coordination with the USFWS, BLM and NDOW regarding treatment of special-status and sensitive wildlife species. Protocol surveys for the desert tortoise and western burrowing owl may be required.
Waters of the U.S.	Ephemeral drainages from the Yucca Mountain watershed flow south over Section 1 with connection to the Amargosa River. Typical washes in Section 1 are narrow and shallow ranging from 2 to10 feet wide. The largest wash observed was located in the center of Section 1 and has a 30-foot-wide active channel. No wetlands were observed during reconnaissance-level survey or aerial photography review. **Requirements.** A jurisdictional delineation and a permit from the U.S. Army Corps of Engineers (USACE) may be required.
Section 2	
Vegetation	The same as Section 1, Mojave Creosote Bush Scrub is the only vegetation type observed within Section 2. Soils in Section 2 are composed of loose unconsolidated sand that in some places form small dynamic or stabilized dunes. Creosote bush is the dominant species, however burrobrush *(Hymenoclea salsola*) and Thurber's sandpaper plant (*Petalonyx thurberi* ssp. *thurberi)* are scattered throughout the area. Many more associated plant species were observed in Section 2 including: flatcrown buckwheat (*Eriogonum deflexum* var. *rectum*), indian rice grass (*Achnatherum hymenoides*), basket evening primrose (*Oenothera deltoides*), freckled milkvetch (*Astragalus lentiginosus),* desert sunflower (*Geraea canescens*), and cleome (*Cleome sparsifolia*). No sensitive natural plant communities were observed during the reconnaissance-level survey or are known to occur in the area. **Requirements:** Consultation with the BLM regarding native plant salvage requirements.

TABLE 1
Summary of Key Findings by Section at the Amargosa North Site

Location	Key Findings
Special-Status and Sensitive Plants	No federally listed plants are known to occur or have potential to occur in Section 2. Suitable habitat for these species is either not present or the Site is outside of their known range. Five BLM-sensitive and NNPS listed plant species have potential to occur on the Site: White bear poppy, Pahrump Valley buckwheat, Reveal's buckwheat, White-margined beardtongue, and Death Valley beardtongue. Rare plant surveys were not performed during the reconnaissance so confirmation of species presence/absence was not determined. **Requirements.** A botanical survey following agency accepted protocols would be needed to determine absence of any potentially occurring special-status or sensitive plant species. Typically, this would be required from approximately mid March through May.
Special-Status and Sensitive Wildlife	One federally listed species, desert tortoise, has potential to occur in Section 2, especially with the dense annual vegetation available for forage. Western burrowing owls also have potential to burrow in small hills and forage over Section 2. Three species of bats, all BLM-sensitive species, could forage over the site but no potential roosting sites are present in Section 2. Roosting locations would be expected in caves or mines in the surrounding mountains. **Requirements.** Consultation with the USFWS, BLM and NDOW regarding treatment of special-status and sensitive wildlife species. Protocol surveys for the desert tortoise and western burrowing owl may be required.
Waters of the U.S.	Small ephemeral washes were uncommon in Section 2. Aerial photography review indicates washes from Section 1 enter Section 2, however few defined drainages were observed. This may be due to the increased permeability of sandy soils. **Requirements.** A jurisdictional delineation and a permit from the USACE may be required.

2.2 Vegetation Characterization

Mojave Creosote Bush Scrub (Holland, 1986) is the only vegetation type observed within the Site. Although the Site is within Nevada, the vegetation type corresponds closely to the Creosote Bush and Creosote Bush-White Bursage as described in *A Manual of California Vegetation* (Sawyer and Keeler-Wolf, 1995). Soils on the site vary from sandy-gravelly and consolidated sandy areas to loose and drifting sandy areas resembling small dunes. Variations in species assemblages occur throughout the Site, and in some areas associates vary based on the soil type. In sandy-gravelly soils creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*) dominate almost completely, or creosote bush is the only perennial shrub. In some cases, white bursage densities are diminished, or white bursage is absent and is replaced by saltbush (e.g. allscale [*Atriplex polycarpa]* or shadscale [*Atriplex confertifolia]*). Mormon tea (*Ephedra* sp.) is another common associate in these areas. Shrubs are typically well spaced with annual species occurring between them such as cryptanthas (*Cryptantha* spp.) or desert dandelion (*Malacothrix glabrata*). A list of plant species observed during the reconnaissance-level field survey is provided in Appendix B.

The southwest area of the Site (Section 2) has soils consisting of loose unconsolidated sand. Presumably, this is due to adjacent Big Dune feature which deposit large quantities of sand around the base. Creosote bush is typically the only perennial in sandy soils, however associate species include: burrobrush *(Hymenoclea salsola*) and Thurber's sandpaper plant (*Petalonyx thurberi* ssp. *thurberi)*. Annuals in these areas are common and include flatcrown buckwheat (*Eriogonum deflexum* var. *rectum)*, basket evening primrose (*Oenothera deltoides*), freckled milkvetch (*Astragalus lentiginosus),* fanleaf crinklemat (*Tiquilia plicata*), and laxflower (*Baileya* c.f. *pauciradiata*). North of Big Dune, in the eastern portion of Section 2, a large expansive area with very little shrub cover and an extreme profusion of forbs was observed. Desert dandelion appears to be the most common species and covers large areas almost to the exclusion of any other species. Additional species in this area include flatcrown buckwheat, indian rice grass (*Achnatherum hymenoides*), tumbleweed (*Salsola* sp.), sun cups (*Camissonia* spp.), Thurber's sandpaper plant, desert sunflower (*Geraea canescens*), and cleome (*Cleome sparsifolia*).

Most washes are characterized by similar vegetation to the surrounding areas. Dominant species are creosote bush and white bursage with occasional saltbush or Mojave indigo bush (*Psorothamnus* c.f. *arborescens*).

Overall, diversity and density of vegetation is low on the Site. In general, vegetation is similar but notable differences in species diversity, and species coverage occur due to differing soil types.

2.3 Potential for Special-Status or Sensitive Plant Occurrence

No special-status or sensitive plant species were observed within the Site during the reconnaissance; however, most potentially occurring special status plants would not be observable at this time of year. Special status plant species that may occur on Site due to the presence of potential habitat include: White bear poppy (*Arctomecon merriamii*), Pahrump Valley buckwheat (*Eriogonum bifurcatum*), Reveal's buckwheat (*E. contiguum*), White-margined beardtongue (*Penstemon albomarginatus*), and Death Valley beardtongue (*Penstemon fruticiformis* ssp. *amargosae*) (Appendix C). There is no potential habitat on the Site that would support any listed or candidate species protected under the ESA. Some BLM-Sensitive or Nevada Native Plant Society (NNPS) listed plant species are known from or having the potential to occur in the region were eliminated from further consideration because no suitable habitat is present onsite (e.g. wetlands) (Appendix C).

2.3.1 Other Plant Concerns

BLM requires a permit for salvage of many species of cactus, including the silver cholla (*Cylindropuntia* [*Opuntia] echinocarpa)* which was observed during the reconnaissance-level survey.

2.4 Potential for Special-Status or Sensitive Wildlife Occurrence

The only federal or state listed species with potential to occur onsite is the federally threatened Mojave desert tortoise (Appendix C). Four sensitive wildlife species also have the potential to occur within the Site: western burrowing owl and three species of bat. These species are discussed in greater detail in following sections. Appendix C summaries the special-status and sensitive wildlife species identified during the queries or literature review and their potential to occur onsite. A list of wildlife species observed on or adjacent to the Site during the reconnaissance-level survey is provided in Appendix B.

Nelson's bighorn sheep (*Ovis canadensis nelsoni*) is the only big game species of concern in this area. According to a NDOW biologist, historic populations of bighorn are present in the Funeral Mountains south of the Site (Pers. Comm. T. Kipke 2008). Since no guzzlers are known from this area, bighorn have low potential to use the Site as a movement corridor between adjacent mountain ranges.

Upon initial review, the Site does not appear to be within the range or provide habitat for any other sensitive species of reptile; however, chuckwalla (*Sauromalus ater)* and banded Gila monster (*Heloderma suspectum cincutm)* may occur on the rocky slopes of the adjacent hills.

Four species of invertebrates were identified on the NNHP query but are restricted to dune habitat south of the Site (Appendix A).

2.4.1 Special-Status Wildlife Species

Federally Threatened Desert Tortoise (*Gopherus agassizii*) (Mojave Population)

The Site is located within the range of the Mojave Desert tortoise, a federally listed threatened species under Endangered Species Act (ESA). However, the Site does not lie within USFWS-designated critical habitat for the desert tortoise.

The desert tortoise is widely distributed throughout the Mojave, Sonoran, and Colorado Deserts with the most favorable habitats occurring between elevations of approximately 1,000 to 3,000 feet. The desert tortoise is a herbivore, feeding mainly on annual forbs and grasses. The highest tortoise densities are achieved in desert washes and creosote bush communities with extensive annual wildflower blooms. The Mojave population of desert tortoise generally avoids very steep rocky areas and prefers open areas of creosote bush scrub. The species also requires friable (sandy) soils for burrow and nest construction.

Desert tortoise, or positive evidence of their presence (e.g., scat, active burrows), was not observed during the reconnaissance-level survey. While habitat within the Site is considered suitable, NDOW expects that the listed tortoise would occur in low densities within or adjacent to the Site is (Pers. Comm. T. Kipke 2008). The BLM also identified the desert tortoise as an issue in the Big Dunes area (Pers. Comm. M. Slaughter 2008). The annual wildflower production in Section 2 provides an abundant source of forage that may attract seasonal visitation from tortoises on and adjacent to the Site. Tortoises have also been previously recorded from the nearby bajadas (NNHP 2008). Additional information

regarding potential for desert tortoise to occur in the evaluated sections onsite is provided in Table 1.

Western Burrowing Owl

The western burrowing owl (*Athene cunicularia*), is protected by the State of Nevada and by the Migratory Bird Treaty Act (Nevada Legislative Council Bureau 2008). This species is known to occupy open areas, such as grasslands, desert scrub, and the edges of agricultural fields. They also are known to inhabit disturbed areas such as golf courses, airports, cemeteries, vacant lots, and road embankments or wherever there is sufficient friable soil for a nesting burrow, which is an important habitat requirement for western burrowing owls. Owls use these burrows for nesting and also require access to alternate burrows providing escape cover for adults and fledglings. Western burrowing owls are dependent on fossorial mammals such as badgers or ground squirrels to create burrows. In the Mojave Desert, burrowing owls have been observed using the abandoned burrows created by desert kit fox, coyotes, and desert tortoise. Habitat features at this Site include hummocks which provide good visibility over relatively sparse vegetation. This is necessary for predator avoidance and forage. Therefore, they have the potential to occur onsite.

Bat Species

Three BLM-sensitive bat species have the potential to forage over the Site or potentially roost in Roses Dry Well: pallid bat (*Antrozous pallidus*), fringed myotis (*Myotis thysanodes*), and western small-footed myotis (*Myotis thysanodes*). All species are insectivorous and could, therefore, forage within the Site. One roost/colony site for these species was observed in the northern portion of the Site in Roses Dry Well (Figure 1). Roses Dry Well is a 10 foot diameter open shaft with undetermined depth. According to bat specialist, G.O. Graening, it is not typical for bats to roost in wells, but the potential cannot be eliminated (Pers. Comm. G. Graening 2008). However, it is more likely that the bats would roost in nearby abandoned mines, caves or abandoned buildings in the surrounding mountains and would forage over the Site.

2.5 Waters of the U.S.

Ephemeral drainages fed by the Yucca Mountain watershed flow south across the Site (Figure 1). These ephemeral washes have connection to the Amargosa River. Many of the washes have small, braided channels ranging from 2 to 10 feet wide. The largest wash observed during the reconnaissance-level field survey flows southwest through the middle of the Site and has a 30 foot wide channel.

2.6 UT10 Instrumentation Tower

Seven potential locations for placement of the 10-foot Instrumentation Tower, Model UT10 were located onsite or just adjacent to the Site (Figure 1). Although these towers could be placed anywhere outside of wash boundaries, the potential locations were located in areas devoid of vegetation, where impacts to sensitive vegetation or wildlife would likely be avoided with the implementation of appropriate minimization and avoidance measures.

2.7 OHV Roads

Open OHV Management Areas are defined by the BLM as areas where all types of vehicle use would be permitted at all times, anywhere in the area. In these areas, visitors are not restricted to existing and designated roads. In the Big Dunes area, off-road activity is only prohibited within the 5 acre ACEC. The BLM and USFWS may have concerns if the location and size of the facility prevents or limits access to public lands. Big Dunes and surrounding staging areas within the Site are heavily trafficked by recreational OHV users. A majority of the OHV use is outside the project boundary but many tracks extend beyond designated roads and signs of camping were observed onsite. Although there are established roads into Big Dunes, they all cross the Site making public access a concern.

Due to the time restriction of the reconnaissance-level survey, no OHV trails were included in the maps.

SECTION 3

Summary and Conclusions

No critical issues for this Site were identified during CH2M HILL's reconnaissance-level biological resources survey in August 2008. The text below summarizes the key findings and presents the next steps for conducting required protocol-level surveys.

- **Special-status plant species.** No Federally threatened or endangered plants are known to occur onsite. Suitable habitat for these species is not present within the Site or the Site is outside of their known range. Five sensitive plant species listed by the BLM or NNPS have potential to occur on the Site based on the presence of suitable habitat: White bear poppy, Pahrump Valley buckwheat, Reveal's buckwheat, White-margined beardtongue, and Death Valley beardtongue. Rare plant surveys were not performed during the reconnaissance so confirmation of species presence/absence was not determined.

- **Special-status wildlife species.** Five special-status or sensitive wildlife species have the potential to occur on the Site: desert tortoise (Mojave Population), western burrowing owl, and three species of bat. Protocol surveys for the federal listed desert tortoise and State of Nevada protected western burrowing owl may be required. Due to the proximity of the endemic beetle species ACEC, it will be important to address the potential affects of any adjacent development to the continued habitat function and viability of this ACEC. Coordination with the BLM regarding treatment of sensitive bat species will also be required since there is one potential roosting location at Roses Dry Well. Suitable habitat to support other federal or state listed wildlife species is not present within the Site or the Site is outside of their known range.

- **Waters of the U.S.** The dry washes identified during the survey may meet the criteria of a "waters of the U.S." A jurisdictional delineation of waters of U.S. and wetlands should be conducted during the rainy season to document wetland and wash features within the Site. Work resulting in dredge and/or fill within a wetland or wash would require a Section 404 permit (Nationwide or Individual).

Depending on the project configuration, the following follow-on surveys may be required to support the environmental review under the National Environmental Policy Act (NEPA) and associated consultation and permitting:

- Spring plant surveys following BLM or NNPS recommended protocols may be required to provide the information necessary to determine presence/absence or assess the extent of salvage activity that may be required.

- Protocol surveys as established by USFWS for desert tortoise.

- Protocol surveys as established by USFWS for western burrowing owls.

- Coordination with BLM regarding treatment of three sensitive bat species.

- Jurisdictional delineation of waters of the U.S. and a permit from the USACE.

SECTION 4

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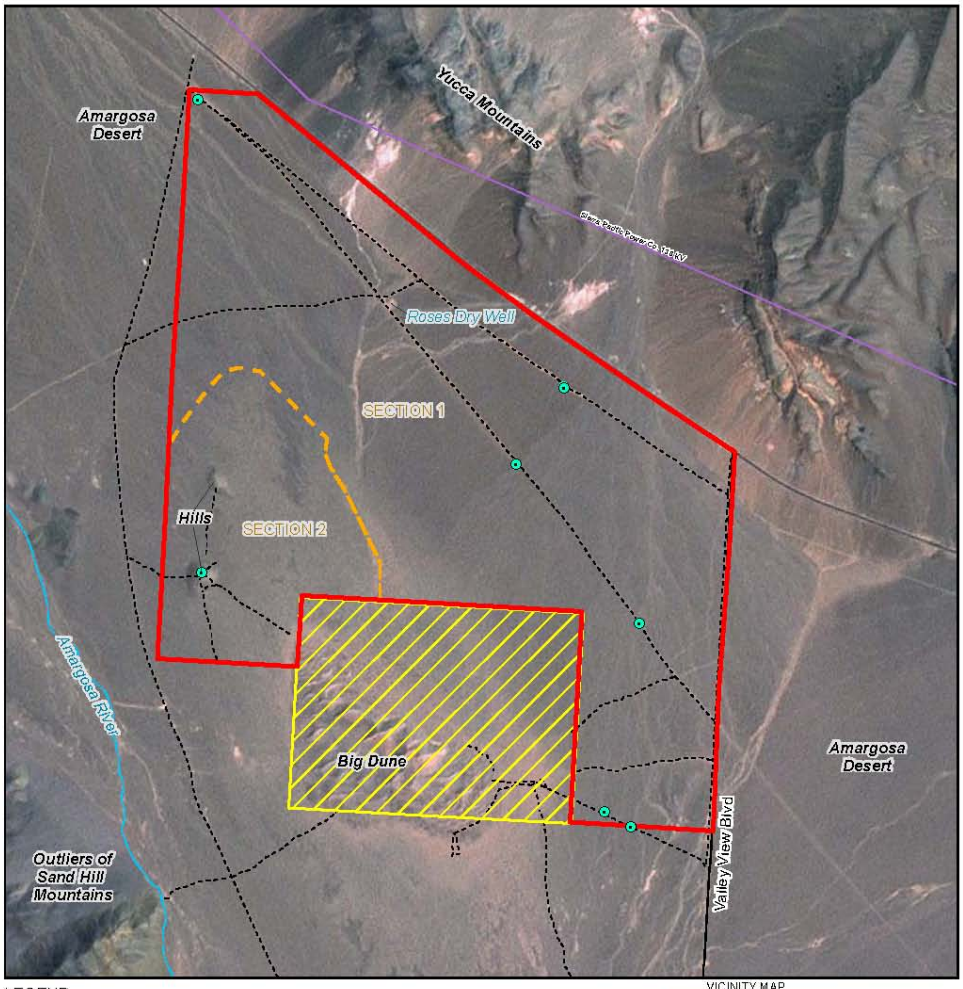


LEGEND

- Potential UT10 Locations
- IBERDROLA RENEWABLES Sites
- Area of Critical Environmental Concern (ACEC)
- Paved Roads
- Dirt Roads

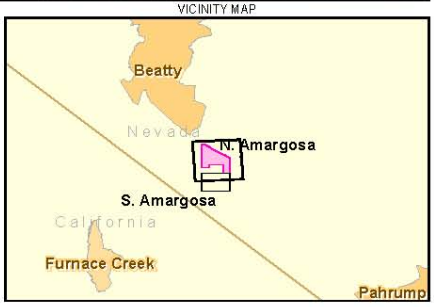
Transmission Lines

- 12.50 KV - 69.0 KV
- 69.01 KV - 115.00 KV
- 115.01 KV - 230.00 KV
- 230.01 KV - 500.00 KV
- > 500 KV
- Evaluated Sections
- Rivers

N

0 0.5 1
Miles

VICINITY MAP



Note:
1. Aerial Image Source: ESRI World Imagery 2008 Sources for this imagery include USGS and other organizations.

IBERDROLA RENEWABLES

Figure 1
Amargosa North Project Site
IBERDROLA RENEWABLES Solar Acquisition Project

CH2MHILL

Appendix A
Nevada Natural Heritage Program and California Natural Diversity Database Query Results

APPENDIX A
Nevada Natural Heritage Program and California Natural Diversity Database Query for Special-status Plants and Wildlife with Potential to Occur at Amargosa North

Scientific Name	Common Name	Survey Date	Major Group	Status	BLM Status	NNPS Listed	Restricted to Wetlands (Y/N)	Restricted to Sand Dunes (Y/N)
Nevada Natural Heritage Program (NNHP) [1]								
Aegialia magnifica	large aegialian scarab	none available	Invertebrate Animal	n/a	Sensitive	n/a	N	Y
Miloderes rulieni	Big Dune miloderes weevil	1994	Invertebrate Animal	n/a	Sensitive	n/a	N	Y
Neivamyrmex nyensis	endemic ant	1970-04-16	Invertebrate Animal	n/a	n/a	n/a	N	N
Pseudocotalpa giulianii	Giuliani's dune scarab	1983	Invertebrate Animal	n/a	Sensitive	n/a	N	Y
Castilleja martinii var. clokeyi	Clokey paintbrush	1970-05-25	Vascular Plant	n/a	n/a	Delisted	N	N
Gilia nyensis	Nye gilia	1979-PRE	Vascular Plant	n/a	n/a	Delisted	N	Y/N
Gilia ripleyi	Ripley gilia	1970-06-11	Vascular Plant	n/a	n/a	Delisted	N	N
Ivesia arizonica var. saxosa	rock purpusia	none available	Vascular Plant	n/a	Sensitive	Watch-list	N	N
Penstemon fruticiformis ssp. amargosae	Death Valley beardtongue	1907-04-27	Vascular Plant	n/a	Sensitive	Threatened	N	N
Perityle intricata	desert rockdaisy	1969-06-19	Vascular Plant	n/a	n/a	Delisted	N	N
Antrozous pallidus	pallid bat	1996-07-03	Vertebrate Animal	State of Nevada Protected Mammal	Sensitive	n/a	N	N
Gopherus agassizii	desert tortoise (Mojave Desert pop.)	1987-PRE	Vertebrate Animal	State of Nevada Threatened	Special Status	n/a	N	N
Microtus montanus nevadensis	Ash Meadows montane vole	none available	Vertebrate Animal	BLM Sensitive Species	Sensitive	n/a	Y	N
Myotis ciliolabrum	western small-footed myotis	1996-07-03	Vertebrate Animal	n/a	Sensitive	n/a	N	N
Myotis thysanodes	fringed myotis	1996-06-04	Vertebrate Animal	State of Nevada Protected Mammal	Sensitive	n/a	N	N
California Natural Diversity Database (CNDDB)[2]								
Ovis canadensis nelsoni	Nelson's bighorn sheep	1986	Vertebrate Animal	NV big game	n/a	n/a	N	N

APPENDIX A
Nevada Natural Heritage Program and California Natural Diversity Database Query for Special-status Plants and Wildlife with Potential to Occur at Amargosa North

Scientific Name	Common Name	Survey Date	Major Group	Status	BLM Status	NNPS Listed	Restricted to Wetlands (Y/N)	Restricted to Sand Dunes (Y/N)
				species				
Coryphantha chlorantha	desert pincushion	1984	Vascular Plant	CA special-status only	n/a	n/a	N	N

NOTES:

[1] USGS 7.5" quads included in Nevada query: Carrara Canyon, Crater Flat, Busted Butte, Aston, Big Dune, Lathrop Wells, Lees Camp, Leland, South of Amargosa Valley.

[2] USGS 7.5" quads included in California query: Amargosa North

Special Status	Nevada Special Status Species - USFWS listed, proposed or candidate for listing, or protected by Nevada state law
Sensitive	Nevada Special Status Species - designated Sensitive by State Office
Proposed	Proposed Nevada Special Status Species - designated proposed Sensitive by BLM State Office
Candidate	BLM California Special Status Species (see definitions S and N)

Nevada Natural Plant Society (NNPS)

Absent	**Absent** currently and historically from Nevada, previously with another status but not now of concern
Delisted	Delisted, dropped from consideration, no longer of concern to NNNPS
Endangered	Endangered, believed to meet the ESA definition of endangered
Marginal	Marginal/Disjunct, rare and/or possibly distinct, and potentially vulnerable, in the Nevada portion of its range, but much more widespread and secure outside Nevada.
Possibly Extripated	Possibly Extirpated, historically native to Nevada, but may no longer survive in the wild
Threatened	Threatened, believed to meet the ESA definition of threatened
Watch-list	**Watch-list species**, potentially vulnerable to becoming Threatened or Endangered

Appendix B
Plants and Wildlife Observed During Reconnaissance-Level Survey at the Amargosa North Site

TABLE B-1
Plants Observed at the Amargosa North Site

Common Name	Status[1]	Scientific Name
Trees		
No tree species were observed		
Shrubs		
White Bursage		*Ambrosia dumosa*
Shadscale		*Atriplex confertifolia*
Allscale		*Atriplex polycarpa*
Mormon tea		*Ephedra* sp.
Burrobrush		*Hymenoclea salsola*
Creosote bush		*Larrea tridentata*
Thurber's sandpaper plant		*Petalonyx thurberi* ssp. *thurberi*
Mojave indigo bush		*Psorothamnus* c.f. *arborescens*
Cactus		
Silver cholla	*CY/*SR	*Cylindropuntia [Opuntia] echinocarpa*
Grasses		
Indian ricegrass		*Achnatherum hymenoides*
Mediterranean Grass		*Schismus* sp
Forbs		
Fiddleneck		*Amsinckia tesselata*
Mojave prickly poppy		*Argemone corymbosa*
Freckled milkvetch		*Astragalus lentiginosus*
Laxflower		*Baileya* c.f. *pauciradiata*
Booth's primrose		*Camissonia boothii*
Brown-eyed primrose		*Camissonia claviformis*
Wheeler's skeletonweed		*Chaetadelpha wheeleri*
Brittle spineflower		*Chorizanthe brevicornu*
Rigid Spiny Herb		*Chorizanthe rigida*
Cleome		*Cleome sparsifolia*
Narrow leaved cryptantha		*Cryptantha angustifolia*
Cushion cryptantha		*Cryptantha circumscissa*
Soft dalea		*Dalea mollis*
Flatcrown buckwheat		*Eriogonum deflexum* var. *rectum*
Flat topped buckwheat		*Eriogonum deflexum* var. *deflexum*
Desert trumpet		*Eriogonum inflatum* var. *inflatum*
Desert sunflower		*Geraea canescens*
Gilia		*Gilia* sp.
Moth langloisia		*Langloisia setosissima*
Desert calico		*Loeseliastrum matthewsii*
Desert dandelion		*Malacothrix glabrata*
Basket evening primrose		*Oenothera deltoides*
Broom-rape		*Orobanche* sp.
Wooly Plantain		*Plantago ovata*

TABLE B-1
Plants Observed at the Amargosa North Site

Common Name	Status[1]	Scientific Name
Turtleback		*Psathyrotes ramosissima*
Tumbleweed		*Salsola* sp.
Arizona honeysweet		*Tidestromia oblongifolia*
Fanleaf crinklemat		*Tiquilia plicata*

[1] **CY-**Species protected under Nevada State Law 527.060-.120, permit required for salvage

SR -Consult with BLM before removal for possible salvage.

TABLE B-2
Wildlife Observed During Reconnaissance-level Survey of Amargosa North Site

Common Name (Scientific Name)	Sign
Invertebrates	
Common sulfur butterfly *Colas philodice*	Direct observation
Broad-necked darkling beetle *Coelocnemis californicus*	Direct observation
Inconspicuous crab spider *Philodromus* spp.	Direct observation
Pallid-winged grasshopper *Trimerotropis pallidipennis*	Direct observation
Reptiles	
Western zebra-tailed lizard *Callisaurus draconoides rhodostictus*	Direct observation, tracks
Leopard lizard *Gambelia wislizenii*	Direct observation
Great Basin whiptail *Aspidoscelis tigris tigris*	Direct observation
Southern desert horned lizard *Phrynosoma platyrhinos calidiarun*	Direct observation
Birds	
Turkey vulture *Cathartes aura*	Direct observation
White winged dove *Zenaida asiatica*	Direct observation
Mourning dove *Zenaida macroura*	Direct observation
Greater roadrunner *Geococcyx californianus*	Direct observation, tracks
Northern rough-winged swallow *Stelgidopteryx serripennis*	Direct observation
Sparrow sp.	Direct observation
Northern mocking bird *Mimus polyglottos*	Direct observation
Loggerhead shrike *Lanius ludovicianus*	Direct observation
Common raven *Corvus corax*	Direct observation
Mammals	
Kangaroo rat sp. *Dipodomys* sp.	Indirect observation, burrow communities, tracks

TABLE B-2
Wildlife Observed During Reconnaissance-level Survey of Amargosa North Site

Common Name (Scientific Name)	Sign
Black-tailed jackrabbit *Lepus californicus deserticola*	Direct observation, tracks
American badger *Taxidea taxus berlandieri*	Potential Indirect observation, Digging
Kit fox *Vulpes velox*	Indirect observation, tracks, scat, burrows
Coyote *Canis latrans mearnsi*	Indirect observation, scat, tracks, call

Notes: Wildlife observations were included if species were observed onsite or adjacent to the Site.

Appendix C
Summary of Special-Status and Sensitive Plants and Wildlife and Their Potential to Occur Within Amargosa North Site

TABLE C-1
Summary of Special-Status and Sensitive Plants and Wildlife and Their Potential to Occur Within the Amargosa North Site

Species	Status[1]	Potential To Occur Within Site/Basis of Occurrence Determination
Birds		
Western burrowing owl *Athene cunicularia*	NV-P	**Potential;** Potential habitat present onsite for both burrowing and forage.
Mammals		
Pallid bat *Antrozous pallidus*	BLM-S	**Potential;** Bats could forage over site, one roosting habitat present onsite at Roses Dry Well (Pers. Comm. Graening 2008).
Western small-footed myotis *Myotis ciliolabrum*	BLM-S	**Potential;** Bats could forage over site, one roosting habitat present onsite at Roses Dry Well (Pers. Comm. Graening 2008).
Fringed myotis *Myotis thysanodes*	BLM-S	**Potential;** Bats could forage over site, one roosting habitat present onsite at Roses Dry Well (Pers. Comm. Graening 2008).
Plants		
White bear poppy *Arctomecon merriamii*	NNPS-W BLM-S	**Potential;** Though no known sites of white bear poppy occur in Amargosa Valley, one site is known from the adjacent Funeral Mountains. Habitat for this species includes Mojave creosote scrub from 490-1800m, which is consistent with habitat found on the Site.
Ash Meadows milkvetch *Astragalus phoenix*	NNPS-T BLM-S NV-P USFWS-T	None; Known only from the Ash Meadows area in seasonally moist, white, barren flats on calcareous alkaline soils from 671-716m.
Spring-loving centaury, *Centaurium namophilum*	NNPS-T BLM-S NV-P USFWS-T	None; Known only from the Ash Meadows area on wet alkali crusted soils of seeps springs, ouflow drainages, hummocks, and meadows. Found in wetland communities from 640-716m.
Ash Meadows sunray *Enceliopsis nudicaulis* var. *corrugata*	NNPS-T BLM-S NV-P	None; Known from Ash Meadows area in strongly alkaline to silty clay soils in spring and seep areas within creosote-bursage or shadescale communities from 670-720m.
Pahrump Valley buckwheat *Eriogonum bifurcatum*	NNPS-T BLM-S	**Potential;** The closest populations to the Site are currently located in Stewart Valley near Pahrump. Though typically found on the edge of dry lake playas, its occasional association with sandy soils and stabilized dunes makes it difficult to rule out for this Site.
Reveal's buckwheat *Eriogonum contiguum*	NNPS-W	**Potential.** There are no known sites near the project area; however, habitat does exist for the species. Reveal's buckwheat grows in Mojave desert scrub on sandy flats from 50-1000m, which is consistent with habitat found on the Site.

TABLE C-1
Summary of Special-Status and Sensitive Plants and Wildlife and Their Potential to Occur Within the Amargosa North Site

Species	Status[1]	Potential To Occur Within Site/Basis of Occurrence Determination
Ash Meadows gumplant *Grindelia fraxinopratensis*	NNPS-T BLM-S NV-P USFWS-T	None; Known only from the Ash Meadows on whitish, strongly alkaline hard packed soils that are either moist or dry. Generally associated with meadows, seeps, springs, or drainages in ash-mesquite, shadscale, or saltgrass communities from 630-700m.
Rock purpusia *Ivesia arizonica* var. *saxosa*	NNPS-W BLM-S	None; Known from crevices of cliffs or boulders on volcanic and carbonate rocks in sagebrush and pinyon juniper woodlands from 1500-2700m.
Ash Meadows blazing star, *Mentzelia leucophylla*	NNPS-T BLM-S NV-P USFWS-T	None; Known only from Ash Meadows on dry hard salt crusted alkaline or sandy clay soils in shadscale communities, typically around seeps from 671-716m.
Amargosa niterwort, *Nitrophila mohavensis*	NNPS-E BLM-S NV-P USFWS-E	None; Known only from the Carson Slough area in Ash Meadows in moist heavily alkaline salt-crusted clay flats in seepage areas with shadscale communities from 640-658m.
White-margined beardtongue *Penstemon albomarginatus*	NNPS-T BLM-S	**Potential;** Known from just north of Lathrop Wells this species occurs in loose desert sand or on stabilized dunes in Mojave creosote scrub from 700-900m. Suitable habitat for this species occurs within the Site.
Nevada dune beard tongue *Penstemon arenarius*	NNPS-W BLM-S	None; Known from the Sarcobatus Flat area and north, this species is associated with shadscale habitats in valley bottoms, dune skirts, alkaline areas and road banks from 1195-1817m.
Death Valley beardtongue *Penstemon fruticiformis* ssp. *amargosae*	NNPS-T BLM-S	**Potential;**. Known from the Amargosa Valley both NW and S of the Site in Mojave creosote scrub from 1000-1200m. Suitable habitat for this species occurs within the Site.
Death Valley round-leaved phacelia *Phacelia mustelina*	NNPS-W	None; Known from Mojave creosote scrub above 1500 meters in Nevada.
Reptiles		
Desert tortoise *Gopherus agassizii (Mojave Population)*	USFWS – T	**Potential;** Potential forage and friable soils for burrows present onsite. Most likely to occur in low density (Pers. Comm. T. Kipke 2008).
Banded Gila monster *Heloderma suspectumcinctum*	BLM – S NV – P	Unlikely; Habitat onsite is marginal, however potential cannot be eliminated.
Chuckwalla *Sauromalus ater*	BLM- S	Unlikely; Habitat onsite is marginal, however potential cannot be eliminated.

TABLE C-1
Summary of Special-Status and Sensitive Plants and Wildlife and Their Potential to Occur Within the Amargosa North Site

Species	Status[1]	Potential To Occur Within Site/Basis of Occurrence Determination

Notes:

[1] **NNPS (Nevada Native Plant Society)** ranks are: **Endangered (E)** - in danger of extinction in all or a significant portion of its range; **Threatened (T)-** likely to be classified as Endangered in the foreseeable future if present trends continue; **Watchlist (W)-** potentially vulnerable to becoming Threatened or Endangered

BLM-S (Bureau of Land Management-Sensitive Species)—those taxa occurring on BLM Lands in Nevada that are considered sensitive by the Nevada State Office.

NV (State of Nevada) rank is: **Protected (P)-**Receives full state protection under Nevada State Law N.R.S. 527.260-.300.

USFWS (United States Fish and Wildlife Service)- : **Endangered (E)** - in danger of extinction in all or a significant portion of its range; **Threatened (T)-** likely to be classified as Endangered in the foreseeable future.

Appendix K Cultural/Paleontological Resources Management Plan

Construction monitoring by a qualified archaeologist may be required if a specific area exhibits high potential for cultural resources. A cultural resources management plan will be prepared documenting how these activities will be conducted during construction. If any culturally significant features are found during excavation or earthmoving, the proposed roadway or facilities will be relocated. If relocation of roadways or facilities is not possible, mitigation measures will be proposed in consultation with the BLM and the SHPO.

Please see attached cultural resources reconnaissance-level survey.

IBERDROLA RENEWABLES Cultural Resources Constraints Analysis Report; Archival Research and Reconnaissance Field Visit of The Amargosa North Site, Nye County, Nevada

Report Prepared For

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August 2008

INTRODUCTION

IBERDROLA RENEWABLES (IBR) is evaluating 10 potential sites to construct solar facilities on lands managed by the Bureau of Land Management (BLM) in California, Nevada, Arizona and New Mexico. CH2M HILL is supporting this effort by collecting cultural data needed by IBR to assist in the assessment of the study areas' suitability for solar development. CH2M HILL conducted an archival literature search and reconnaissance field visits of each study area to identify potential constraints to project implementation. This report documents the results of the archival literature review and reconnaissance survey conducted on the Amargosa North study area located in rural Nye County, Nevada, south of the North Valley View Road exit off of State Route 95, south of Amargosa Valley in the Amargosa Desert (Figure 1).

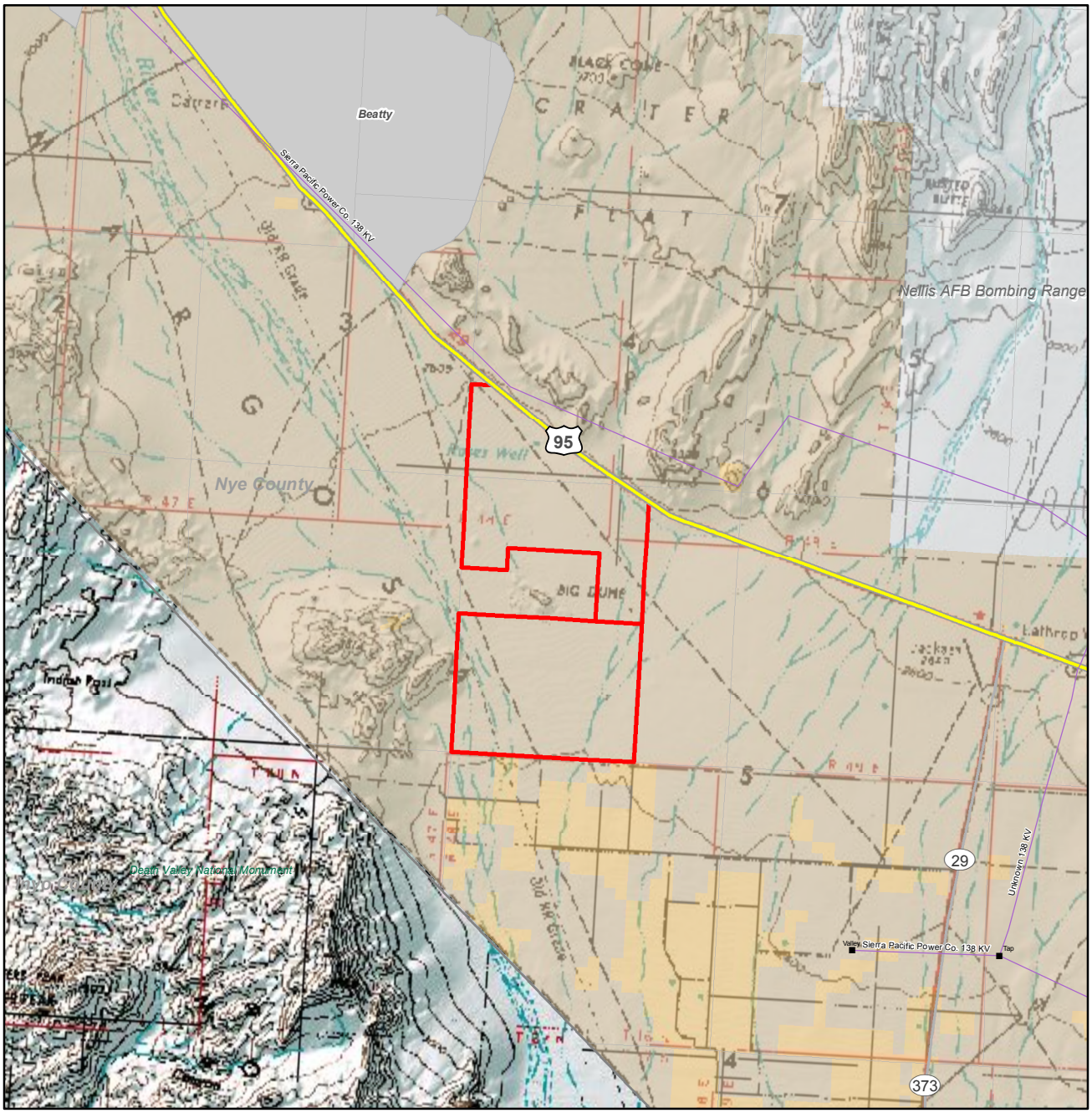
CH2M HILL conducted an archival literature search for the entire 7,543-acre Amargosa North study area. The screening-level literature and records review involved publicly and readily available maps, databases, agency websites, codes and regulations, and news articles, to identify potential conditions and constraints that may pose a risk to solar energy developments. This data was used as context to assess the nature and sensitivity of known cultural resources in the study area.

Following the literature search, CH2M HILL staff performed a limited site reconnaissance of the Amargosa North study area. The purpose of the site reconnaissance was to further investigate areas of concern and potential resources identified during the literature and records review and to gather information to address critical data gaps in publicly and readily available information.

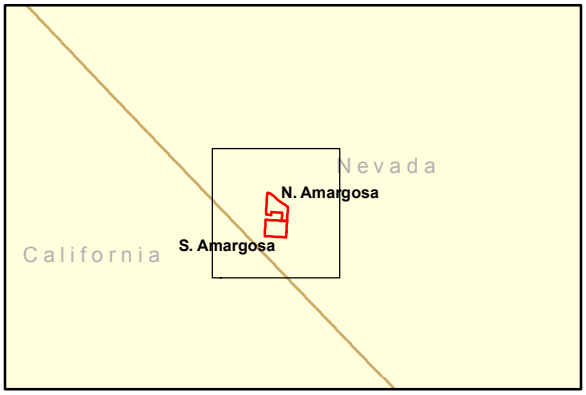
Project personnel included CH2M HILL cultural resources specialists Natalie Lawson, RPA , Gloriella Cardenas, RPA, and Clint Helton, RPA. A summary of findings for the cultural resources constraints analysis is presented below.

PROJECT SETTING

The Amargosa North study area is located in rural Nye County, Nevada, south of the North Valley View Road exit off of State Route 95, south of Amargosa Valley in the Amargosa Desert. The Yucca Mountains are located north of the study area, Big Dune and Death Valley National Monument are located south of the study area, and open desert is located east and west of the study area. Current land use is limited to cattle grazing and off road vehicle (ORV) use. Transmission lines, graded access roads, and the route for the Best in the Desert, Vegas to Reno Off Road Vehicle (ORV) race route are also located within the study area.



VICINITY MAP



LEGEND

- IBERDROLA RENEWABLES Sites
- Substations

Transmission Lines
- 12.50 KV - 69.0 KV
- 69.01 KV - 115.00 KV
- 115.01 KV - 230.00 KV
- 230.01 KV - 500.00 KV
- > 500 KV

BLM Surface Management
- Bureau of Reclamation
- National Park Service
- BLM
- Bureau of Indian Affairs
- Military
- Private
- State
- USFWS

Water Sources
- Lake
- Stream

- Counties
- City Outlines

Notes:
1. Site is located in BLM Las Vegas Field Office.

IBERDROLA RENEWABLES

N

0 1.75 3.5
Miles

FIGURE 1
Amargosa North and South Sites

IBERDROLA RENEWABLES Solar Acquisition Project
Amargosa N and S Sites

REPORT OF FINDINGS

Archival Literature Search

CH2M HILL commissioned a literature search of the Amargosa North study area from the staff of the Nevada Cultural Resources Information System (NVCRIS) at the Harry Reid Center for Environmental Studies for the Amargosa North study area. The NVCRIS literature and records review included a review of all recorded archaeological sites as well as all known cultural resource survey and excavation reports. The National Register Information System (NRIS) was also examined to determine if any National Register sites exist within the study area. The NRIS is an online database of places listed on or eligible for the National Register of Historic Places (NRHP). Historical maps available at the Nevada Department of Transportation (NDOT) website, including *Historic Emigrant Trails*, *Historic Explorer Trails,* and *State of Nevada Department of Highways, Road Map of the State of Nevada* (1919, 1922, 1927, and 1932-1958) were all examined. The *Tonopah, Goldfield, and Bullfrog Mining District Map* (1905), the *Tonopah and Tidewater Railroad Company Map* (1907), and the 1922 GLO plat map for T16S R48E Mount Diablo Base Meridian available at the Nevada in Maps Online Collection were also examined. The prints of the historic maps in the Nevada in Maps Online Collection are located in the University of Nevada library collections at Reno and Las Vegas, the Nevada State Library and the Nevada State Historical Society.

The records search indicated that nine cultural resource studies have been previously conducted within the Amargosa North study area totaling less than 10 percent of the study area. Previous work includes survey for transmission lines, access roads, the Best in the Desert, Vegas to Reno ORV race route, and drill hole locations, as well as soil conservation backhoe excavations.

A total of six recorded cultural resources were identified within the study area (Table 1). Mapped cultural resource locations are shown in Appendix A. Only one of these sites has been formally evaluated and five remain unevaluated. Site 26-NY-2695 is a historic well site called Rose's Well and trash scatter evaluated by Blair in 1999. This site was determined to not be eligible to the NRHP as the site lacks integrity due to extreme disturbance from its proximity to an ORV race route (Blair 1999).

Additionally, the Las Vegas &Tonopah Railroad was visible on the following historic maps: the *Tonopah and Tidewater Railroad Company Map* (1907), the *State of Nevada Department of Highways, Road Map of the State of Nevada* (1919, 1922, 1927, and 1932-1958), and the 1922 GLO plat map for T16S R48E Mount Diablo Base Meridian. A proposed railroad route is visible in the study area on the *Tonopah, Goldfield, and Bullfrog Mining District Map* (1905). This railroad grade traverses the northern section of the Amargosa North Study area, reaching the 100-mile marker at Rose's Well or Rosewell, an historic well located within the study area.

The Las Vegas and Tonopah Railroad ran almost 200 miles through the Nevada desert, connecting the mainline of the San Pedro, Los Angeles, and Salt Lake Railroad at Las Vegas to the Bullfrog Mining District gold mines in Goldfield, Nevada. The railroad was incorporated in 1905 (LA Times 1905); track reached Rose's Well in the Amargosa North study area by 1906. The entire line was completed in 1907 (LA Times 1907). Ore production and quality had decreased within the Bullfrog Mining District by 1913 (LA Times 1913).

Portions of the line fell into disuse during World War I and by 1919, the remainder of the line had been abandoned and the track had been scrapped (Warden 1949). This historic railroad grade has not been formally recorded or evaluated.

TABLE 1.
Known Cultural Resources within the Amargosa North Study Area

Site Number	Site Type	NRHP Status	Date listed/evaluated
26-NY-1560	Lithic scatter	Not evaluated	n/a
26-NY-2694	Rock ring and cobble core	Not evaluated	n/a
26-NY-2695	Brush ring	Not evaluated	n/a
26-NY-2696	Historic well and trash scatter	Not eligible	1999
26-NY-3977	Lithic scatter	Not evaluated	n/a
26-NY-3980	Historic trash scatter	Not evaluated	n/a
None	Las Vegas and Tonapah Railroad	Not evaluated	n/a

Source: NVCRIS: Nevada Cultural Resources Information System.

Reconnaissance Field Visit

On August 12, 2008, CH2M HILL conducted a one-day reconnaissance visit to the Amargosa North study area to generally characterize the study area, further investigate areas of concern and potential resources identified during the literature and records review, and gather information to address critical data gaps in publicly and readily available information.

Areas of concern, potential resources, and other cultural resources identified during the literature review were visually inspected as feasible from vehicle-accessible roads. The majority of the vehicle accessible roads within the study area were driven, a portion of the Las Vegas and Tonopah Railroad grade was revisited and a single isolated prehistoric artifact, a cobble core tool, was located on the desert pavement. The isolated artifact by definition is not significant. Disturbances to the study area, sediment types, and locations of water sources were noted.

The Amargosa North study area is located in an undeveloped area of the Amargosa Desert in open desert consisting of medium to well varnished desert pavement and alluvial washes. The study area is relatively flat and generally undisturbed aside from a narrow corridor that traverses the northern end of the study area, the Vegas to Reno ORV race route. This dirt race route is approximately five lanes wide and the disturbance around the race route is fairly high. The Valley Electric Company Beatty to Lathrop Wells transmission line runs through the study area. A limited number of access roads have been graded throughout the study area for access to Big Dune, the race route, and for cattle ranching. Current land use is limited primarily to grazing and ORV use.

Ground visibility is excellent over the majority of the Amargosa North study area. As mentioned previously, the majority of the area consists of well varnished and well developed desert pavement, where vegetation was limited to small creosote bushes, various cacti, Mormon tea, and other small desert shrubs. Silty sand with rounded gravel and fist sized cobbles were observed in the wash areas.

As previously mentioned, the mapped location of the original railroad grade of the Las Vegas and Tonopah Railroad was revisited. This historic grade appears to be located within the Vegas to Reno ORV race route, which runs adjacent to Rose's Well. The rail grade is not presently visible however, likely due to the high amount of disturbance of the race route. A single isolated cobble core tool was observed near a wash in an area of desert pavement. No other tools or features were found near this tool and it is not significant.

SUMMARY OF RESULTS

The literature search and reconnaissance field visit did not identify any significant cultural constraints within the Amargosa North study area. There are no known NRHP eligible or Nevada Register eligible cultural sites located within the study area. Some examples of environmental conditions and site types which may be considered constraints include areas near permanent water sources, areas with favorable vegetation (i.e., berries, herbs, nuts, and other edible and useful plants), areas with large amount of game and animal trails, areas with alluvial deposition, the documented presence of large complex habitation sites, densely packed smaller resource procurement or exploitation and manufacturing sites, sacred sites (traditional cultural properties), locally or nationally significant historic architectural resources, or burial sites. Based on the results of archival research and the field reconnaissance site visit, as well as a general assessment of the study areas sensitivity for cultural resources, none of these constraints have been previously documented within the study area and their potential presence is of low probability.

Extant site types noted within the Amargosa North study area include historic trash scatters and prehistoric lithic scatters. The brief field reconnaissance visit noted a previously undocumented single cobble core tool located adjacent to a wash on desert pavement. Although it is likely that similar undocumented prehistoric and historic sites exist in the Amargosa North study area, these are typically not considered significant and do not represent a constraint. The study area consists of either desert pavement or active washes, conditions that would typically contribute to a low sensitivity for the presence of buried intact cultural resources. Additionally, no permanent sources of water were observed. The nearest seasonal water source is the Amargosa River which flows during the winter months and is located just west of the study area.

The literature search revealed that less than 10 percent of the study area has been surveyed with only six cultural resources identified, inferring the likelihood of a low density of resources for the general vicinity. Given the local topography, distance to major stream drainages or other archaeologically sensitive conditions, and the limited number of previously identified resources, the sensitivity for significant archaeological resources within the Amargosa North study area is considered moderate to low.

Given the lack of a permanent water sources or other potentially sensitive environmental conditions, the relatively flat terrain, and the general lack of known significant cultural resources, the presence of any significant cultural resources constraints appears unlikely within the Amargosa North study area. This said, a significant portion of the study area has not been subject to a pedestrian inventory and resources could potentially be present in these unsurveyed areas. Also, both prehistoric and historic resources are known to occur within the general area and it is therefore recommended that a pedestrian inventory be performed more accurately determine potential impacts. However, based on the available literature, cultural resources are not considered to be a "fatal flaw" for this project in this location, and are unlikely to represent a substantive constraint during project implementation.

REFERENCES

Blair, Lynda G.
1999 Site Record for 26-NY-2695. Ms. on file, Harry Reid Center for Environmental Studies, Las Vegas, NV.

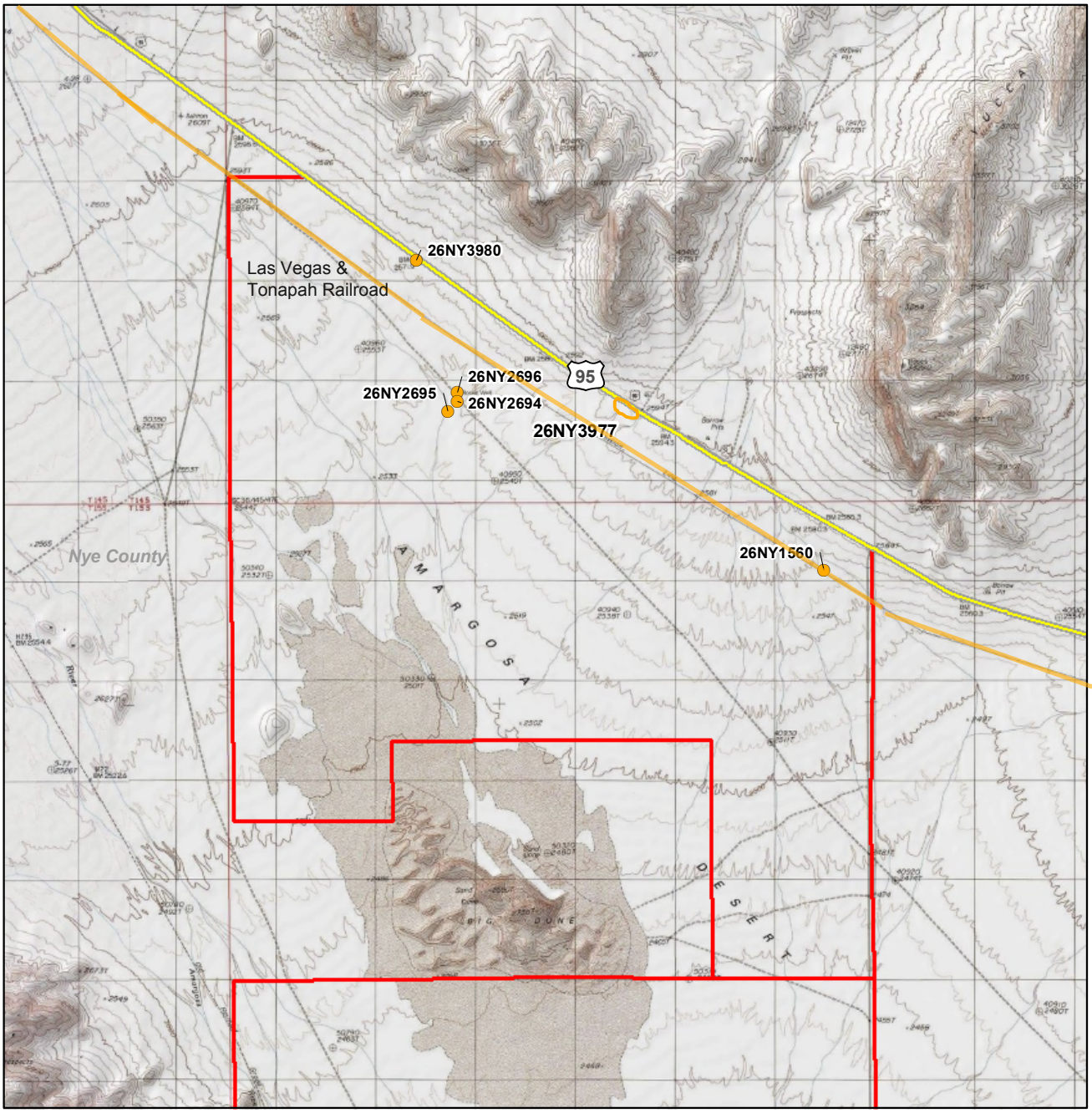
Los Angeles Times (LA Times)
1905 Tonopah Railroad: Preliminary Work on New Line Rushing from Las Vegas to Gold Country. October 5, 1905. Los Angeles.
1907 Bullfrog District: Rapid Railroad Extension. June 17, 1907. Los Angeles
1913 Mines and Mining in the Great Southwest. August 17, 1913. pV19. Los Angeles
1914 Nevada Line Sold. November 18, 1914. pI5. Los Angeles
1918 Las Vegas Line May Stop Service. October 20, 1918. pII8. Los Angeles

Warden, Naoma
1949 Last of Bonanza Railroads to Stop. *Los Angeles Times*, July 26, 1942. p2. Los Angeles

APPENDIX A

Cultural Resource Locations

(Confidential Map, not for Public Distribution)



LEGEND

- IBERDROLA RENEWABLES Sites
- Cultural Resources
- Cultural Resources
- Counties

Notes:
1. Site is located in BLM Las Vegas Field Office.

VICINITY MAP

IBERDROLA RENEWABLES

N

0 0.75 1.5
Miles

FIGURE A
North Amargosa Site Cultural Map
IBERDROLA RENEWABLES Solar Acquisition Project
North Amargosa Site

Appendix L Amargosa North Hydro-Geomorphic Profile Report

Attached is the Amargosa North Hydro-Geomorphic Profile that was prepared by CH2M Hill for PSI, and describes the site geology, soil types and hydrology.

APPENDIX F

Amargosa North and South Sites Hydro-Geomorphic Profile

1.1 Setting

1.1.1 Regional Setting

The Amargosa North and South project sites are located to the Southwest of I-95, in the Amargosa River valley in Southwestern Nevada. The project sites are about 2 miles east of the California/Nevada state boundary. The Amargosa River flows from its valley of origin to the north/northeast of the project site to it's terminus in Death Valley. The river was named after the Spanish word for "bitter" due to the bitter taste of the water. The Amargosa project sites are located about 100 miles to the north west of Las Vegas, Nevada and are about 20 miles south east from the small town of Beatty, Nevada. The Funeral Mountains of the Amargosa Range are located to the west and south of the sites. The southern extent of the Bare and Yucca Mountains form the hills to the north of the sites.

The Amargosa project sites are located in the Great Basin section of the Basin and Range province. The Basin and Range Province is an immense region of alternating, north-south-trending, faulted mountains and flat valley floors that was created about 20 million years ago when the earth's crust was stretched, thinned, and then broke into mountain blocks. The Great Basin is an internally-drained area that occupies approximately 200,000 square miles, including most of Nevada, a large part of Utah, and portions of Idaho, California, and Oregon. Precipitation that doesn't evaporate or infiltrate flows into streams and collects in short-lived lakes called playas on the valley floor and eventually evaporates.

1.1.1.1 Proposed IBR Site Boundary and Development Footprint

The Amargosa North and South project sites are located north and south of each other and are separated by the Big Dune sand dune complex. The northern edge of the North Amargosa project site parallels Highway 95, forming a diagonal northern boundary. The site wraps around the eastern edge of Big Dune. The South Amargosa project site is the shape of a rectangle south of Big Dune. The North Amargosa project site occupies 7,497 acres and the South Amargosa project site occupies 7,699 acres.

1.1.1.2 Access

The Amargosa North and South project sites are easily accessible by Highway 95 to the north, a well maintained dirt road along the west side, and a paved road along the eastern boundary of the sites. Also, an extensive network of OHV trails surrounds Big Dune. The well-maintained dirt road on the western boundary connects Highway 95 with the farming areas south of the project area. The road bends to the east at the intersection with the Amargosa River. A powerline access road parallels Highway 95 at the northern edge of the North Amargosa project site. A second dirt road/trail crosses across the North Amargosa

FIGURE 1
Amargosa North and South Project Sites Regional Map

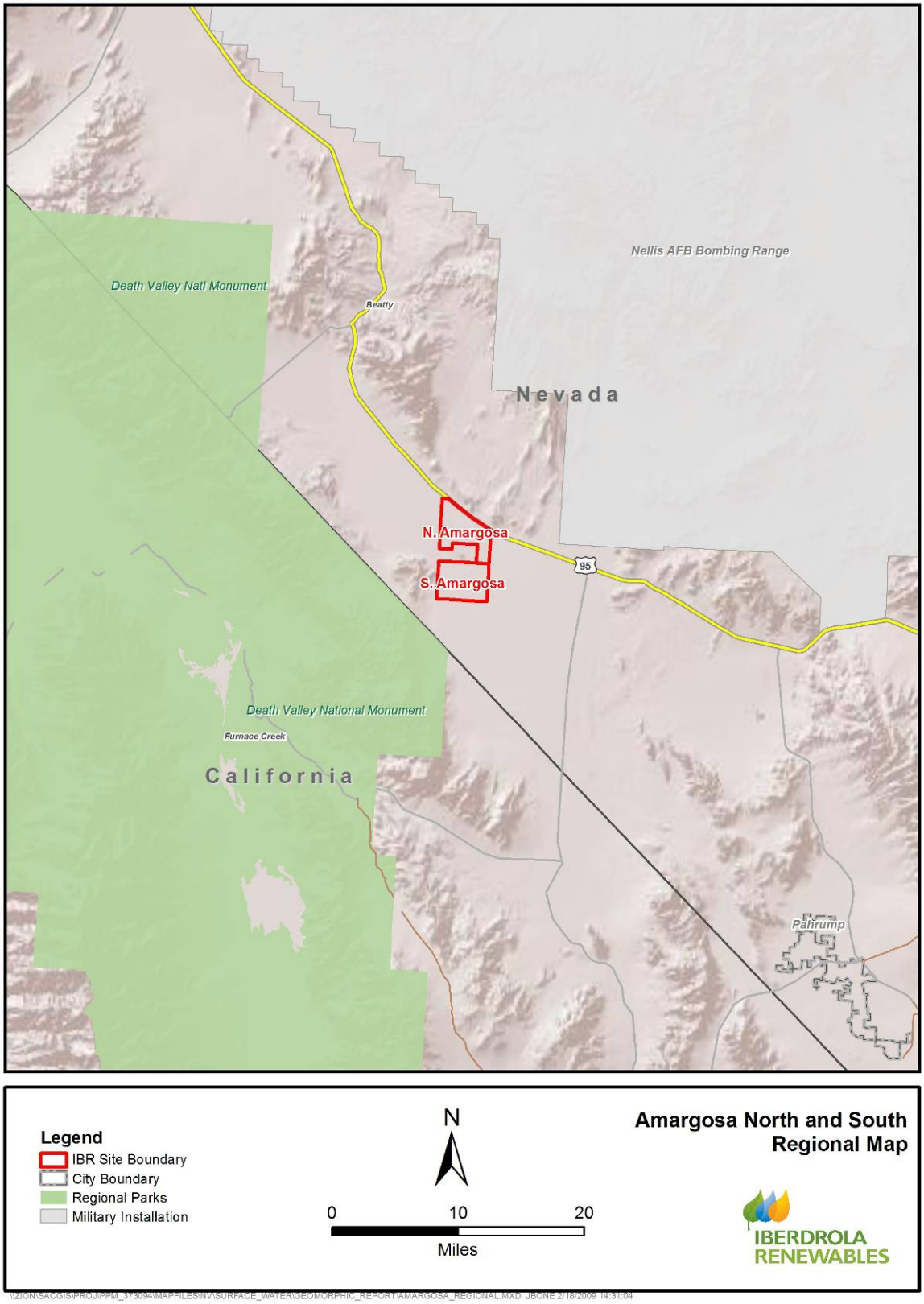
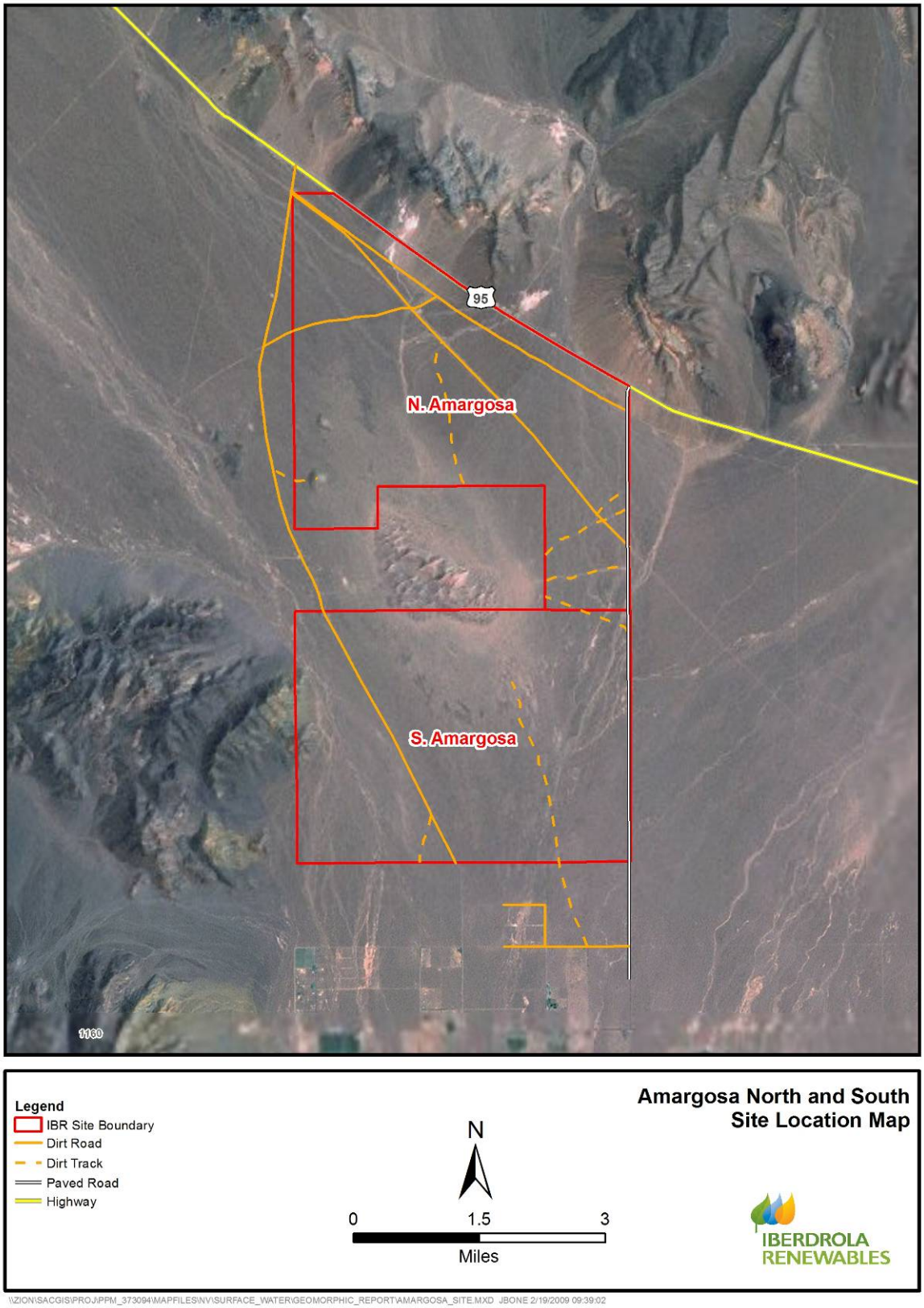


FIGURE 2
Amargosa North and South Project Sites Map



project site paralleling the powerline road. Valley View Rd, a paved road on the eastern boundary of both Amargosa North and South project sites, connects Highway 95 to the farming areas to the south. A grid network of dirt roads exists south of the project area in the farming area.

1.1.2 Existing Land Use and Land Cover

Both sites are entirely located on BLM owned land. The South Amargosa project site is adjacent to private land holdings to the south. Some of the private land to the south is actively being farmed. Regionally, the majority of the surrounding area is owned by the federal government. Death Valley National Park is located to the southwest and Nellis Air Force Base and Bombing Range is located to the north. Land ownership to the east is primarily BLM and Department of Energy with scattered private and U.S. Fish and Wildlife ownership as part of the Ash Meadows National Wildlife Refuge. Most of the area surrounding the sites is open desert with limited farming activity to the south of the project sites. Big Dune is a popular off highway vehicle (OHV) recreation area and receives heavy use during weekends.

1.2 Geology, Soils, Hydrology, and Geomorphology

1.2.1 Geology

The geological assessment for the Amargosa North and Amargosa South project sites is based on USGS and Nevada Bureau of Mines and Geology (http://www.nbmg.unr.edu/) reference data for the area (Figure 3; Stewart and Carlson, 1978).

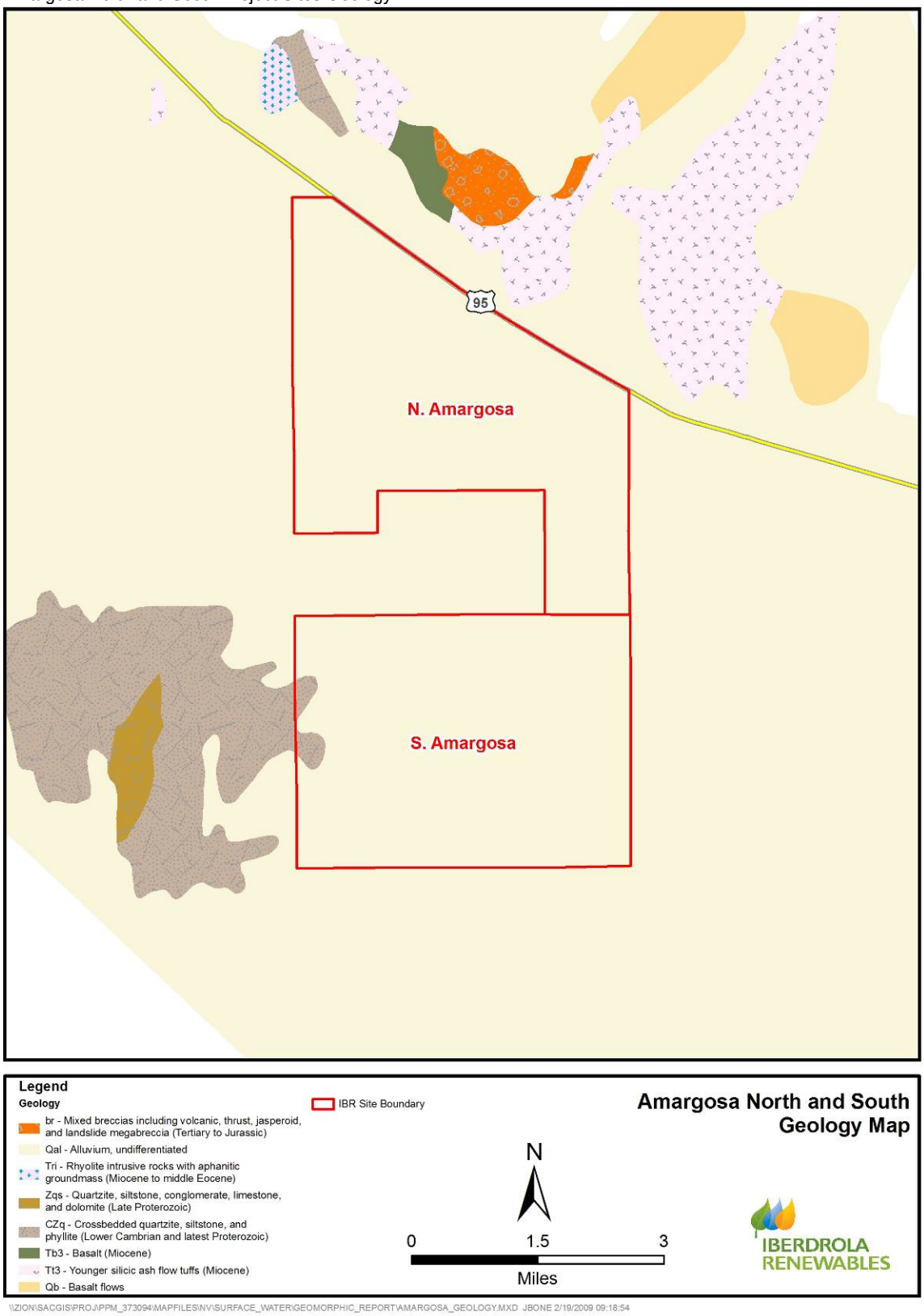
Surficial geology of the Amargosa North and Amargosa South project sites is composed entirely of Quartenary Alluvium (map unit "Qa"). This alluvium is estimated to reach a maximum of 500 feet in depth across the project site, underlain by older sedimentary rocks (Potter *et. al*, 2002).

Faulting at the site is as described by Potter *et al.*, 2002:

> *Geologic and geophysical data imply the presence of a large-offset, east-west-striking "Highway 95" fault beneath surficial deposits along the northeast margin of the Amargosa Desert, directly south of Yucca Mountain and Crater Flat. The Highway 95 fault is interpreted to be downthrown to the north, with a component of dextral displacement. It juxtaposes a block of Paleozoic carbonate rock overlain by a minimal thickness of Tertiary rocks (to the south) against the Miocene volcanic section of Yucca Mountain (to the north).*

Alluvial geomorphic surfaces compose the bulk of Quaternary surficial units in the Amargosa Desert region. Deposits associated with these surfaces include alluvium, colluvium, and minor eolian and debris-flow sediments. Photogeologic and field studies locally have identified subtle fault scarps that offset these surfaces, and other evidence of Quaternary fault activity (Potter *et. al*, 2002).

FIGURE 3
Amargosa North and South Project Sites Geology



1.2.2 Soils

The soils assessment for the Amargosa North and Amargosa South project sites is based on Natural Resource Conservation Service (NRCS) reference data for the area (Figure 4 and Table 1; Soil Survey for Nye County, Nevada, Southwest Part). Hydrologic classification, runoff potential, and RUSLE2 erosion factors are evaluated to determine the sites' potential for erosion via water; and the wind erodibility group and wind erodibility index values are evaluated to determine potential for wind erosion. Other soil factors that could potentially present limitations for development of solar energy facilities at the site are also presented, insofar as information was available in the soil survey.

A summary of the soil characteristics, water and wind erosion hazards, and other limitations for the Amargosa North and South sites is presented below, with more detailed information in the following sections.

General Soil Characteristics - Most soils mapped at the site are associated with alluvial fans and sand dune landforms. At the surface, many of the mapped soils have about 47 to 62 percent cover with stones and boulders, which reduces susceptibility to soil blowing and water erosion. Surface and subsurface soil horizons are coarse-textured.

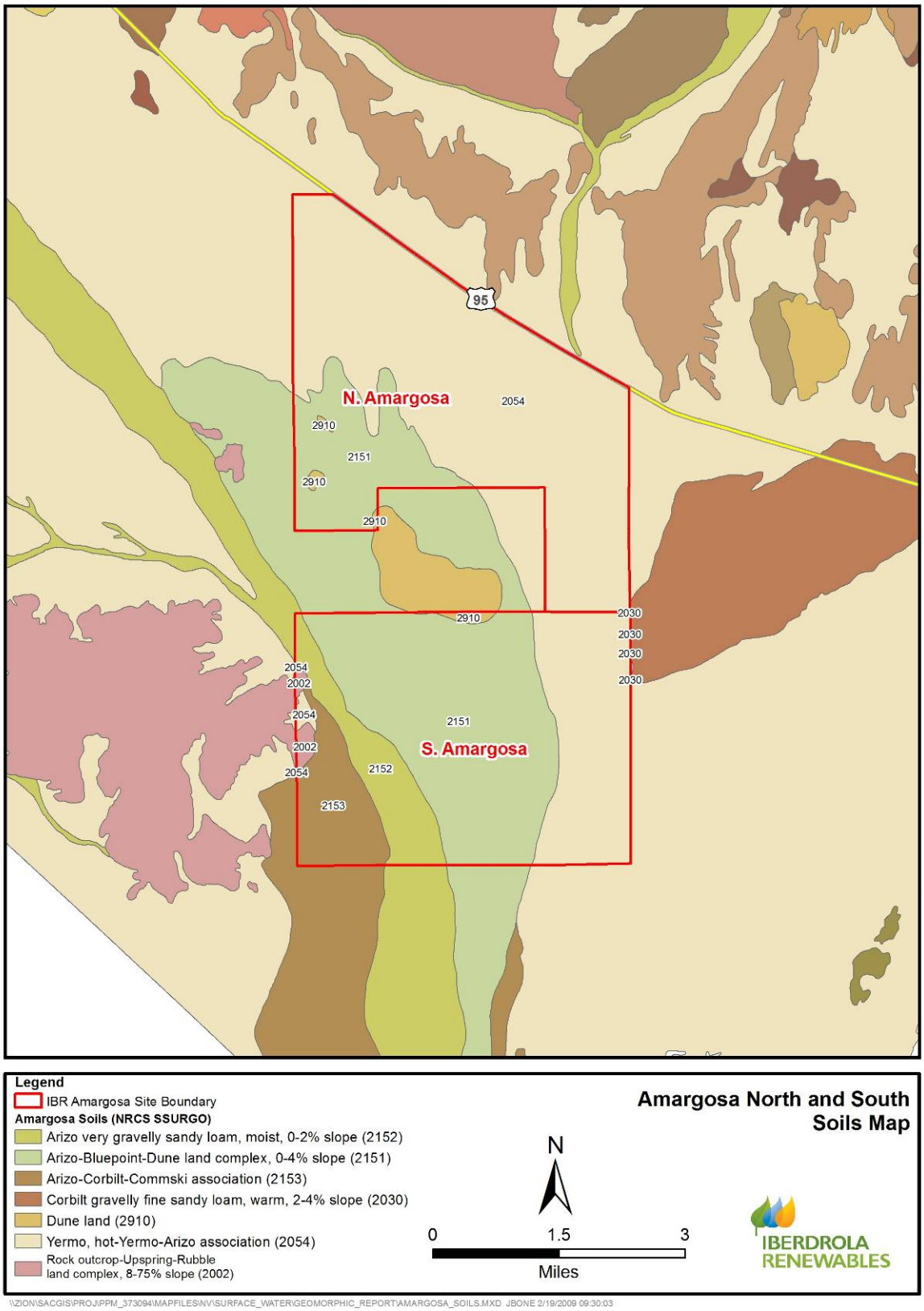
Water Erosion Hazards – Potential for water erosion on approximately 90% of the site presents only slight limitations during construction. Implementation of erosion and sediment controls during construction, and other stabilization measures during operations would further reduce any adverse effects resulting from water erosion. Dune lands, and Rock outcrop-Upspring-Rubble land complex, units would present greater risk for soil loss due to water erosion; these soil units are present on approximately 10% of the site. These areas should be avoided or more rigorous control measures implemented to stabilize soils.

Wind Erosion Hazards – Approximately 18 percent of the site has soils that are very highly susceptible to erosion by wind; the remainder of the site contains soils that are moderately susceptible to wind erosion. Measures would need to be considered to control soil blowing during construction, and to stabilize soils and thereby reduce wind erosion during operations.

Other Limitations:

- Risk of corrosion to uncoated steel: High (except Dune lands)
- Risk of corrosion to concrete: Low (except Bluepoint soils)
- Limitations for construction of small commercial buildings: one-half site – no limitations; one-half site: very limited
- Limitations associated with shallow excavations: 60% very limited; 40% moderately limited
- Expansiveness: Low
- Flooding: Brief or very brief, occasional or rare, over approximately 35% of the site

FIGURE 4
Amargosa North and South Project Sites Soils



1.2.2.1 General Soil Characteristics

Nearly 90 percent of the Amargosa sites is composed of Yermo, hot-Yermo-Arizo association (map unit [MU] 4054) and Arizo-Bluepoint-Dune land complex (MU 2151). Table 1 shows the soil types and their relative presence on the site.

TABLE 1
Amargosa North and South Project Sites Soil Units
Soils Evaluation – Amargosa Site

Soil Map Unit	Acres	Map Unit Description	Percent of Site
2054	8017	Yermo, hot-Yermo-Arizo association	52.8
2151	5227	Arizo-Bluepoint-Dune land complex, 0 to 4 percent slopes	34.4
2152	889	Arizo very gravelly sandy loam, moist, 0 to 2 percent slopes	5.8
2153	887	Arizo-Corbilt-Commski association	5.8
2002	87	Rock outcrop-Upspring-Rubble land complex, 8 to 75 percent slopes	0.57
2910	87	Dune land	0.57
2030	2	Corbilt gravelly fine sandy loam, warm, 2 to 4 percent slopes	0.01

Soil textures on the site range from fragmental material to gravelly fine sandy loam in surface horizons. Soil textures of subsurface horizons similarly coarse-textured. Minor soil components represented at the site have a restrictive layer at the 56 to 60 inch depth, or unweathered bedrock at the 12 to 22 inch depth.

1.2.2.2 Water Erosion, Flooding and Ponding

Nearly 100 percent of the site has a surface runoff potential that is very low to negligible, consistent with presence of coarse-textured soils and relatively flat surface topography. Hydrologic groups are A or B for the majority of the site, also indicating low potential for runoff. On the other hand, runoff can be high on rock outcrops and Upspring soils where slopes are 8-75%; these soil types, however, occupy less than 1 percent of the site.

When wet, the majority of soils at the site transmit water readily, with representative saturated hydraulic conductivity values ranging from about 26 to 371 μm per second (or 3.7 to 52 inches per hour). Drainage class ranges from well-drained to excessively drained (water is removed very rapidly in excessively drained soils, and water is removed from the soil readily but not rapidly in well-drained soils).

RUSLE2 is a NRCS model used to predict sheet and rill erosion via water; and predictions vary with soil texture, structure, and percent organic matter present in the soil. In the model, one of the factors considered is soil erodibility (K). K values can range from 0.02 to 0.69, with higher values indicating more susceptibility to erosion by water. K values for the Amargosa surface soils range from 0.05 to 0.17 (whole soil), indicating relatively low susceptibility to sheet and rill erosion would be expected; low values are related, in part, to presence of rock fragments. The overall soil limitations due to risk of water erosion are slight (see Table 4).

TABLE 2
Map Unit Soils Descriptions – Amargosa North and South Project Sites

Map Unit Number	Map Unit Identification	Setting	Typical Profile	Representative percent in surface horizon			Saturated Hydraulic Conductivity (μm/sec)
				Sand	Silt	Clay	
2054	Yermo, hot-Yermo-Arizo association Yermo, hot and similar soils: 40% Yermo and similar soils: 30% Arizo and similar soils: 15%	Landform: Inset fans and fan remnants Slope: 2-4% Surface area covered with stones and boulders: 47-62% Parent material: alluvium derived from mixed rock sources	Yermo, hot: 0-6 in. – very gravelly sandy loam 6-60 in. – stratified extremely gravelly sandy loam to gravelly loam	67.4	19.6	13.0	14.00-42.00 14.00-42.00
			Yermo: 0-6 in. – very gravelly sandy loam 6-60 in. – stratified extremely gravelly sandy loam to gravelly loam	67.4	19.6	13.0	14.00-42.00 14.00-42.00
			Arizo: 0-8 in. – very gravelly sandy loam 8-60 in. – stratified cobbly coarse sand to extremely gravelly sand	67.8	23.7	8.5	14.00-42.00 141.00-705.00
2151	Arizo-Bluepoint-Dune land complex, 0-4 percent slopes Arizo and similar soils: 40% Bluepoint and similar soils: 35% Dune land: 15%	Landform: inset fans, sand sheets, and dunes Surface covered with stones and boulders (Arizo): 47% Parent material: alluvium derived from mixed rock sources (Arizo); eolian sands (Bluepoint)	Arizo: 0-8 in. – very gravelly sandy loam 8-60 in. – stratified cobbly coarse sand to extremely gravelly sand	67.8	23.7	8.5	14.00-42.00 141.00-705.00
			Bluepoint: 0-9 in. – loamy fine sand 9-17 in. – stratified fine sand to gravelly loamy fine sand 17-41 in. – fine sand 41-60 in. – stratified sand to very fine sandy loam	79.4	16.6	4.0	42.00-141.00 42.00-141.00 42.00-141.00 14.00-42.00
			Dune land: 0-6 in. – fine sand 6-60 in. – fine sand	98.9	0.6	0.5	42.00-141.00 42.00-141.00

TABLE 2
Map Unit Soils Descriptions – Amargosa North and South Project Sites

				Representative percent in surface horizon			
2152	Arizo very gravelly sandy loam, moist, 0 to 2 percent slopes	Landform: Inset fans Surface covered with stones and boulders: 47% Parent material: alluvium derived from mixed rock sources	0-8 in. – very gravelly sandy loam 8-60 in. – stratified cobbly coarse sand to extremely gravelly sand	67.8	23.7	8.5	14.00-42.00 141.00-705.00
2153	Arizo-Corbilt-Commski association Arizo and similar soils: 35% Corbilt and similar soils: 25% Commski and similar soils: 25%	Landform: Inset fans, fan skirts Slope: 0 to 2 percent Surface covered with stones and boulders: 47-50% Parent material: Alluvium derived from mixed rock sources	Arizo: 0-8 in. – very gravelly sandy loam 8-60 in. – stratified cobbly coarse sand to extremely gravelly sand Corbilt: 0-4 in. – very gravelly sandy loam 4-32 in. – gravelly fine sandy loam 32-56 in. – very gravelly sandy loam 56-60 in. – cemented Commski: 0-5 in. – very gravelly fine sandy loam 5-14 in. – extremely gravelly sandy loam 14-60 in. – extremely gravelly coarse sandy loam	67.8 66.1 68.5	23.7 19.9 24.0	8.5 14.0 7.5	14.00-42.00 141.00-705.00 14.00-42.00 14.00-42.00 14.00-42.00 0.42-1.40 14.00-42.00 14.00-42.00 4.00-14.00
2002	Rock outcrop-Upspring-Rubble land complex, 8 to 75 percent slopes Rock outcrop: 45% Upspring and similar soils: 30% Rubble land: 15%	Landform: Hills Surface covered with stones and boulders: 71% (Upspring) Parent material: Colluvium derived from volcanic rocks over residuum weathered from volcanic rocks (Upspring)	Upspring: 0-8 in. – very gravelly sandy loam 8-12 in. – very gravelly fine sandy loam 12-22 in. – unweathered bedrock Rubble land: 0-60 in. – fragmental material	66.8 --	19.2 --	14.0 0	14.00-42.00 14.00-42.00 0.00-0.01 141.00-705.00

TABLE 2
Map Unit Soils Descriptions – Amargosa North and South Project Sites

				Representative percent in surface horizon			
2030	Corbilt gravelly fine sandy loam, warm, 2 to 4 percent slopes Corbilt and similar soils: 85%	Landform: Fan remnants Surface area covered with stones and boulders: 50% Parent material: alluvium derived from mixed rock sources	0-4 in. – gravelly fine sandy loam 4-32 in. – gravelly fine sandy loam 32-56 in. – very gravelly sandy loam 56-60 in. - cemented	65.2	27.3	7.5	14.00-42.00 14.00-42.00 14.00-42.00 0.42-1.40
2910	Dune land	Landform: Dunes Slope: 0-30%	0-6 in. – fine sand 6-60 in. – fine sand	98.9	0.6	0.5	42.00-141.00 42.00-141.00

The water erosion interpretation in Table 4 assumes the following:

> Rating indicates the hazard of soil loss from off-road/off-trail areas after disturbance activities that expose the soil surface. Rating assesses sheet and rill erosion from exposed soil surfaces caused by various activities; site has 50-75 percent bare ground in affected area; equipment use. The rating does not assess gully erosion, stream bed/stream bank erosion, or the amount of surface water runoff from ground disturbing activities. Rating classes: None – no erosion hazard; Slight – erosion is unlikely under normal climatic conditions; Moderate – Some erosion is likely; control measures may be needed; Severe – Erosion is very likely; control measures for vegetation re-establishment on bare areas and structural measures are advised; Very Severe – Significant erosion is expected; loss of soil productivity and off-site damages are likely; control measures are costly and generally impractical.

With implementation of appropriate erosion and sediment control BMPs during construction and soil stabilization measures during operations, the amount of soil loss due to water erosion would be expected to be insignificant.

On Arizo soils, very brief (i.e., lasting 4 hours to 2 days) flooding may occur throughout the year due to overflowing streams or runoff from adjacent slopes (see Table 3); however, flooding is relatively rare. Rare to occasional flooding for brief or very brief periods occurs on approximately 35% of the site. If these areas were used to support solar energy facilities, measures may need to be considered that would prevent potential flood damage.

1.2.2.3 Wind Erosion

Soil loss due to wind erosion may be problematic during construction and operation of the proposed solar energy facilities. During operations, abrasion and burial could potentially occur with blowing and deposition of particulates. Accelerated soil loss could occur through wind erosion once the surface soils are disturbed and vegetation is removed. The soil surface attributes that contribute to erosivity include particle size and carbonate content. Attributes that resist the erosive affect of wind include organic matter content and presence of coarse fragments. The soil wind erosion potential is the interaction of those soil surface features that make the soil susceptible to wind erosion and those that resist the wind erosion process.

“Wind erodibility groups” are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible, assuming a dry, bare, smooth surface, with a long distance that is exposed to the wind. “Wind erodibility index” is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion.

Overall, the potential for wind erosion on approximately 80 percent of the site is moderate, as indicated by wind erodibility group values of 4 to 8 (Table 3). On the other hand where Dune Land or Bluepoint soils occur (approximately 18 percent of the site), wind erodibility group value is 1 to 2, indicating an extremely high susceptibility to wind erosion. Similarly, for most soil types present on the site, the wind erodibility index (tons per acre per year of soil lost to wind erosion) ranges from 56-86. For Dune Lands and Bluepoint soils, however, the wind erodibility index can be 134-250.

TABLE 3
Soil Erodibility Characteristics – Amargosa North and South Project Sites

Map Unit Number	Map Unit Identification	Hydrologic Group	Surface Runoff Potential	Flooding Potential	RUSLE2 Soil Erodibility Factor (surface horizon)	Wind Erodibility	
					Kw	Group	Index
2054	Yermo, hot-Yermo-Arizo association						
	Yermo, hot and similar soils: 40%	B	Very low	None	.05	5	56
	Yermo and similar soils: 30%	B	Very low	None	.05	5	56
	Arizo and similar soils: 15%	A	Very low	Rare, very brief, Jan.-Dec.	.10	5	56
2151	Arizo-Bluepoint-Dune land complex, 0-4 percent slopes						
	Arizo and similar soils: 40%	A	Very low	Occasional, very brief, Mar-Sept	.10	5	56
	Bluepoint and similar soils: 35%	A	Negligible	None	.17	2	134
	Dune land: 15%	A	Very low	None	.15	1	250
2152	Arizo very gravelly sandy loam, moist, 0 to 2 percent slopes	A	Very low	Occasional, very brief, Mar.-Sep.	.10	5	56
2153	Arizo-Corbilt-Commski association						
	Arizo and similar soils: 35%	A	Very low	Occasional, very brief, Mar-Sep	.10	5	56
	Corbilt and similar soils: 25%	B	Low	None	.10	5	56
	Commski and similar soils: 25%	B	Very low	None	.15	5	56
2002	Rock outcrop-Upspring-Rubble land complex, 8 to 75 percent slopes						
	Rock outcrop: 45%	--	--	None	--	--	--
	Upspring and similar soils: 30%	D	Very high	None	.15	5	56
	Rubble land: 15%	A	Low	None	--	8	0
2030	Corbilt gravelly fine sandy loam, warm, 2 to 4 percent slopes						
	Corbilt and similar soils: 85%	B	Very low	None	.15	4	86
2910	Dune land	A	Very low	None	.15	1	250

TABLE 4
Soil Use Limitations – Amargosa North and South Project Sites

Map Unit Number	Map Unit Identification	Potential Erosion Hazard Limitation During Construction	Limitation for Shallow Excavations	Limitation for Construction of Small Commercial Buildings
		Rating Class and limiting features	***Rating Class and Limiting Features***	***Rating Class and Limiting Features***
2054	Yermo, hot-Yermo-Arizo association			
	Yermo, hot and similar soils: 40%	Slight	Somewhat limited; cutbanks cave	Not limited
53% of site	Yermo and similar soils: 30%	Slight	Somewhat limited; cutbanks cave	Not limited
	Arizo and similar soils: 15%	Slight	Very limited; cutbanks cave	Very limited due to flooding
2151	Arizo-Bluepoint-Dune land complex, 0-4 percent slopes			
34% of site	Arizo and similar soils: 40%	Slight	Very limited; cutbanks cave, flooding	Very limited due to flooding
	Bluepoint and similar soils: 35%	Slight	Very limited; cutbanks cave	Not limited
	Dune land: 15%	Moderate due to steep slope and soil erodibility	Very limited; cutbanks cave, steep slope	Very limited due to steep slopes
2152	Arizo very gravelly sandy loam, moist, 0 to 2 percent slopes	Slight	Very limited; cutbanks cave, flooding	Very limited due to flooding
6% of site				
2153	Arizo-Corbilt-Commski association			
	Arizo and similar soils: 35%	Slight	Very limited; cutbanks cave, flooding	Very limited due to flooding
6% of site	Corbilt and similar soils: 25%	Slight	Very limited; cutbanks cave	Not limited
	Commski and similar soils: 25%	Slight	Very limited, cutbanks cave	Not limited
2002	Rock outcrop-Upspring-Rubble land complex, 8 to 75 percent slopes			
<1% of site	Rock outcrop: 45%	Not rated	Not rated	Not rated
	Upspring and similar soils: 30%	Severe due to steep slopes and soil erodibility	Very limited; shallow depth to bedrock, steep slope, cutbanks cave	Very limited due to steep slopes and shallow depth to hard bedrock
	Rubble land: 15%	Very severe due to steep slopes and soil erodibility	Very limited; large stones content, steep slopes, dense layer	Very limited due to steep slopes and large stones content
2030	Corbilt gravelly fine sandy loam, warm, 2 to 4 percent slopes			
<1% of site	Corbilt and similar soils: 85%	Slight	Very limited, cutbanks cave	Not limited
2910	Dune land	Moderate due to steep slopes and soil erodibility	Very limited; cutbanks cave and steep slopes	Very limited due to steep slopes
<1% of site				

1.2.2.4 Other Soil Interpretations

Other soil interpretations that are provided in the soil survey that could be applicable to project construction include those associated with corrosive soil properties, inherent limitations for shallow excavations (installation of gas and water pipelines), and inherent limitation for construction of small commercial buildings. In soil surveys, the degree of limitation is expressed as a rating on the basis of degree of limitation. Ratings are "not limited," "somewhat limited," and "very limited."

Soil survey information, however, must be used cautiously, since the preparation of building sites may alter soil properties markedly. Upper horizons may be removed, which might either increase or decrease the depth to horizons important to behavior. The pattern of soil-water states may also be changed. Nevertheless, the soil interpretations provided in Table 4 may be useful in comparing project alternatives, planning for onsite investigations or testing, or other planning purposes. Ratings and assumptions are described below for shallow excavations and construction of small commercial buildings.

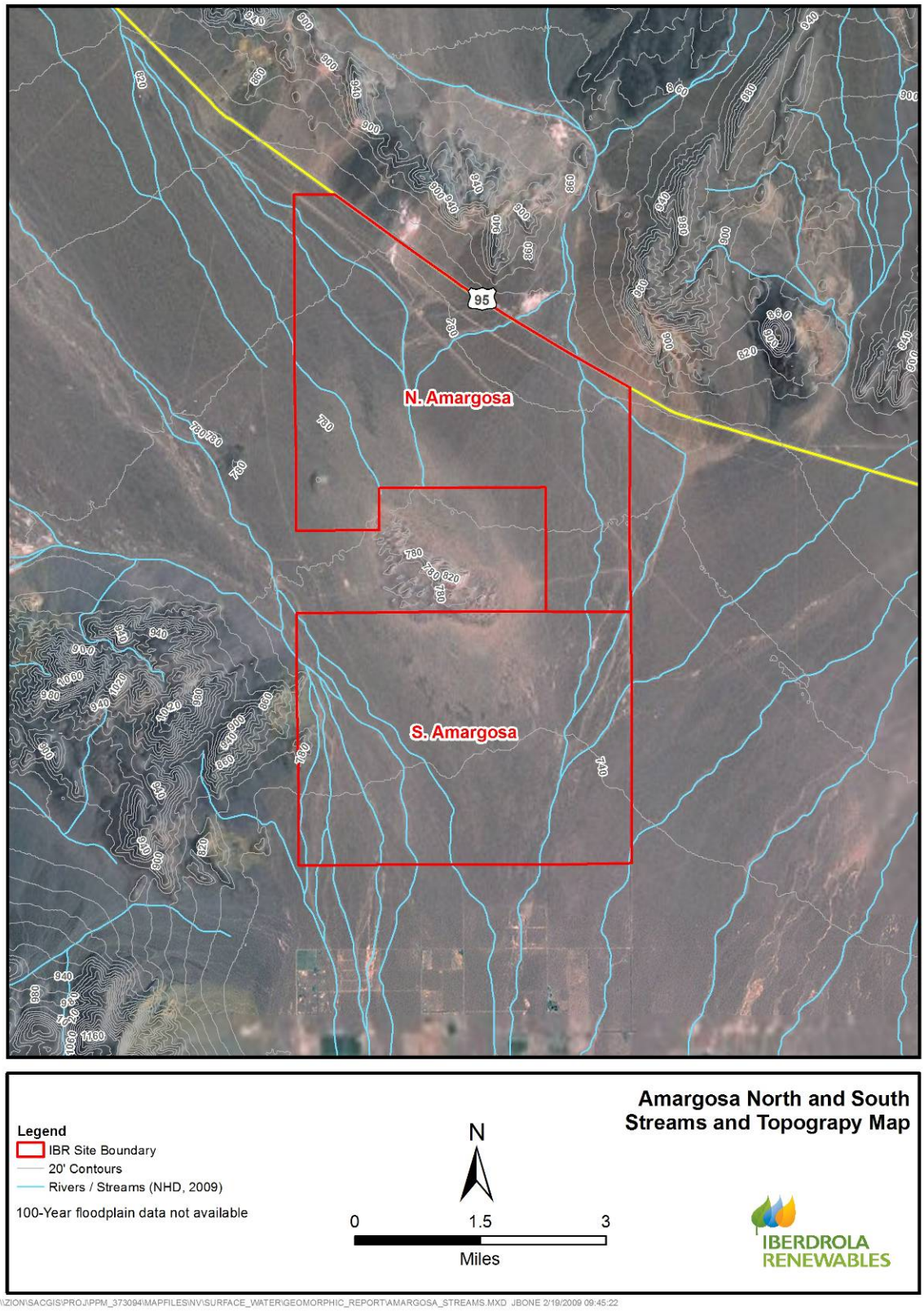
Shallow Excavations: Over 60% of the site would likely be very limited with respect to excavating shallow trenches for utilities, due to susceptibility to cutbanks caving, flooding, steep slopes, or large stone content. The remainder of the site contains soils that may be somewhat limited due to susceptibility of cutbank caving (Table 4). Ratings are based on present soil properties that influence ease of digging and resistance to sloughing. Depth to bedrock or cemented pan, hardness of bedrock or cemented pan, and amount of large stones influence ease of digging, filling and compacting. Depth to seasonal high water table and flooding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture and depth to water table influence the resistance to sloughing.

Small Commercial Buildings: About one-half of the site has soils that would have no limitations for construction of small commercial buildings. One-half of the site contains soils that may be very limited, due to flooding potential, steep slopes or large stones content. Small commercial buildings are assumed to be less than three stories without basements. The foundation is assumed to be spread footings of reinforced concrete at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. Ratings are based on present soil properties and qualities affecting the capacity of the soil to support a load without movement and those that affect excavation and construction costs. Properties and qualities that are considered in the rating include depth to hard and soft bedrock, flooding, organic matter content, content of large stones, ponding, shrink-swell potential, depth to cemented pan, subsidence, depth to saturated zone, and unstable fill.

1.2.3 Hydrology

Precipitation that occurs during mild storms is often absorbed by pervious soils, but during intense rainstorms runoff quickly fills washes in flash flood conditions and results in scour and deposition that shapes the desert landscape. In general, runoff flows south from Thirsty Canyon into the Amargosa River, flows past the Amargosa project sites, and then doubles back and terminates in the Bad Water Basin in Death Valley National Park. Locally, ephemeral washes drain the Bare and Yucca Mountain ranges across the Amargosa project sites south towards the Armargosa River (Figure 5). Runoff is collected to pass under Highway 95 at culverts.

FIGURE 5
Amargosa North and South Project Sites Surface Waters and Topography



1.2.3.1 Climate

Desert environments are characterized as regions with limited annual precipitation (typically defined as less than 10 inches of precipitation annually) and limited vegetation. The Sonoran Desert region is the hottest desert in North America. Monthly maximum, mean, and minimum temperatures and monthly average precipitation for the period of record from 1971 to 2000 was obtained from the National Oceanic and Atmospheric Administration (NOAA; Table 5). The closest cooperative weather station in operation during the period of record is located 8 miles east of the Amargosa sites in the Amargosa Desert. The average annual precipitation at the weather station is 3.92 inches per year. The annual mean monthly maximum temperature is 81.6 degrees Fahrenheit, the annual mean monthly temperature is 65 degrees Fahrenheit, and the annual mean monthly minimum temperature is 48.2 degrees Fahrenheit. Seasonally, the majority of the precipitation falls from January through March and the summer monsoons occur in August. The highest monthly temperatures occur between June and September and the coolest monthly temperatures occur from November through March.

TABLE 5
Monthly and Annual Maximum, Mean, and Minimum Temperatures and Mean Precipitation
Climatography of the United States NO. 81 1971-2000; Amargosa Farms Garey, NV NOAA COOP Station 260150

	Temperature (Degrees Fahrenheit)			Precipitation (Inches)
Month	**Maximum**	**Mean**	**Minimum**	**Mean**
January	61	46.1	31.2	0.51
February	66	50.7	35.3	0.62
March	71.4	55.6	39.8	0.64
April	79.7	62.6	45.4	0.19
May	88.6	71.3	54	0.24
June	98.1	80.6	63.1	0.07
July	103.6	86.1	68.5	0.26
August	101.8	84.6	67.4	0.39
September	94.7	77.1	59.4	0.29
October	83.8	65.9	48	0.13
November	69.4	52.9	36.3	0.27
December	61.5	45.9	30.3	0.31
Annual Mean	81.6	65	48.2	3.92

Source: National Oceanic and Atmospheric Administration, 2002

1.2.3.2 Contributing Basins

The Amargosa River watershed encompasses the project sites. The Amargosa River crosses through the South Amargosa project site and continues down the Amargosa Desert Valley

southeast until it crosses the California/Nevada state border and heads south. The river continues south cutting through the Amargosa Canyon and then double back towards the northwest and terminates in the Badwater Basin about 30 miles southwest from the project area and across the Funeral Mountains.

Three distinct basins drain onto the Amargosa North and South project sites; the Amargosa River (with a contributing area of 814 square miles), the Crater Flat basin that drains onto the site from the north (with a contributing area of 159 square miles), and a small portion of the Fortymile Wash basin that drains onto the site from the northeast (with a contributing area of 53 square miles; Figure 6). These basins all support braided ephemeral washes. Hills at the base of the Funeral Mountains encroach into the Amargosa Desert Valley and push the Amargosa River toward the center of the valley where the river is further confined by Big Dune. The Amargosa River drainage basin intersects the west and a portion of the north side of the Amargosa North and South project sites. Numerous local ephemeral washes terminate at Big Dune from the northern side of the valley. The Crater Flat basin drains the southern portion of Yucca Mountain, intersecting the Amargosa North project site after crossing Highway 95. The desert washes channels are consolidated by dykes extending out from Highway 95 to pass runoff under the highway at culverts. The small portion of Fortymile Wash that intersects the project area on the east side drains the southern extent of Yucca Mountain. The ephemeral washes from the Fortymile basin intersect the washes from the Crater Flat basin in the southeastern portion of the study area.

1.2.3.3 Regional Regression Analysis

The state of Nevada is divided into 6 regions for regional regression flood frequency analysis. The drainage basins intersecting the Amargosa North and South project sites are in Region 6 and Region 10. Both the Crater Flat and Fortymile Wash drainage areas are located in Region 10. The Amargosa River drainage basin is equally split between Region 6 and Region 10. USGS regional regression equations used for the analysis were published in USGS Fact Sheet 123-98 (USGS 1999) and are listed in Table 6. For the Amargosa River basin, discharge was computed by averaging the results using the equations for Region 6 and Region 10. The results of the flood-frequency analysis are presented in Table 7.

TABLE 6
Regional Regression Equations Used to Calculate Flood-Frequency and Magnitude for Offsite Drainages That Intersect the Project Area

Regression Equation	Estimated Average Standard Error of Regression, in Log Units	Equivalent Years of Record
Region 6 - 80 stations		
Q2 = 0	--	--
Q5 = 32AREA0.80(ELEV/1,000)-0.66	1.47	0.233
Q10 = 590AREA0.62(ELEV/1,000)-1.6	1.12	.748
Q25 = 3,200AREA0.62(ELEV/1,000)-2.1	.796	2.52
Q50 = 5,300AREA0.64(ELEV/1,000)-2.1	1.10	1.75
Q100 = 20,000AREA0.51(ELEV/1,000)-2.3	1.84	.794

TABLE 6
Regional Regression Equations Used to Calculate Flood-Frequency and Magnitude for Offsite Drainages That Intersect the Project Area

Regression Equation	Estimated Average Standard Error of Regression, in Log Units	Equivalent Years of Record
Region 10 - 104 stations		
Q2 = 12 AREA0.58	1.14	0.618
Q5 = 85 AREA0.59	.602	3.13
Q10 = 200 AREA0.62	.675	3.45
Q25 = 400 AREA0.65	.949	2.49
Q50 = 590 AREA0.67	.928	3.22
Q100 = 850 AREA0.69	1.23	2.22

Source: USGS, 1999

The results of the flood-frequency analysis are presented in Table 7. The discharge expected to occur at a frequency of once every two years is 293 cfs for the Amargosa River basin, 227 cfs for the Fortymile Wash basin, and 120 cfs for the Crater Flat basin. The discharge expected to occur at a frequency of once every hundred years is 79,665 cfs for the Amargosa River basin, 28,067 cfs for the Fortymile Wash basin, and 13,149 cfs for the Crater Flat basin. The magnitude of discharge for the Amargosa River drainage basin is likely an over-estimation. Approximately half of the watershed is located in the Amargosa Valley Desert and a significant amount of runoff likely infiltrates into the desert floor before reaching the Amargosa River. Additionally, the applicable watershed area for using the Region 6 regional regression is less than 210 square miles and the Amargosa River basin is a total of 814 square miles.

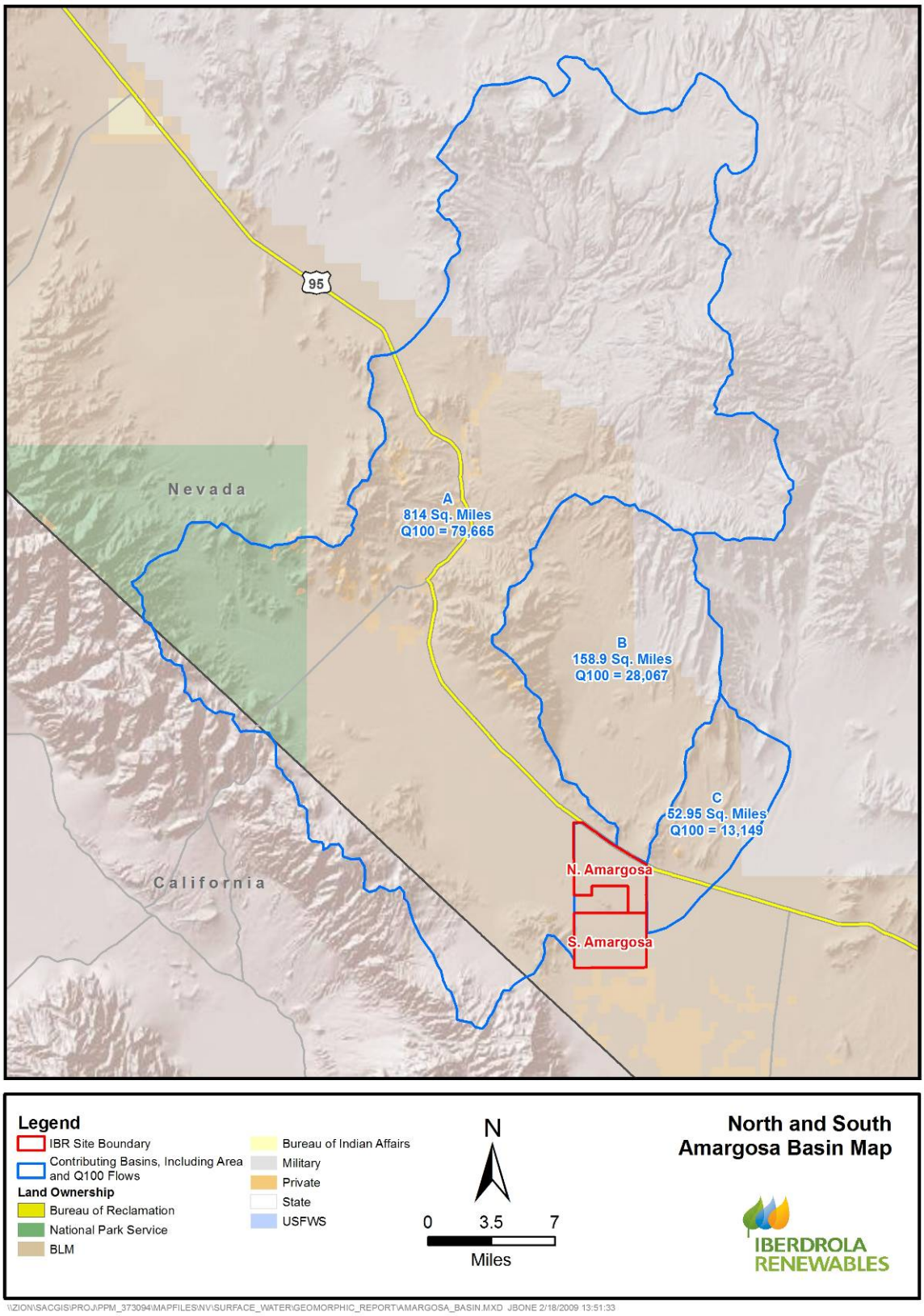
TABLE 7
Estimated Flood–Frequency and Magnitude for Drainages Intersecting the Amargosa North and South Project Sites

Sub-Basin	Sub-Basin Name	Region	Area (sq mi)	Peak Discharge (cfs)					
				Q^2	Q^5	Q^{10}	Q^{25}	Q^{50}	Q^{100}
A	Amargosa River	6 & 10	814	293	4,068	10,658	30,216	57,765	79,665
B	Fortymile Wash	10	159	227	1,691	4,632	10,784	19,482	28,067
C	Crater Flat	10	53	120	884	2,343	5,279	9,127	13,149

1.2.3.4 Areas of Inundation/Floodplain Delineation

No FEMA flood maps have been prepared for the Amargosa North and South project sites.

FIGURE 6
Amargosa North and South Project Sites Contributing Basins and Q100 Discharges



1.2.4 Geomorphic Classification

Geomorphic classification of the project site is derived from existing geologic and geomorphological studies of the area, as well as from field investigations by CH2M HILL and River Research and Design, Inc. in December 2008.

The Amargosa valley is primarily composed of alluvial fans which have eroded from the ranges to the east and west of the valley. Sediments have been transported to the project site by fluvial process associated with the Amargosa River and numerous small tributaries, as well as aeolian and hillslope (colluvial) transport processes. Alluvial and fluvial sediments were deposited during the wetter phases of interglacial periods and periods of transitional climates when infrequent but large storms eroded the hillslopes (Forester *et al.*, 1999). The intersection of these fans form a natural low point, and is where overland flow and tributaries converge to form larger, braided and dynamic ephemeral channels that are termed "desert washes".

Aeolian transport is also a very significant geomorphic process in the Amargosa Valley; immediately to the south of the project site lies the "Big Dune" sand dune formation, one of the largest dune complexes in Southeastern Nevada, which contains dunes as large as 300 feet high. The basal areas of medium to large sized shrubs which occur throughout the project site support mounds of fine sands, likely deposited as the vegetation provides "roughness" to convection currents, decreasing local velocities and causing deposition of wind-borne sediments around the vegetation.

Despite some evidence of minor incision within the larger, braided desert wash channels, the site is primarily depositional in nature.

The project sites are located in a low gradient portion of the valley floor. The Amargosa North site is dominated by two primary alluvial fan features: 1) the older and larger Amargosa River fan, which extends in a southeasterly direction across the western portion of the site, and 2) the newer and steeper Crater Flat basin fan, which drains the Yucca Mountains and extends in a southerly direction across the northern and eastern portions of the site. The average gradient across the Amargosa fan is approximately 0.5%, the average gradient across the Crater Flat basin fan is approximately 1%.

The Amargosa South site is dominated by the Amargosa River fan on the western half of the site, and the intersection of the Crater Flat fan (oriented in a southerly direction) and Fortymile Wash fan (oriented in a southwesterly direction) on the eastern half of the site. The average gradient across the Amargosa fan is approximately 0.4%, the average gradient across the Crater Flat/Fortymile Wash fan is approximately 0.35%.

Surface sediments are composed of fine sands and gravels (Figure 7), with occasional larger clasts of cobbles and boulders present, especially in the vicinity of two volcanic outcrops on the southwestern margin of the Amargosa North site.

The Big Dune complex is a much more recent, very dynamic feature which sits atop the alluvium and divides the Amargosa North and Amargosa South sites in half. Surface sediments are (not surprisingly) composed of fine to medium-grained sands (Figure 8). From visual observation of dune morphology, prevailing winds tend to blow in a southwesterly direction, creating scarps and ridges that run in an East-West orientation.

FIGURE 7
Typical surface sediments on an alluvial fan

FIGURE 8
"Big Dune" landform

The Amargosa River alluvial fan contains several larger, interconnected braided washes on the valley floor (Figure 9). These are likely active only during a rare, high intensity storm event, or during a series of events when the surficial groundwater table is saturated. The washes lie within a distinct, wide low point across the valley floor. A historic railroad grade runs parallel to the wash and in many places serves as a levee or berm, concentrating flow into a single channel for long reaches. A lack of fine materials in the channel along with the absence of hydrophilic vegetation in the vicinity of the project site implies that the channel sustains flow only during very brief periods, and that the rate of infiltration is likely to be very high in the valley; no evidence of ponding or shallow wetlands is present.

The Crater Flat fan contains a series of more well-defined, smaller to medium-sized channels that drain off of the fan in a radial pattern (Figure 10). The channels on the eastern half of the fan tend to be larger and more well-defined, and drain through the Amargosa North site into the Amargosa South site, where they confluence with channels flowing off of the Fortymile Wash fan and continue in a larger braided wash through the southern boundary of the Amargosa South site. Channels which flow off of the western half of the fan eventually flow into the Big Dune formation, and terminate at the base of the dune complex.

FIGURE 9
Main channel of the Amargosa River, at the western border of the Amargosa South project site.

FIGURE 10
One of the many small washes extending from the Crater Flat fan, on the Amargosa North project site.

The Fortymile Wash fan contains several less distinct washes that intersect the Crater Flat drainages in the southern and eastern portions of the Amargosa South site.

1.2.5 Conclusions from Hydro-Geomorphic Analyses

As pertains to the development of proposed solar facilities on the Amargosa North and South sites, the following conclusions about hydro-geomorphic conditions have the potential to affect site planning and design:

- The project site is depositional, with long term sediment transport dominated by alluvial and fluvial processes, and short-term sediment transport dominated by aeolian process.
- The development footprint on the Amargosa North site is situated in an area that is hydrologically stable (not located in an area of any major washes/channels, low gradient, not prone to inundation during large flood events). Existing washes, channels, and runoff on the site could be easily accommodated during the site design process.
- The development footprint on the Amargosa North site lies partially on the Crater Flat alluvial fan. The Crater Flat basin drains the Yucca Mountain complex, which is the location of a major US Department of Energy nuclear disposal project which is currently under construction and slated to be operational in 2012. Although it is unlikely that this project will influence hydrology or water quality on the Amargosa North site, it is a factor which should be acknowledged during the site selection process.
- The development footprint on the Amargosa South site is also situated in an area that is hydrologically stable (not located in an area of any major washes/channels, low gradient, not prone to inundation during large flood events). Existing washes, channels, and runoff on the site could be accommodated during the site design process.
- The development footprint on the Amargosa South site is on the lee side of the Big Dune formation, and within the area of influence of a high frequency of sand deposition by aoelian transport processes. This may be a factor in facilities maintenance (scouring of sensitive infrastructure by frequent sand-blasting during windstorms), and facilities upkeep (frequent deposition of sand within the development footprint).

1.3 Design Constraints and Recommendations

Design constraints and recommendations for the development of proposed solar facilities on the Amargosa North and South project sites are discussed in the following sections, and summarized on a map (Figure 11). The design constraints and recommendations are based upon analysis of relevant geophysical data (in the preceding sections), as well as from site observations by CH2M HILL and River Research and Design, Inc. staff geomorphologists in December 2008.

The Amargosa North and South project sites exhibit similar constraints – primarily wind erodibility and active washes. Of these two constraints, wind erodibility is the most critical and potentially constraining for design in both project sites.

1.3.1 Site Design Constraints

Several design constraints exist on the Amargosa North and South project sites:

1. Soils Sensitive to Wind Erosion - The major constraint for the Amargosa North and South project sites consists of a large area of extremely wind erodible soils where little cover grows due to the movement of sand during even moderate wind events. This soil area is shown as a critical soil constraint on the hydro-geomorphic design constraints and recommendations map (Figure 11). While portions of this soil group are extremely erodible, other portions of these areas do exhibit extremely serious erosion problems. This was noted on examination of the aerial photos and verified during the site visit. The areas further away from the dunes, especially to the south, appear to be less erodible, but soils analysis is recommended prior to any development activities that disturb existing vegetation on the site.

   Soils to the west that are shown as critical do not appear to exhibit the high wind erosion susceptibility noted for soils near the Big Dune. It is likely that soils near the southern boundary of Amargosa South will similarly not exhibit the highly erodible nature of the soils further north on the Amargosa South site. As a result, one of the recommended development footprints falls within the critical soil area. This is a tentative recommendation pending further soils analysis. Possible surface treatments may be required to reduce wind erosion from the site.

2. Critical Hydrology Constraints - There are several hydrologic constraints shown on the hydro-geomorphic design constraints and recommendations map (Figure 11). The Amargosa River is labeled as a critical constraint simply due to the potential for large, infrequent flood flows. This area should be avoided, as it is an area of active washes and potential flood damage.

3. Areas of Significant Hydrologic Constraints - A number of areas along the eastern boundary of the project site and to the east of the project site are labeled as significant constraints due to the presence of active washes and significant flow paths. The area delineated as an active hydrologic constraint at the northern boundary of the Amargosa North project site conveys the full flood flows from the basin to the north and should be left open to allow flow to reach the area near the northern edge of Big Dune.

   The majority of the washes on the eastern boundary of the project sites are not extremely large, but given the potential 100-year flows entering the site, a large area should be left to allow flood flows to transit the site. It may be that more detailed hydro-geomorphic analysis would result in a reduction in the peak flood estimates, reducing the flood hazard in this area. Barring these types of additional studies, a large area should be left to allow flow to move through the site. If development is determined to be necessary in these areas, diversion channels should be very wide and shallow (on the order of 100 feet for even minor channels unless the channel being rerouted is incised with defined banks, in which case even larger widths and bank protection structures may be required), otherwise significant erosion problems may be created.

1.3.2 Recommendations

Based on the constraints described above and the hydro-geomorphic analyses of the project sites presented in this document, our recommendations for the Amargosa North and South project sites are as follows (also see Figure 11):

Amargosa North

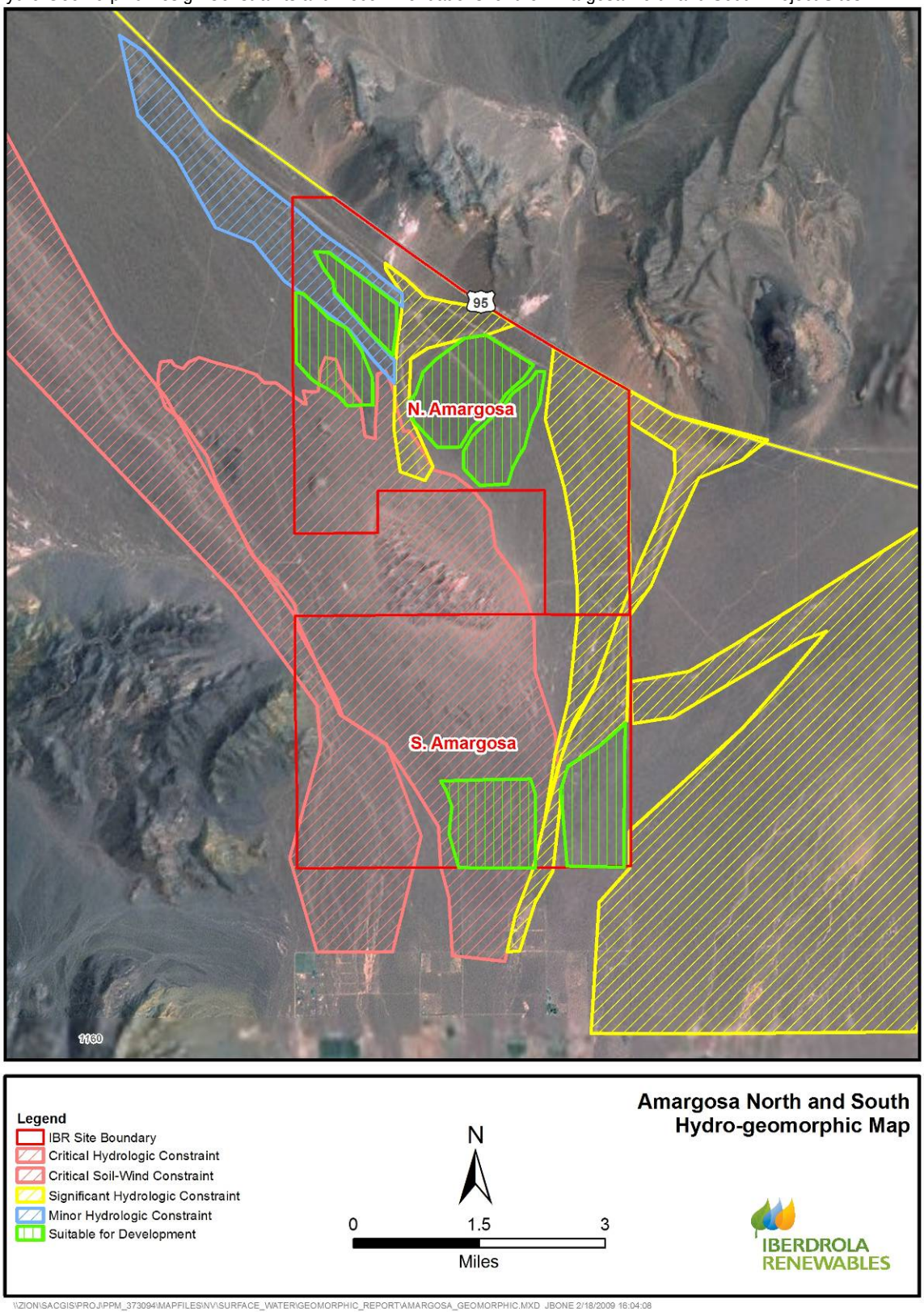
1. Development should avoid the southwestern quadrant of the project site due to highly erodible soils that could damage equipment as well as drift into dunes or other depositional features.
2. Washes in the northwest corner of the project site are not large but consist of very wide distributed flow paths. These can be modified for site development, but care should be taken to understand the nature of the washes and sediment transport processes occurring in the area to reduce the likelihood of flooding or erosion.
3. Washes entering from the northern basins in the central portion of the project site are geomorphically active and ecologically critical, and should be allowed to flow without constraint into the area north of the dune complex to sustain existing flora and fauna in the area. Rerouting this flow could cause environmental impacts that may result in unacceptable impacts on species of concern in the area.
4. Washes in the eastern portion of the project site can be rerouted if necessary, but care should be taken to determine actual flow rates and amounts prior to design and construction. It is recommended that unless this area is determined to be a critical location for development, it should be avoided if possible.

Amargosa South

1. Development should avoid the southwestern half of the project site due to flood hazard; the area is a major flow corridor for the Amargosa River.
2. Development should avoid the northern half of the project site near the Big Dune due to extremely erodible soils and the potential for damage to equipment from abrasion or deposition during wind events. It was noted that even low velocity winds produce movement of sand and dust near the dunes.
3. Development should avoid the active flow corridor near the eastern boundary of the project site to the extent possible. This corridor receives flow not only from the two identified basins (Q100= 13,149 cfs + 28,000 cfs), but also from a portion of an additional basin to the east of the site that was not delineated in this study. This basin is estimated to be of the same magnitude as basin B (28,000 cfs).
4. Estimated flows for the various basins appear to be high based on the geomorphic record observed on the ground. It is anticipated that further, more detailed hydrologic analysis would significantly reduce these flow estimates.

Based on these analyses, portions of the Amargosa North and South project sites are well suited for solar development, although the desired large square blocks of land are not available for concentrating solar technology. Given the site constraints, photovoltaic solar is likely more suited to the Amargosa North and South project sites.

FIGURE 11
Hydro-Geomorphic Design Constraints and Recommendations for the Amargosa North and South Project Sites



1.4 References

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Forester, R.M., J.P. Bradbury, C. Carter, A.B. Elvidge-Tuma, M.L. Hemphill, S.C. Lundstrom, S.A. Mahan, B.D. Marshall, L.A. Neymark, J.B. Paces, S.E. Sharpe, J.F. Whelan, and P.E. Wigand. 1999. *The Climatic and Hydrologic History of Southern Nevada During the Late Quaternary*: U.S. Geological Survey Open-File Report 98-635. Prepared in cooperation with the Nevada Operations Office U.S. Department of Energy (Interagency Agreement DE-AI08-97NV12033). Denver, Colorado.

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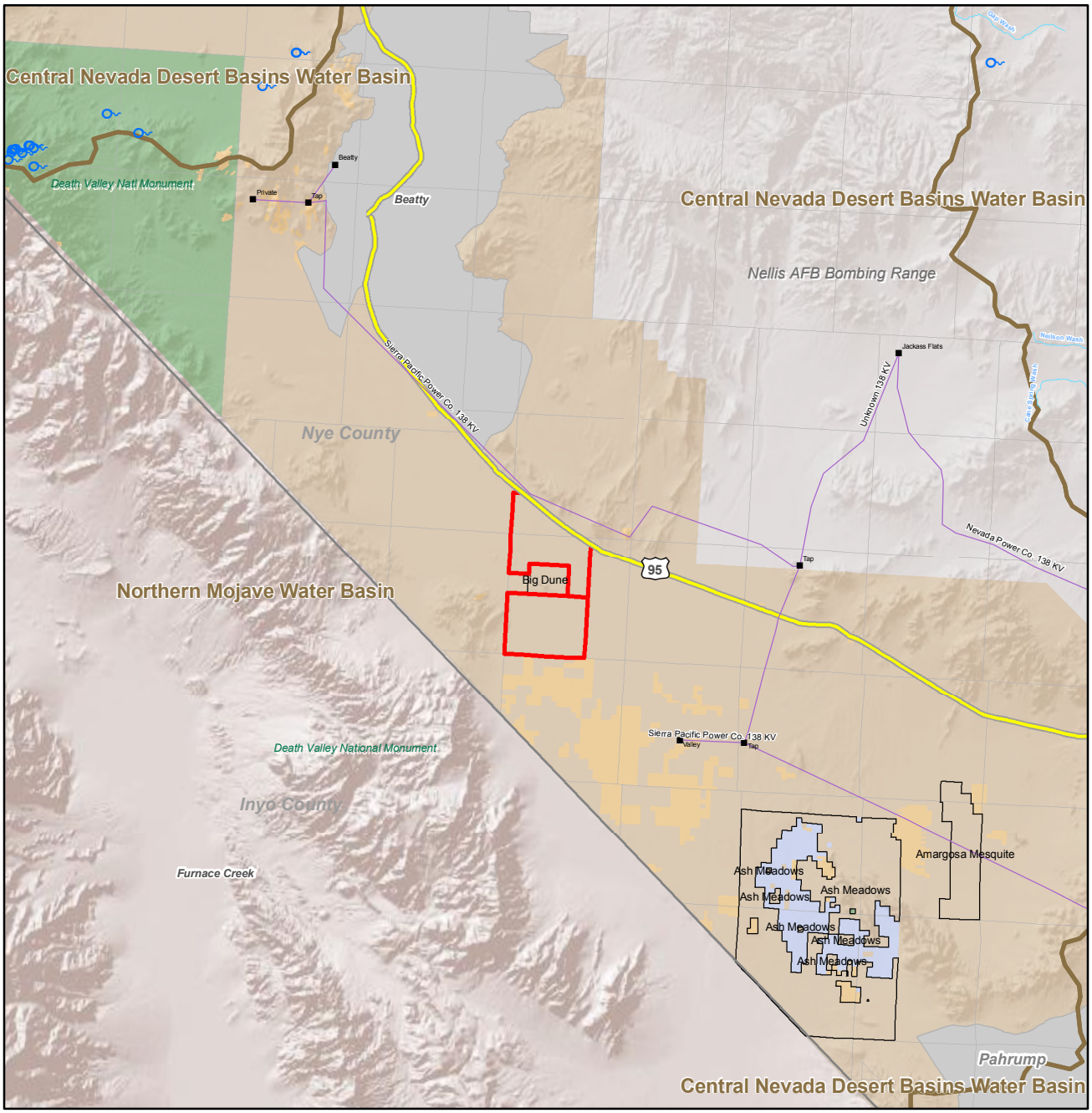
Appendix M Decommissioning and Site Restoration Plan

PSI will prepare a Decommissioning and Site Restoration Plan to ensure that the facility and its related structures are properly removed at the end of their useful life and that the surrounding soil and vegetation is restored to a usable and non-hazardous condition. The plan will address facility dismantling and removal and habitat restoration and noxious weed and invasive species control. It will also address measures to minimize or mitigate negative impacts on vulnerable plants and wildlife during decommissioning. It will include provisions for monitoring, education, weed identification and treatment methods.

Appendix N Water Supply Report

Attached is the evaluation of potential water supplies for the ASP that was conducted by CH2M Hill in January 2009.

The Amargosa sites (Amargosa North and Amargosa South) are located within the Amargosa Desert groundwater basin. Groundwater appears to be the primary source of water for the basin. Agriculture is the primary water usage in the basin. Irrigated agricultural land accounts for approximately 3,000 acres of the basin, with agricultural groundwater pumping reported to be about 14,000 afy, and total pumping in the basin reported to be about 16,000 afy. The remaining 2,000 afy of pumpage is primarily for commercial use. Available groundwater level data suggest that groundwater levels have declined on the order of 20 feet since the early 1980's in some parts of the basin, whereas groundwater levels have remained stable, and even risen in other parts of the basin. Recent water level data suggest a cone of depression has formed around the agricultural pumping centers. The amount of water in storage in the basin is currently unknown. The State Engineer recently (November, 2008) issued an order prohibiting additional groundwater pumpage within 25 miles of Devil's Hole. All of the Amargosa South site, and most of the Amargosa North site, is located within this distance. Therefore, it is likely that any water supply for the solar project would have to come from a groundwater transfer from existing agriculture. Existing agricultural lands exist between 4 and 12 miles from the center of the Amargosa South site, and between 8 and 16 miles from the center of the Amargosa North site. The water transfer could be obtained by using existing wells and conveying the water to the sites through a pipeline. Alternatively, it is possible that new wells could be installed on or closer to the site, and agricultural land could be fallowed to offset the new water use. However, feasibility of producing water closer to the site is currently unknown both from a hydrogeologic perspective (is there an aquifer on-site and can it produce water?) as well as a legal perspective (is "offsetting" water use permitted under the State Engineer's order?).



LEGEND

IBERDROLA RENEWABLES Sites

Substations

Transmission Lines
- 12.50 KV - 69.0 KV
- 69.01 KV - 115.00 KV
- 115.01 KV - 230.00 KV
- 230.01 KV - 500.00 KV
- > 500 KV

BLM ACEC

BLM Surface Management
- Bureau of Reclamation
- National Park Service
- BLM
- Bureau of Indian Affairs
- Military
- Private
- State
- USFWS
- Parks (Local)
- Wilderness Areas

Water Sources
- Lake
- Stream
- Springs
- Water Basins
- Counties
- City Outlines

Notes:
1. Site is located in BLM Las Vegas Field Office.

IBERDROLA RENEWABLES

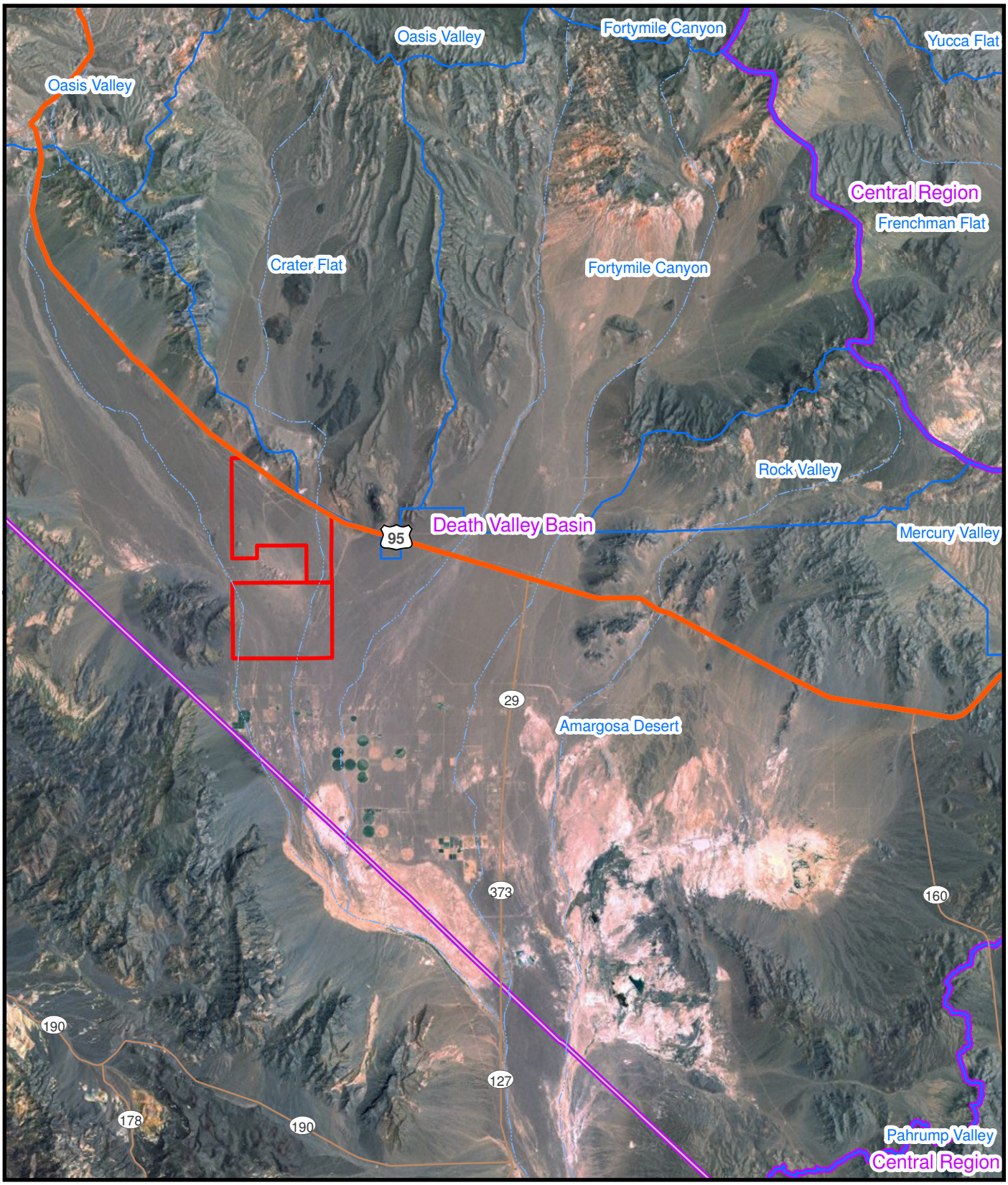
N

0 4 8
Miles

VICINITY MAP

FIGURE 1
Amargosa N and S Regional Vicinity Map
IBERDROLA RENEWABLES Solar Acquisition Project
Amargosa N and S Sites

CH2MHILL



Legend

- all_IBR_sites
- NV State Engineer Basins
- NV Hydrographic Region

N

0 2 4 6 8

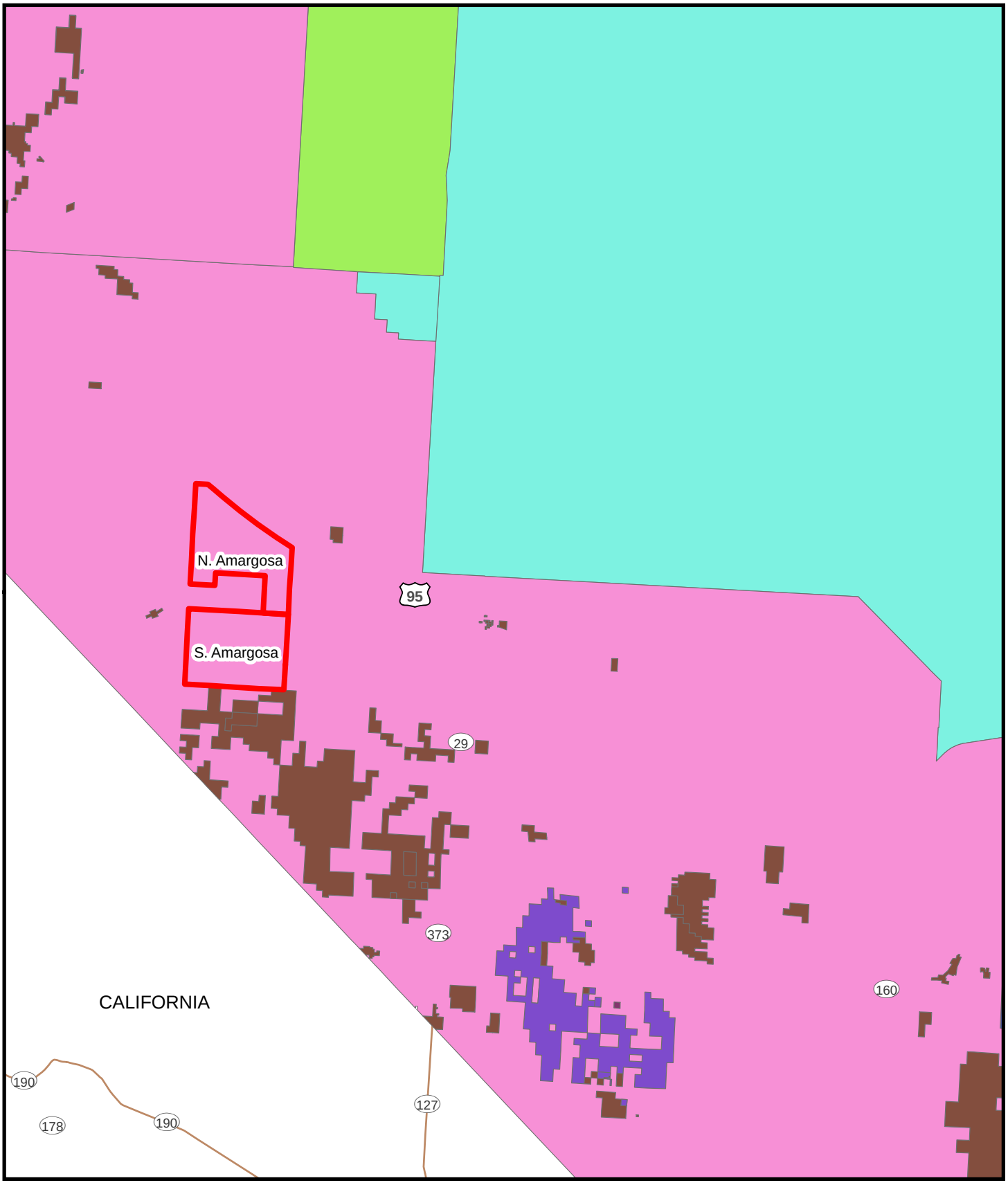
Miles

Figure X

Area Map

Amargosa Site

IBERDROLA RENEWABLES



Legend

- IBERDROLA RENEWABLES Sites
- Limited Access
- Highway
- Major Road

Land Owner

- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Reclamation
- Department of Defense
- Department of Energy
- Fish and Wildlife Service
- Forest Service
- National Park Service
- Nevada State
- Private
- Regional Park
- Water

N

0 2 4 6 8

Miles

Figure X
Land Use
Amargosa Site

IBERDROLA RENEWABLES

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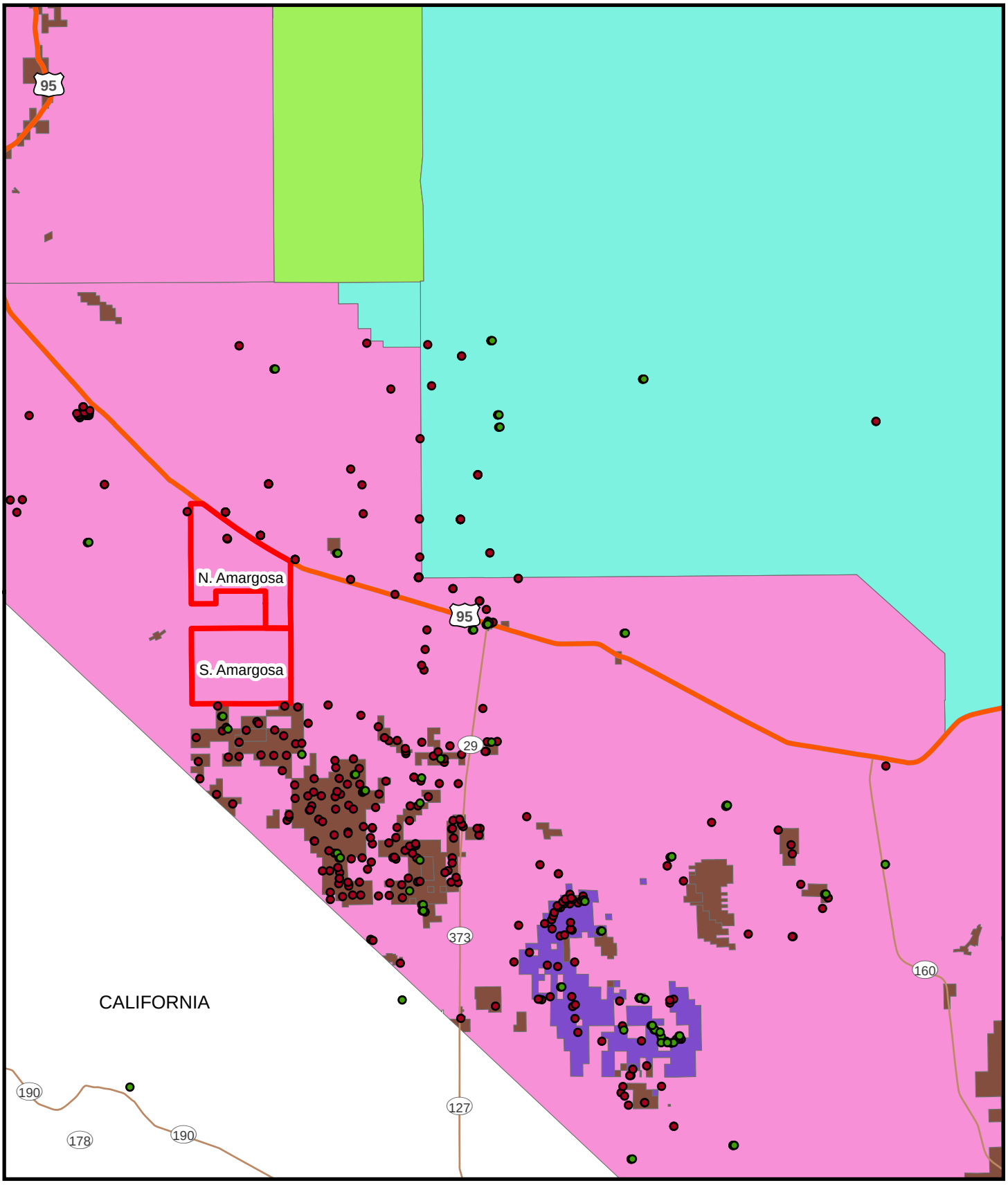
CH2MHILL



Legend

- NV_Wells
- USGS_Wells
- IBERDROLA RENEWABLES Sites
- Limited Access
- Highway
- Major Road

landowner_NV

- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Reclamation
- Department of Defense
- Department of Energy
- Fish and Wildlife Service
- Forest Service
- National Park Service
- Nevada State
- Private
- Regional Park
- Water

N

0 2 4 6 8

Miles

Figure X
Existing Wells
Amargosa Site

IBERDROLA RENEWABLES

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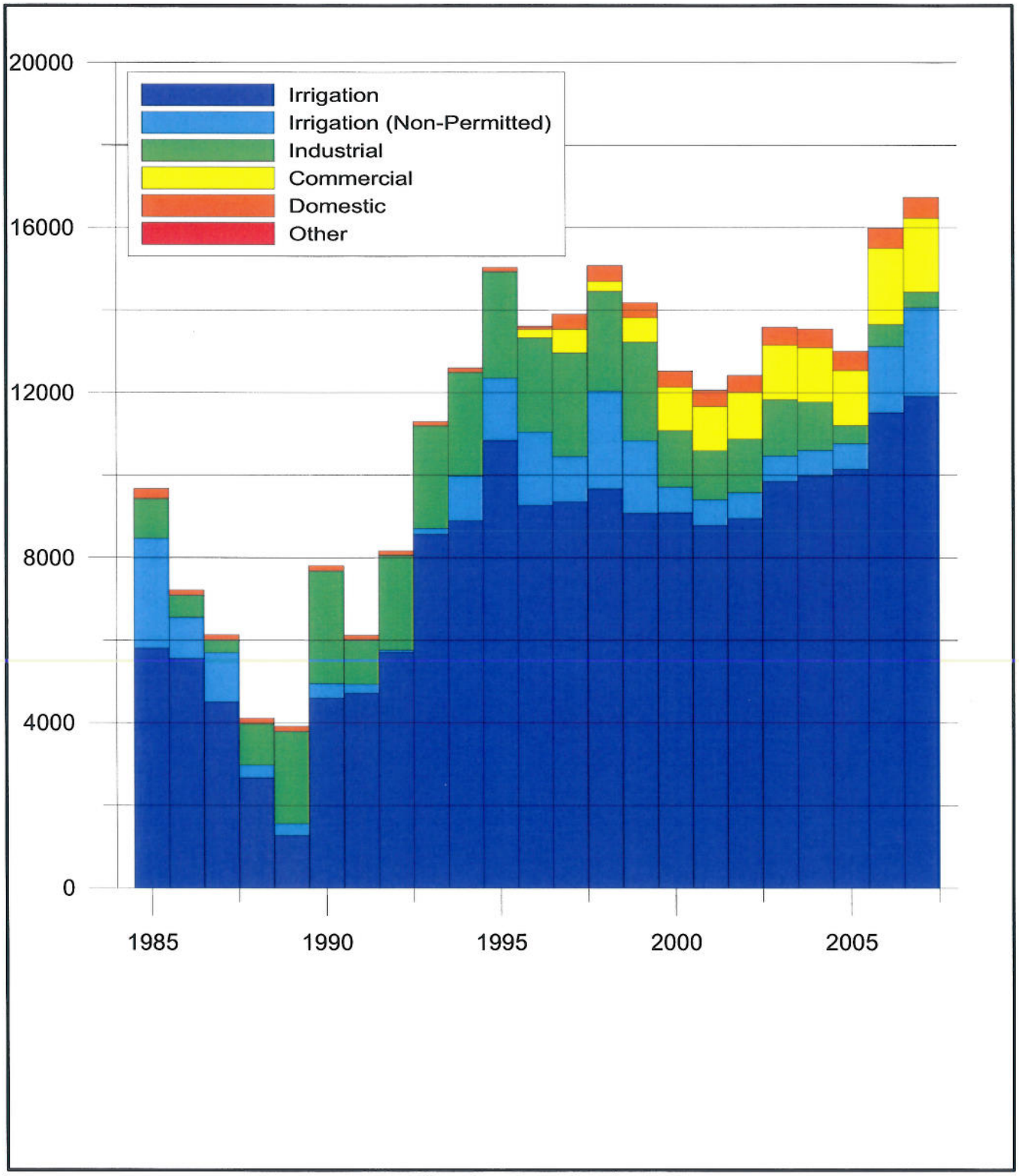
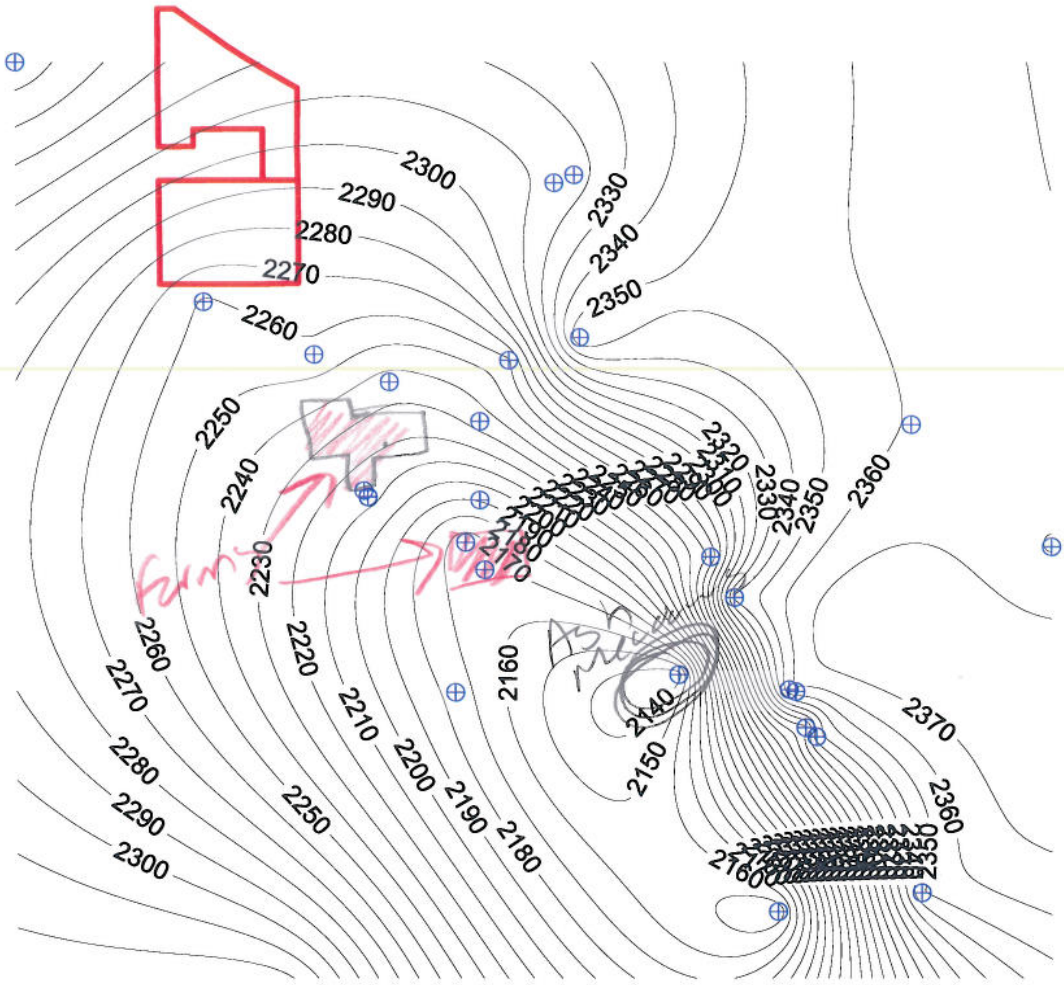
CH2MHILL



AFY

AMARGOSA PUMPING SUMMARY

IBERDROLA RENEWABLES



Note: The data used to create these groundwater contours are from the URL http://webmap.water.nv.gov/index.cfm.

Figure X
2007 Average Water Levels
Amargosa Site

IBERDROLA RENEWABLES

Amargosa_WellLocations.srf

IN THE OFFICE OF THE STATE ENGINEER

1197

OF THE STATE OF NEVADA

ORDER

WHEREAS, NRS § 534.120 provides that within an area that has been designated by the State Engineer where, in his judgment, the ground-water basin is being depleted, the State Engineer in his administrative capacity is empowered to make such rules, regulations and orders as are deemed essential for the welfare of the area involved;

WHEREAS, the State Engineer designated the Amargosa Desert Hydrographic Basin as provided under the provisions of NRS § 534.030 by Order No. 724, dated May 14, 1979;

WHEREAS, an administrative hearing was held on September 5-6, 2007,[1] where evidence and testimony was received regarding the potential impacts of regional pumping on existing rights, particularly the federally reserved water right at Devils Hole.[2] The federally reserved water right specifies a threshold water level at Devils Hole. Information provided at the hearing show the water level in Devils Hole is only 0.6 to 0.7 feet above the threshold level mandated by the U.S. District Court;[3]

WHEREAS, the State Engineer finds that conditions warrant the curtailment of future appropriations of underground water and additional regulation of change applications within a portion of the Amargosa Desert Hydrographic Basin;

WHEREAS, Devils Hole is located within the Amargosa Desert Hydrographic Basin and is further described as being within the SW¼ SW¼ SE¼ of Section 36, T.17S., R.50E., M.D.B.&M. within a detached unit of the Death Valley National Park and the boundaries of the Ash Meadows Wildlife Refuge, Nye County, Nevada;

NOW THEREFORE, it is ordered that, with the following exceptions, any applications to appropriate additional underground water and any application to change the point of diversion of an existing ground-water right to a point of diversion closer to Devils Hole, described as being within a 25 mile radius from Devils Hole within the Amargosa Desert Hydrographic Basin, will be denied;

---

[1] Transcript and Exhibits, public administrative hearing September 5-6, 2007, official records of the Office of the State Engineer.

[2] *Cappaert v. United States*, 426 U.S. 128, (1976).

[3] Note, The District Court's decision was upheld by the Court of Appeals and the Supreme Court of the United States. See, *United States v. Cappaert*, 375 F. Supp. 456 (D. Nev. 1974); *Cappaert v. United States*, 426 U.S. 128, 141 (1976); *United States v. Cappaert*, 455 F. Supp. 81 (D. Nev. 1978).

EXCEPTIONS:

1. Any application within the described area that seeks to change an existing point of diversion closer to Devils Hole but remains within its existing place of use and is no more than ½ mile from its original point of diversion.

2. Those applications filed which seek to appropriate 2.0 acre-feet per year or less, may be considered and shall be processed subject to NRS 533 and 534.

3. For projects that require changes of multiple existing rights, the State Engineer may compare the net impact to Devils Hole of the proposed changes to the impacts to Devils Hole of the base rights. If the net impact of the proposed changes is the same or less than the base right impacts, as determined by the State Engineer, such change applications may be considered and shall be processed subject to NRS 533 and 534. In no such case shall new points of diversion be allowed within ten (10) miles of Devils Hole.

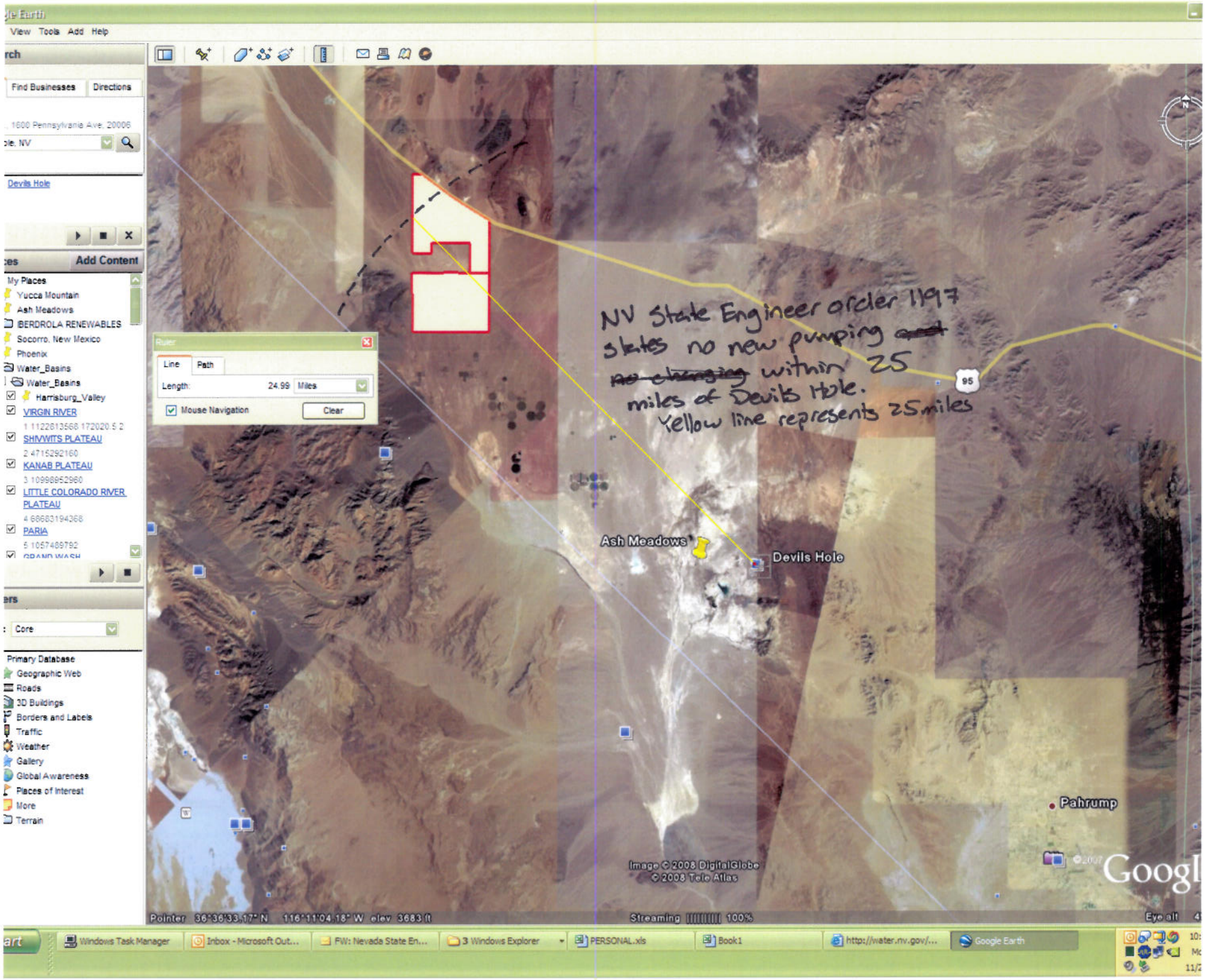
4. Those applications for environmental permits filed pursuant to NRS 533.437 to 533.4377, inclusive.

5. Those applications filed pursuant to NRS 533.371.

TRACY TAYLOR, P.E.
State Engineer

Dated at Carson City, Nevada this

04th day of November, 2008.


View Tools Add Help
Find Businesses
Directions
Devils Hole
Add Content
My Places
Yucca Mountain
Ash Meadows
IBERDROLA RENEWABLES
Socorro, New Mexico
Phoenix
Water_Basins
Harrisburg_Valley
VIRGIN RIVER
SHIVWITS PLATEAU
KANAB PLATEAU
LITTLE COLORADO RIVER PLATEAU
PARIA
Core
Primary Database
Geographic Web
Roads
3D Buildings
Borders and Labels
Traffic
Weather
Gallery
Global Awareness
Places of Interest
More
Terrain
Ruler
Line
Path
Length: 24.99 Miles
Mouse Navigation
Clear
NV State Engineer order 1197
states no new pumping
within 25
miles of Devils Hole.
Yellow line represents 25 miles
95
Ash Meadows
Devils Hole
Pahrump
Image © 2008 DigitalGlobe
© 2008 Tele Atlas
Pointer 36°36'33.17" N 116°11'04.18" W elev 3683 ft
Streaming 100%
Windows Task Manager
Inbox - Microsoft Out...
FW: Nevada State En...
3 Windows Explorer
PERSONAL.xls
Book1
http://water.nv.gov/...
Google Earth

Appendix O Contacts

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