Plan of Development

Esmeralda Solar Project

Prepared for

Bureau of Land Management
Battle Mountain District Office

Prepared by

US Solar Assets, LLC

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SECTION 1

Project Description

1.1 Introduction

1.1.1 Type of Facility, Planned Uses, Generation Output

US Solar Assets, LLC ("The Applicant") proposes to construct, own, and operate the Esmeralda Solar Project ("Project"), consisting of up to a nominal 650-megawatt (MW) alternating current (AC) solar photovoltaic and up to 650 MW storage (PVS) power generating facility with on an application area of approximately 8,702 acres of Bureau of Land Management (BLM) administered land located in Esmeralda County, Nevada. The power produced by the Project would be conveyed to the power grid via a generation-tie transmission line (gen-tie).

Average annual energy production from a 650 MW Project equates to the annual daytime electricity needs of approximately 155,777 local households. Solar electric power is produced during daylight hours when electricity demand is highest while the storage device allows the power to shift with demand. The Project would generate greenhouse gas-free electricity that will offset approximately 586,562 local metric tons of carbon dioxide and other emissions that would result from producing an equivalent amount of electricity from fossil fuel-fired electric generators. This is equivalent to removing more than approximately 270,245 cars off the road.

This Plan of Development (POD) is being submitted to the BLM's Battle Mountain District Office, Tonopah Field Office in connection with a SF 299 right-of-way (ROW) application for the development of a commercial solar PV generating station, with a combined generation output rating of approximately 650 MW. This POD describes the design, location, and proposed permitting and construction schedule for the Project. It has been prepared in accordance with the December 19, 2012 Solar Energy Plan of Development Outline issued by the BLM (BLM 2011a).

The Project area is located within BLM-identified variance areas. In accordance with the Solar Energy Programmatic Environmental Impact Statement (Solar PEIS) Record of Decision (ROD) (BLM 2012b), the BLM will consider ROW applications for utility-scale solar energy development in variance areas on a case-by-case basis based on environmental considerations; coordination with appropriate Federal, State, and local agencies and tribes; and public outreach. This evaluation is referred to as the variance process.

The Project will be constructed using photovoltaic (PV) solar modules, or an alternative photovoltaic module, mounted on single-axis, horizontal tracker structures. The mounting system for the modules will be supported by steel posts driven into the ground. Based on the general soil and drainage characteristics of the surrounding area, preliminary estimates are that the posts will be driven up to 13 feet for tracker structures. Steel table frames (tabletops) then will be bolted to the tracker structures and the modules mechanically fastened to the tables. On the single-axis, horizontal trackers, the PV modules are mounted horizontally (not tilted to the south). The tracking units are arranged into north to south-oriented rows and are powered by a drive motor to track the east-west

path of the sun on a single axis throughout the day. The tracking systems will be bolted onto posts. In the event that the results of detailed geotechnical investigations indicate driven steel posts are not an optimal foundation, other embedded foundation designs including concrete footings may be utilized. The storage facility will be housed in either self-contained modular shipping containers or rows of battery packs depending on selected supplier technologies.

Table 1-1 is a general summary of PV technology for the Project.

TABLE 1-1
PV Technology

	Horizontal Tracker
Mounting Direction	Horizontal
Degrees from Horizontal (ground surface)	0°
Arrangement of Rows	North to South
Drive motor	Yes
Tracks Movement of Sun	Yes
Foundation	Steel posts or embedded pier foundations (concrete footings may be used where dictated by subsurface soil conditions)

1.1.2 Applicant's Schedule for the Project

The BLM will be the lead Federal agency for approving the Project and responsible for right-of-way (ROW) grant authorization for the use of BLM-administered lands for Project construction, operation and maintenance, and decommissioning. The decision regarding the issuance of the ROW grant would be based in part on an evaluation of the Project's potential environmental effects through the requirements of the National Environmental Policy Act (NEPA) and the Federal Land Policy and Management Act of 1976 (FLPMA). Utility-scale solar energy development projects in variance areas must comply with NEPA and other applicable laws, regulations, and policies. The NEPA process is expected to involve the preparation of an Environmental Impact Statement (EIS) detailing the Project's expected environmental impacts, alternatives to the proposed action, and mitigation measures that would avoid, minimize, or offset identified adverse impacts. The NEPA process will commence once the BLM has deemed the POD complete, issued a Notice of Intent (NOI) to prepare an EIS, and selected a consultant to prepare the EIS. It is estimated that it will take up to 24 months from the formal initiation of the NEPA process to receive the Project Record of Decision (ROD) and associated ROW grant.

The Applicant recognizes the importance of timely and clear communication with involved public agencies and community stakeholders. Further, as discussed above, because the Project is located within a BLM-identified variance area there are required coordination protocols with appropriate Federal, State, and local agencies and tribes and public outreach. The Applicant will initiate discussions and consultation processes with other involved Federal, State, and local permitting agencies in a timely manner as Project development proceeds. These include the U.S. Fish and Wildlife Service (USFWS), the U.S. Army Corps of Engineers (USACE), the Nevada State Historic Preservation Office (SHPO), and other agencies with potential jurisdiction over the Project.

The construction of the Project would begin once all applicable approvals and permits have been obtained, the necessary transmission upgrades are in place, and a Power Purchase Agreement has been finalized. It is expected to take up to 36 months from the commencement of the construction process to complete the Project. The Applicant's current expectation is that Project construction would begin in January 2024 and be completed in December 2026. Once construction is completed, the Project would be in operation for at least 25 years with the possibility of a subsequent repowering for additional years of operation.

Project development will include both permitting and construction, as shown in Table 1-2.

TABLE 1-2
Project Schedule

Activity	Duration	Estimated Dates
Prepare required NEPA documents	24 months	March 2021 to March 2023
Required Federal approvals	—	June 2023
Pre-construction biological clearances	3 months	October 2023 to December 2023
Project construction	36 months	January 2024 to December 2026
Total elapsed time	63 months	

1.2 Proponent's Purpose and Need for the Project

1.2.1 Need for Renewable Energy

The United States has a greater solar energy resource potential than any other industrialized nation. The multiple benefits associated with developing this resource have been recognized repeatedly by both federal and state policy-makers. Development of solar resources reduces reliance on foreign sources of fuel, promotes national security, diversifies energy portfolios and contributes to the reduction of greenhouse gas emissions. The demand for power continues to grow in the Western United States. As older technology fossil-fuel plants reach the end of their useful lives, there is a need to replace them with clean, reliable resources. Recognizing this need, many Western states, including Nevada, have enacted legislation to encourage or mandate the development of renewable generation.

Nevada's Renewable Portfolio Standard (RPS) requires that 50 percent of all electricity generated in Nevada be derived from renewable sources by 2030. State government agencies have been directed to take all appropriate actions to implement this target in all regulatory proceedings, including siting, permitting, and procurement for renewable energy power plants and transmission lines. The RPS has created a competitive market for contracts to sell renewable energy, with success determined on the basis of "least cost, best fit" criteria.

In 2013, Nevada passed legislation requiring utilities to phase out their use of coal-fired generation and partially replace that generation with renewable energy, as well as legislation that amended the existing RPS laws, resulting in requirements for utilities to increase their use of renewable energy (SB 123, SB 252). In order to achieve these goals, it is necessary to build new renewable energy facilities, including substantial solar energy

facilities such as the Project. The Applicant believes that the Project will generate electricity that is cost competitive with electricity from other types of renewable projects.

The federal government has enacted legislation strongly encouraging the development of renewable energy. As part of an overall strategy to develop a diverse portfolio of domestic energy supplies for our future, the National Energy Policy of 2001 and the Energy Policy Act of 2005 (Public Law 109-58, August 8, 2005) encourage the development of renewable energy resources, which includes solar energy. Section 211 of the Energy Policy Act of 2005 encourages the approval of at least 10,000 MW of non-hydropower renewable energy production on the public lands within the next 10 years. In early 2009, Secretary of the Interior Salazar issued Orders 3283 and 3285, making the production, development, and delivery of renewable energy top priorities for the Department of the Interior. In 2015, the Omnibus Appropriations Act, included a multi-year extension of the 30% Investment Tax Credit for solar systems for residential and commercial projects completed by the end of 2023. The existence of the ITC provides market certainty for companies to develop long-term investments that drive competition and technological innovation, which in turn, lowers costs for consumers.

1.2.2 Project Purpose and Need

The fundamental purpose of the Project is to construct a clean, renewable source of solar electricity that helps meet Nevada's growing demand for power and helps fulfill national and state renewable energy and greenhouse gas emission goals. Solar energy provides a sustainable, renewable source of power that helps reduce fossil fuel dependence and greenhouse gas emissions. Considering the entire process, from raw material sourcing through end-of-life-cycle collection and recycling, the Project's 650 MW generating capacity will produce a small fraction of the greenhouse gas emissions of a similar capacity fossil fuel plant.

Specific Project objectives are:

- Establish a solar PV power-generating facility that is of sufficient size and configuration to produce at least 650 (MW-ac) of electricity in order to assist the State of Nevada in achieving its RPS by providing a significant new source of renewable energy.
- Utilize up to 650 MW of storage capacity to shift power generation to provide resource adequacy to grid during high demand scenarios.
- Produce and transmit electricity at a competitive cost.
- Locate the facility in the rural part of Esmeralda County in proximity to an available connection to the existing electrical distribution infrastructure.
- Minimize environmental effects by:
    - Using existing electrical distribution facilities, rights-of-way, roads and other existing infrastructure where practicable;
    - Minimizing water use during operation; and
    - Reducing greenhouse gas emissions.
- Use solar technology that is available, proven, efficient, and easily maintained, recyclable, and environmentally sound.

1.2.3 Power Market and Project Benefits

The Project will interconnect to NV Energy's transmission system via an approximately 0.4- mile 230 kilovolt (kV) gen-tie line. The tie in point will be along the proposed Greenlink West project, using the shortest path possible to interconnect to the adjacent substation. The interconnection will allow NV Energy to purchase renewable energy generated by the Project under a Power Purchase Agreement (PPA).

The Project is well suited to arid environments because of the technology's low water consumption. This is a key consideration in Southern Nevada and the Western U.S., as the population grows and water supplies become more constrained. PV solar technology, which converts sunlight directly into electrical energy, entails no thermal process, and therefore does not require process or cooling water to produce electricity. Water consumption during operations will consist exclusively of dust control, panel washing and domestic use for on-site personnel and is between 95% and 99% less that of concentrating solar projects that employ conventional steam turbines to generate electricity.

The Project also will create family-wage jobs for Southern Nevada. The Southern Nevada economy has been adversely affected by the turndown in the economy and, in particular, by the loss of construction jobs. The Project is anticipated to create an average of 500 – 600 construction jobs with a peak not anticipated to exceed 1,300 jobs at any given time and create up to 13 long-term full-time-equivalent (FTE) operational jobs. These jobs will in turn support many other jobs in the Southern Nevada economy.

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SECTION 2

Right-of-Way Location

2.1.1 Project Location, Land Ownership, and Jurisdiction

The Project is located in Esmeralda County, Nevada approximately 173 miles northwest of the City of Las Vegas (Figure 1-1). NV-265 runs adjacent to the Project site from south to north along the eastern boundary of the project site and the unincorporated community of Silver Peak, Nevada is located approximately 12 miles southeast of the Project site. U.S. Route 95 (Veteran's Memorial Highway) forms the northern boundary of the project site. NV Energy's Greenlink West project includes plans to site the Esmeralda substation immediately east of the southeastern portion of the project site, and to be completed in 2026. The exact location of the substation is to be determined.

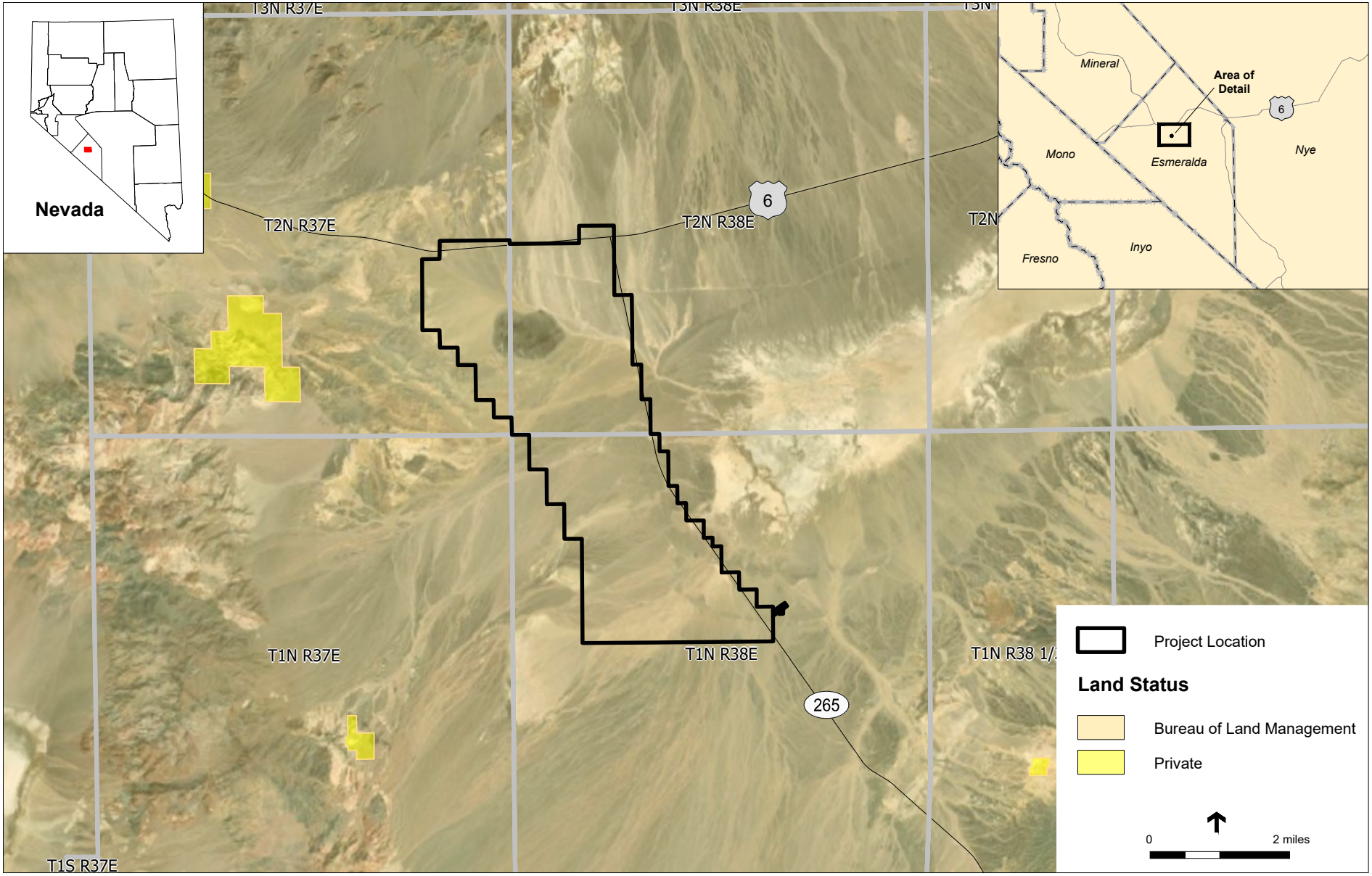
The Project site is located in an unincorporated portion of Esmeralda County. All lands for new facilities are federal lands administered by the BLM. To provide a sufficiently large area to evaluate a reasonable range of alternatives for solar facility siting, the Applicant has established an Application area of approximately 8,702 acres of BLM-administered lands (Figure 1-1). The proposed Solar facility will be located on approximately 8,683 acres of this total area (Figure 1-2). Additionally, among the 8,702-acre project site that is proposed on BLM land, the gen-tie line will comprise 19 acres, 5 acres of which will be for temporary use (during construction).

2.1.2 Legal Land Description

The Project site is located in T1N, R38E, T1N, R38 1/2E, T2N, R38E, T2N, R38 1/2E, T2N, R39E Mount Diablo Base and Meridian. The township/range and section information for the primary components of the Project is shown in Table 2-1. A full legal description is provided in Appendix A, and title plats for the project site are provided in Appendix B.

TABLE 2-1
Township/Range and Section Information

Facility	Township/Range	Section
Solar Field and Ancillary Facilities	1N/38E	1, 2, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 20, 21, 22, 23, 26, 27, 28, 33, 34, 35
	1N/38 1/2E	5, 6, 7
	2N/38E	32, 33
	2N/38 1/2E	28, 29, 31, 32, 33
	2N/39E	17, 19, 20, 29, 30, 31
Project Access	1N/38E	9, 15
500kV Transmission Line	1N/38E	15
O&M Area	1N/38E	15
Onsite Substation	1N/38E	15



Esmeralda

Figure 1-1

Project Location Map

LEEWARD renewable energy

Preliminary
Subject to Change

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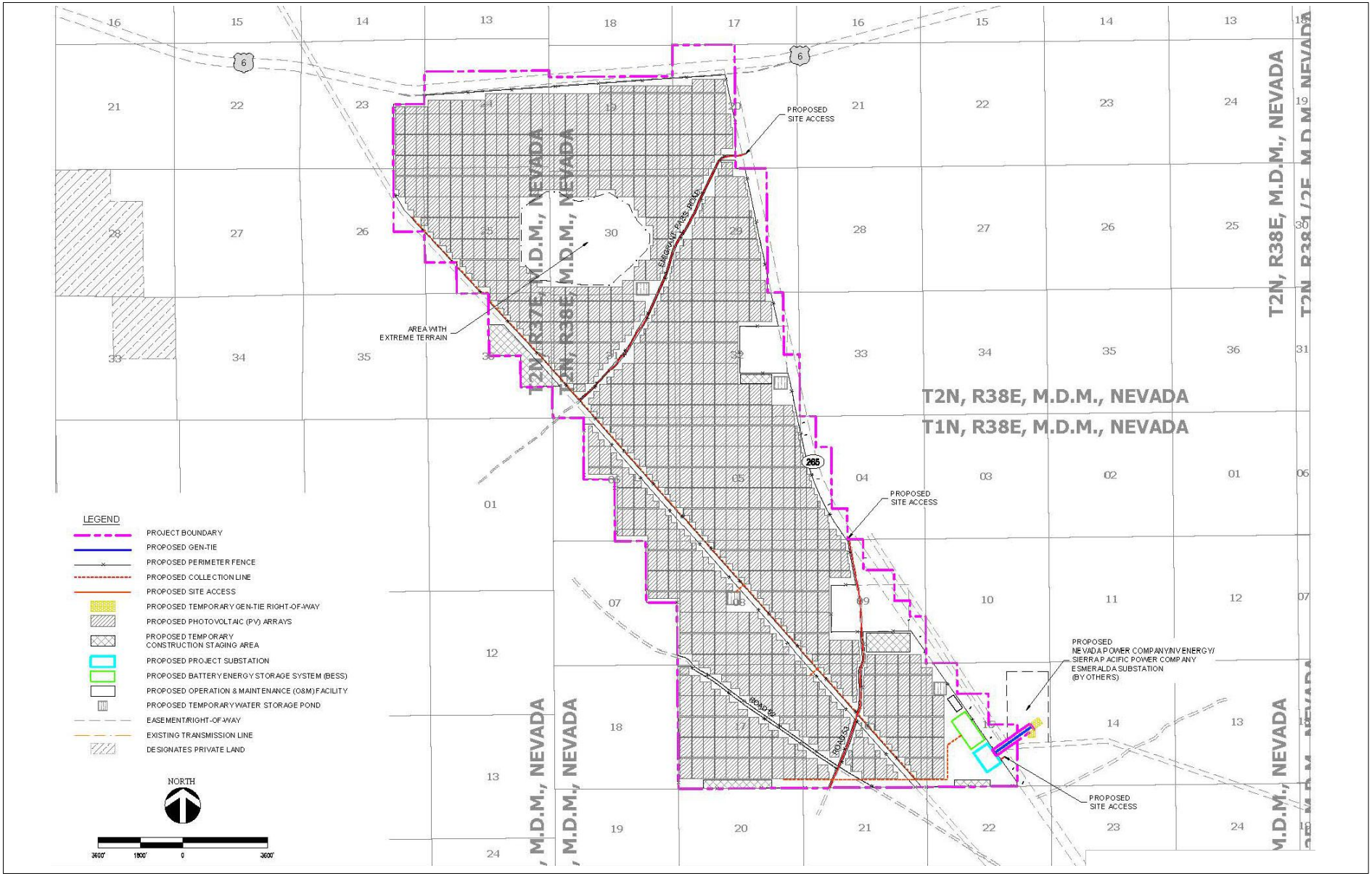

Esmeralda

Figure 1-2

Preliminary Site Plan

LEEWARD renewable energy

Preliminary
Subject to Change

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SECTION 3

Project Facilities and Design

3.1 Power Plant Facilities, Photovoltaic Conversion Process

3.1.1 Power Plant Facilities

The Project will include the following main elements:

- PV solar array field and associated interior access-ways and perimeter roads.
- PV solar modules on single-axis, horizontal tracker systems, supported by driven steel posts or other embedded foundation design, or a combination of both.
- Direct current (DC) collection system comprised of underground, aboveground and overhead DC cabling and combiner boxes.
- Meteorological stations up to 30 feet high mounted on concrete foundations.
- Power conversion stations (PCSs), which include the DC to alternating current (AC) inverters and the medium voltage transformers which steps up the voltage to 34.5 kV. The PCS will also include emergency backup power. The backup power will be provided by batteries, subject to Esmeralda County requirements.
- Underground, aboveground and overhead 34.5kV collection system to convey electricity from the PCSs to the onsite substation.
- An onsite substation with 34.5kV to 230kV step-up transformers, breakers, buswork, protective relaying and associated substation equipment. The onsite substation will include a microwave tower, a control house, and one or more transformers.
- Approximately 0.4 miles of 230kV gen-tie transmission line that will connect to NV Energy's proposed 500kV Esmeralda substation.
- Energy storage system (ESS) consist of self-contained battery storage modules placed in racks, converters, switchboards, inverters, transformers, controls, and integrated heating, ventilation, and air conditioning (HVAC) units, all enclosed in one or more buildings or in prefabricated metal containers.
- Operation and maintenance (O&M) area that may accommodate an O&M building, parking area, and other associated facilities such as above ground water storage tanks, septic system, security gate, signage, and flagpoles.
- Potential purchase of water from existing water rights owners or from private water companies to provide construction water, fire protection water, and other operational water supply requirements.
- Primary site entrances will be accessed from NV-265.

- Site security facilities including perimeter security fencing controlled access gates, and signage.
- Perimeter desert tortoise exclusion fencing, as determined necessary.
- Fiber optic cable installation for communications to the Project will be installed underground and on overhead lines along the transmission line corridor between the onsite substation and the point of interconnection with NV Energy systems.

Construction of the Project will require the following temporary facilities. These temporary facilities will be removed at the end of the construction period.

- One or more construction staging areas consisting of construction trailers for offices and first aid station, parking, portable toilets or a septic system, temporary generators, truck loading and unloading and material staging and assembly area, and storage materials and trash;
- Construction workforce parking area with adequate parking spaces for the workforce necessary for construction of the Project;
- Stringing and pulling sites and temporary construction areas at each new structure for the gen-tie and collection lines;
- Temporary lined basins or aboveground tanks to hold water during construction and temporary water lines.

The following sections describe the Project site arrangement and the processes, systems, and equipment that constitute the power plant.

3.1.1.1 Energy Conversion Equipment

As a solar PV facility, the Project relies on sunlight as its sole source of fuel. All of the electricity generated by the Project will be generated through the conversion of solar energy to electricity by the PV modules. The Project will not consume fossil fuels of any type for power generation.

The design calls for PV modules, inverters, and transformers to be combined into blocks of arrays that are repeated to reach the full contract capacity. The inverter and transformer sizes will be selected based on the cost and market availability of these units. Design details and characteristics are discussed in Section 3.1.2.

During operational daylight hours, the Project will generate its own power for equipment operation. During non-daylight hours, the Project will require power to keep transformers energized, maintain communications to Project equipment, and provide power for heating, ventilation, and air conditioning and lighting to the O&M building. The total annual power consumption of the Project during non-daylight hours will be approximately 950 MWh/year.

3.1.2 Numbers and Dimensions of Solar Array and Other Equipment

The Project will be constructed using PV modules mounted on single-axis, horizontal tracker systems. The design layout calls for PV modules, inverters, and transformers to be combined into blocks of arrays that are repeated to reach the full contract capacity. The site plan is shown on Figure 1-2. The primary Project components include solar arrays, transmission lines, onsite substation, site entrance, and O&M facilities. Power from multiple rows of PV modules will be collected through a system of combiner boxes to a PCS, inverters for

conversion of power from DC to AC, transformers, and collection lines and delivered to the Project substation. Discussion of these Project electrical components and interconnection to the transmission grid is provided in Section 3.1.11 and Section 3.1.12.

3.1.2.1 Horizontal Trackers


Horizontal Trackers

On horizontal trackers, the PV modules are mounted horizontally and are not tilted to the south. A typical array layout using horizontal trackers is shown to the right. The tracker units are arranged in north-south oriented rows and drive motors rotate the solar panels from east to west to follow the sun (on a single axis) throughout the day. The highest point for a horizontal tracker is achieved during the morning and evening hours when the trackers are tilted at their maximum angle, and is a maximum of 13 feet off the ground surface depending on the grade where the posts are installed. When the solar modules are roughly parallel to the ground, the overall height of the tracker unit will be a maximum of 10 feet off the ground surface depending on the grade where the posts are installed.

The vertical support legs for the trackers consist of foundations that may include: (1) concrete piers approximately 18 to 24 inches in diameter and 6 to 8 feet deep or (2) driven posts (wide flange I-beam) approximately 6-8 inches across and 6-12 feet deep. The preferred mounting configuration utilizes directly embedded driven posts and concrete piers will only be utilized if subsurface conditions do not support driven posts.

Each tracker unit is approximately 65 feet long and powered by a low voltage, approximately 0.5 horsepower electric drive motor. The motors and actuator are mounted to one of the driven posts and do not require separate foundations for mounting. Hydraulic drive systems will not be used. The motors are only operated for a few seconds every 5-10 minutes during daylight conditions to move the panels in approximately 1 degree increments. The sound from the tracker motors is less than 70 decibels, A-weighted at 3 feet.

Meteorological stations located at the site will monitor wind speed and communicate with the tracker units. This allows for the trackers to rotate to a flat position during high wind activity. The meteorological station towers will be located at multiple locations around the perimeter of the solar array. Meteorological station towers will be monopole or lattice design and will not exceed 30 feet in height. Each tower will require a small concrete foundation approximately 3 feet x 3 feet that extends approximately 4 feet into the ground depending on soil conditions.

Each PCS Shelter is equipped with communication equipment to wirelessly communicate with the tracker units to control operation and detect anomalous conditions. The PCS Shelter also is equipped with emergency backup power required to rotate the tracker units to their stow position in the unlikely event of high winds and a loss of the primary 500kV electrical connection from the Project to NV Energy's transmission system.

3.1.2.1.1 Emergency Backup Power

The emergency back-up power requirement would be met by utilizing a small (approximately 15 kilo-volt-ampere [kVA], 2 feet x 3 feet x 4 feet high) battery-based uninterruptible power supply (UPS) with each PCS shelter. Batteries would be lead acid based and/or lithium ion. Sufficient cooling capacity to maintain ambient temperatures appropriate for the selected

battery will be provided. Periodic replacement of the UPS batteries is expected based on usage and quarterly inspections—as often as every 5 years (though it is not uncommon for the batteries to last greater than 10 years). Inspections would be performed to ensure ambient temperature requirements are met and visual inspections of all batteries as part of the preventative maintenance program.

3.1.3 Temporary Construction Workspace, Yards, Staging Areas

The Project construction contractor will develop a temporary Construction Mobilization and Laydown Area approximately 77 acres in size to build the Project. The Construction Mobilization and Laydown area will include the following facilities:

- Mobile trailer construction offices
- Temporary water service and fire water supply holding tanks
- Temporary construction power and water service
- Portable toilets
- Parking for construction worker's vehicles
- Tool sheds/containers
- Laydown area for construction equipment and material delivery

The Project site itself will be used for construction laydown as further described in Section 4, Construction of Facilities. These areas will provide laydown for installation of solar equipment in the immediate vicinity of panel installation. Construction of the 230kV gen-tie line at the site will require temporary construction areas at each tower location and at locations required for conductor stringing and pulling operations. These areas will be required for staging equipment and materials for foundation construction and tower installation. Other temporary laydown areas will be located at the site based on construction requirements.

Temporary construction power will be provided by a temporary connection to the NV Energy distribution service in the area. A temporary above-ground circuit will be located between the construction trailer area and the NV Energy point of interconnection. The temporary construction power service will be removed (including any towers if required) at the end of the construction period. Alternatively, generators may be used to provide temporary construction power.

Prior to temporary construction water storage pond, the Project may utilize a temporary, above ground, water hose. All temporary power and water service lines will be located within the Project site and easements for their use.

The Applicant will provide 24-hour site security during construction.

3.1.4 Geotechnical Studies and Data Needs

3.1.4.1 Geotechnical Studies

To develop a geological profile of the area underlying the Project site, the Applicant will conduct detailed geotechnical studies prior to construction of the Project to determine the engineering characteristics of local soils and geology. These geotechnical studies will include:

- Borings up to 50 feet in depth (to include a minimum of 20 feet deep at the location of the 230kV interconnection switch pole)

- Test pits up to 15 feet in depth
- Driving of test posts

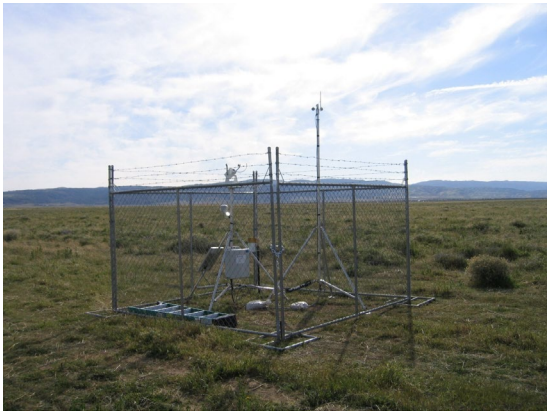
Geotechnical and soils analysis will be performed to determine:

1. The presence or absence of rock, old excavation, or fill
2. The classification of the soil strata
3. The bearing capacity of the soil and depth at which footings must be founded
4. Compaction, swelling, collapse and corrosion potential
5. Thermal and electrical resistivity
6. Infiltration

3.1.4.2 Meteorological Stations

The Applicant will install solar meteorological stations (SMSs) at the Project site to gather information on air temperature, wind direction and speed, and solar transmissivity. It is anticipated that up to four SMSs will be installed at the site.

The SMSs will consist of either driven post or surface-mounted tripods containing meteorological instrumentation and communication equipment. The maximum height is approximately 10 feet. The SMS sites will be located within the Project's perimeter fence; they will not be separately fenced.



Typical Meteorological Stations

3.1.5 Water

An estimated 850-acre feet of water will be required during Project construction for construction-related activities, including dust control. After construction is complete, the Project's annual water consumption during operation is expected to be not greater than 10 acre-feet per year. The Project does not require process water; however, the administrative area will require domestic potable water service. The main consumption of water during operation will be for occasional panel washing and/or dust control.

The Applicant will prepare a Water Quality Management Plan that will include measures that the Applicant will take to minimize the impacts to water quality from operations, including measures for erosion and sediment control, flood control, and storm water monitoring and response.

3.1.6 Ancillary Facilities

The following subsections describe the various power plant auxiliary systems associated with the Project.

3.1.6.1 Supervisory Control and Data Acquisition System

The Project will have a Supervisory Control and Data Acquisition (SCADA) system that will allow for the remote monitoring and control of inverters and other Project components. The SCADA system will be able to monitor Project output and availability, and to run diagnostics on the equipment. This equipment will be located in the O&M building.

The SCADA system will provide control, monitoring, alarm, and data storage functions for the power plant systems. Redundant capability will be provided for critical SCADA components such that no single component failure will cause a plant outage. The SCADA will be linked to the inverters, met stations and relays via fiber optic and copper communications cable. These data links will provide control, monitoring, alarm, and data storage functions via the control operator interface and control technician workstation of the SCADA system.

3.1.6.2 Lighting System

The Applicant has incorporated measures designed to reduce night lighting into the Project's lighting systems. Night lighting used during construction, operation, and maintenance of the Project will be controlled or reduced using directed lighting, shielding, and/or reduced lumen intensity. Permanent lighting may be provided at the O&M building and the main site entrance. The Applicant will prepare a Lighting Management Plan.

3.1.6.3 Cathodic Protection Systems

While not expected, underground metal structures may have cathodic protection as necessary based on soil conditions. The only underground metal structures will be the driven posts (to support the PV modules and combiner boxes) and ground grid used under high voltage equipment to reduce touch potential. The ground grid will be composed of copper wire and will be limited to the substation portion of the Project. Cathodic protection is not anticipated at this time but may be necessary if the soil corrosivity data from the geotechnical investigation recommends it. Galvanized metal posts and epoxy-coated rebar may be utilized in lieu of cathodic protection if supported by soil conditions. If cathodic protection is recommended, a sacrificial anode type cathodic protection system will be provided. Institute of Electrical and Electronics Engineers (IEEE), Electric Power Research Institute and the National Association of Corrosion Engineers (NACE) guidelines will be used in establishing the necessity, type and extent of cathodic protection equipment. All cathodic protection equipment will be included within the area already designated for the substation.

3.1.6.4 Buildings, Roads, Fencing, and Security

3.1.6.4.1 Buildings

The Project will include an O&M area that may include a permanent O&M building that would house administrative, operation, and maintenance equipment and personnel. The location of the O&M area is shown on Figure 1-2. The O&M building would be approximately 3,000 square feet, with a maximum height of approximately 18 feet, and would have an adjacent parking area. Additional components of the O&M area may include a laydown and storage area, trash containers, water storage tanks and septic field. The O&M area will be equipped with exterior lighting as described in the Lighting Management Plan that the Applicant will prepare.

The O&M building also will include communication equipment and a storage and equipment area. It will contain offices, toilets and other features necessary for habitation on a daily basis. The design and construction of this building will be consistent with applicable county building standards.

A separate, uninhabited communications enclosure will be located adjacent to the substation. The communications enclosure will be constructed of either metal or pre-cast concrete. The communications enclosure will house the site communications and metering equipment.

Water storage tanks, if required, will be located within the O&M area and will be designed to meet applicable federal, state, and local requirements.

3.1.6.4.2 Roads

Project-related roads include the Project access ways, and solar field access ways as summarized in Table 3-1, and further described below. During construction, a stabilized entrance/exit will be provided to clean vehicle wheels prior to exiting the construction area. Similar to the disturbance that would occur from other Project components (based on the assumption that all acreage within the fenced perimeter will be disturbed), the acreage identified for roads also is considered to be permanent disturbance.

Project Access Way. The project site will include three (3) entrances which will be directly off of NV-265 to the south of U.S. Hwy 95/U.S. Hwy 6 (Figure 1-2). One project access way will be located along Emigrant Pass Road, extending in a southwest direction from its intersection with NV-265. Another project access way will be located along Road 53, extending in a southwest direction from its intersection with NV-265. A third project site access will be located along NV-265 in the vicinity of the proposed project substation, near the southeast corner of the project site. The access ways will be graded compacted earth and will be used for delivery of all Project components and will be used by workers traveling to the site during construction. If determined necessary by the Project, for dust control purposes, the access way may be upgraded to aggregate or paved surface.

Solar Field Access Ways. Within the solar field, new access ways will be built to provide vehicle access to the solar equipment (PV modules, inverters, transformers) for O&M activities. These access ways will be approximately 20 feet wide and approximately every 1800 feet across the solar field. The existing surface area will be graded and compacted using onsite materials to facilitate use by two-wheel-drive vehicles. The solar field access ways will connect to the Perimeter Road at each end of each access way.

TABLE 3-1
Project-related Roads

Road	Status	Surface
Solar Field Access Ways	New	Compacted earth
Project Access Ways	New	Graded/compacted earth[a]

[a]Access Road(s) may be constructed with an aggregate or paved surface if required by Esmeralda County, or at the discretion of the Project.

3.1.7 Site Security and Fencing

Security at the Project site will be achieved by fencing, lighting, security patrols, and electronic security systems. The Project site will be monitored on a 24 hours per day, seven days per week basis. Site security will be provided through a combination of on-site staffing and security patrols, remote monitoring, or electronic security systems. Lighting will be provided at the O&M building and Project Entrance Gate.

3.1.7.1 Perimeter Fencing for Solar Field

The solar field and support facilities perimeter will be secured with chain link metal-fabric security fencing. Controlled access gates will be located at the site entrance. Access gates also will be located at specific locations along the Perimeter Road to allow maintenance and security crew access to all portions of the Project site. The location of the perimeter fence is shown on Figure 1-2.

The perimeter fence will be an approximately 6-foot-high chain link fence with 1-foot-high barbed-wire security strands at the top. As necessary, approved desert tortoise exclusion fencing also will be utilized and either will be installed outside the perimeter security fence or with tortoise-proof half-inch hardware cloth metal mesh installed against the lower 2 feet of the chain link fence. Either tortoise fence option would extend an additional 1 foot below the ground. Below ground, this tortoise fencing will be angled outward, away from the solar collector field, to discourage burrowing tortoises. The tortoise-proof fencing is intended to prevent federally listed desert tortoises from entering the solar field.

Fencing also will be installed around the substation. Access gates will be provided to allow maintenance vehicle access to the equipment. Substation fencing will be similar in design to the perimeter fence.

3.1.7.1.1 Construction Fencing

Fencing during construction will consist of portable stand-alone chain link fence modules or plastic snow fencing supported by standard metal fencepost. As necessary, temporary desert tortoise fencing will be installed prior to construction along the boundaries of the construction zone to clearly mark this zone, preventing vehicles or personnel from straying onto adjacent offsite habitat.

3.1.8 Electrical Components, New Equipment, and Upgrades

3.1.8.1 Electrical Generation

The PV modules will convert sunlight into DC electricity. Arrays of PV-generated DC power will be collected from each of the multiple rows of PV modules through one or more combiner boxes and conveyed to an inverter. The inverter will convert the DC power to AC power, which then will flow to a medium-voltage transformer that converts the output of the inverter to medium voltage, typically 34.5kV. Multiple medium-voltage transformers will be connected with collection system which will deliver energy to the onsite substation, where the power will be stepped up with transformer(s) to 230kV for delivery to the NV Energy transmission system.

3.1.8.2 Inverters, Transformers and Medium Voltage Switchgear

The Project inverters and medium voltage transformers, as well as other electrical equipment (such as medium voltage switchgear enclosures, also referred to as Photovoltaic Combining Switchgear, or PVCS), will be supported by concrete pads. Each PVCS will be connected to one or two transformers to support each array.

3.1.8.3 Onsite Substation

An onsite substation will be constructed as part of the Project (shown in Figure 1-2). The onsite substation will include an uninhabited control house, medium and high voltage switchgear, and conductor structures. The substation will include one or more 34.5kV/230kV main power step up transformers.

The containment area will be concrete lined and will drain to a below-grade sump. Any stormwater or fluid drained to the sump will be inspected for a sheen. If a sheen is observed,

the sump contents will be removed by vacuum truck and disposed at an approved disposal facility. If no sheen or contaminants are detected, the storm water will be drained on-site. The above containment system will be designed to accommodate the volume of the dielectric fluid in the transformer plus an allowance for precipitation.

3.1.8.4 Electrical System for Plant Auxiliaries

Power for plant auxiliaries will be supplied by the PV facility when the array is producing power and back feed from the electrical grid when the PV facility is not producing power. Auxiliary electrical needs include power to keep the transformers energized at night and for plant lighting and security, and data acquisition/communications. Electric generators also may be used for plant auxiliary electricity.

3.1.9 Interconnection to the Electrical Grid

The Project will include an approximately 0.4-mile 230kV gen-tie line that will connect with the NV Energy transmission grid through NV Energy's planned 230kV Esmeralda substation.

3.1.10 Erosion Control and Stormwater Drainage

3.1.10.1 Technical Drainage Study

A conceptual drainage study will be conducted for the Project. This POD will be updated to incorporate that information once the study is complete.

3.1.10.2 Drainage Control Design

The majority of the Project site will be drained by sheet flow to existing onsite and offsite drainages. A conceptual drainage study will be conducted for the Project. This POD will be updated to incorporate that information once the study is complete.

3.1.11 Vegetation Treatment and Weed Management

3.1.11.1 Vegetation Treatment

Within the solar field areas, existing vegetation would be worked into the underlying surface soils using the techniques of mowing or "disk and roll" where feasible. Use of conventional grading will be minimized and used only where necessary. The mowing approach would remove above ground vegetation without major impacts to topology or below ground vegetation. The disk and roll approach uses conventional farming techniques and equipment to prepare the site for construction. The solar array field would be prepared using rubber tired tractors with disking equipment and drum rollers with limited use of scrapers to perform micro-grading. In areas where the terrain is not suitable for mowing or disk and roll, grading would be used to prepare the site surface. The desire and intent is not to change the macro-level topography (in order to utilize the existing drainage pattern across the site), but to flatten the surface of the existing topography to provide safe working conditions. Additional discussion of site preparation is provided in Section 4.6.

In development areas where "disk and roll" or conventional grading techniques are not implemented, vegetation will be cut to a height of less than 12 inches. Vegetation will be permanently cleared from roadways, access ways and where concrete foundations are used for inverter equipment, substation and the O&M facilities.

In general, plant root systems will be left in place, except where grading and trenching is required for placement of solar module foundations, underground electric lines, inverter and transformer pads, roads and access ways, and other facilities. Vegetation will be maintained

in accordance with applicable fire codes and local ordinances using mechanical and chemical controls.

3.1.11.2 Noxious Weed Control

A Noxious Weed Management Plan will be prepared for the Project. This plan will follow the *Las Vegas Resource Management Plan* (BLM, 1998), *Noxious Weed Plan* (BLM, 2006), and the interagency guidance *Partners Against Weeds* (BLM, 2007b) for an active integrated weed management program using weed control best management practices (BMPs). The Project will implement the Project-specific measures that are included in the Noxious Weed Management Plan.

3.1.12 Waste and Hazardous Materials Management

The primary waste generated at the Project site during operations and maintenance will be nonhazardous solid and liquid wastes. The types of wastes and their estimated quantities are discussed below. The Applicant will prepare an Emergency Response Plan, which will address waste and hazardous materials management, including BMPs related to storage, spill response, transportation, and handling of materials and wastes. Waste management will emphasize the recycling of wastes where possible and will identify the specific landfills that will receive wastes that cannot be recycled.

3.1.12.1 Nonhazardous Solid Waste

The Project will produce wastes typically associated with O&M activities. These will include defective or broken electrical materials, empty containers, the typical refuse generated by workers and small office operations, and other miscellaneous solid wastes.

3.1.12.2 Nonhazardous Wastewater

The Project may generate onsite domestic water and sanitary sewer waste from the O&M building. A septic tank and drain field system may be used for collection, treatment, and disposal of sanitary sewer waste. The sanitary waste system would not receive other wastes or surface runoff from the O&M area (i.e., hazardous materials or contaminated runoff). No connection to any existing sanitary sewer system is anticipated.

3.1.12.3 Hazardous Materials and Hazardous Waste

Limited quantities of hazardous materials will be used and stored on site for O&M. The Applicant will prepare hazardous materials management plans, if needed, in accordance with Esmeralda County regulations, including hazardous materials information sheets (Esmeralda County Fire Code, Article 80), and flammable/combustible materials storage tank permits (Esmeralda County Fire Code, Article 79) as necessary.

Table 3-2 lists the hazardous materials anticipated to be stored and used on site. Safety Data Sheets (SDSs) for each of these materials will be provided in the Emergency Response Plan.

TABLE 3-2
Hazardous Materials That May Be Used During Operation

Hazardous Material	Storage Description	Storage Practices and Special Handling Precautions
Mineral Insulating Oil	Carbon steel transformers	Used only in transformers, secondary containment for each transformer (will be managed in accordance with the Spill Response Plan).
Batteries, lead acid based and/or lithium ion*	Battery-based emergency back-up power at each of the nine PCS shelters	Sufficient cooling capacity to maintain ambient temperatures appropriate for the selected battery will be provided.
Herbicide Roundup® or equivalent	Brought on site by licensed contractor, used immediately	Inventory will be stored in original containers in accordance with Esmeralda County Fire Code requirements and conditions of Esmeralda County Hazardous Materials Permit.

Table 3-3 lists the wastes that may be generated by the Project, both hazardous and nonhazardous.

TABLE 3-3
Wastes Potentially Generated by the Project

Waste	Origin	Composition	Classification	Disposal
Oily rags	Maintenance, etc.	Hydrocarbons, cloth	Hazardous	Recycled or disposed of by certified oil recycler
Oil sorbents	Cleanup of small spills	Hydrocarbons	Hazardous	Recycled or disposed of by certified oil recycler
Universal Waste	Maintenance, etc.	Fluorescent bulbs, batteries	Universal Waste	Recycled or treated or disposed at permitted offsite facility

3.1.13 Fire Protection

The Project's fire protection water system, if required, will be supplied from up to two water storage tanks located near the O&M building. During construction, a fire protection water system will be installed within the temporary construction trailers as required by Esmeralda County Fire Department. As discussed in Section 3.1.14, vegetation height will be managed in accordance with applicable fire code.

The electrical equipment enclosures that house the inverters and transformers (see Section 3.1.1) will be either metal or concrete structures. Any fire that could potentially occur would be contained within the structures, which are designed to meet National Electric Manufacturers Association (NEMA) 1 or NEMA 3R IP44 standards for electrical enclosures (heavy-duty sealed design to withstand harsh outdoor environmental conditions).

The Applicant will prepare a Fire Management Plan.

3.1.14 Spill Prevention and Containment for Construction and Operation

A Stormwater Pollution Prevention Plan (SWPPP) will be produced if required by the Nevada Department of Environmental Protection (NDEP). Regardless of whether preparation of a SWPPP is required, the Applicant will prepare a Spill Response Plan for the Project.

3.1.15 Health and Safety Program

The Applicant considers the health and safety of its employees and contractors to be the highest priority for Project construction and operation and will require that all employees and contractors adhere to appropriate health and safety plans and emergency response plans. All construction and operation contractors will be required by the Applicant to operate under a health and safety program that meets industry standards. All site personnel will be required to go through a new hire orientation which will address site-specific safety, health and environmental concerns of the Project. A written plan will be developed and administered on the construction site.

3.2 Alternatives Considered

In order to provide a sufficiently large area to evaluate a reasonable range of alternatives for solar facility siting, the Applicant has established an Application Area for the Project of approximately 8,702 acres of BLM-administered lands (Figure 1-1). The proposed solar facility will be located on approximately 8,683 acres of this total area. As necessary, alternatives will be developed and analyzed that address identified unresolved resource and land use conflicts. Alternatives may include varied site layouts, configurations, and solar modules. As appropriate, the Applicant also will describe any alternatives considered but eliminated from further analysis along with the rationale for dismissing such alternatives.

3.3 Other Federal, State, and Local Permits and Approvals

Table 3-4 lists other federal, state, and local permits and approvals that may be required for the Project, and the authorizing agencies. The master permit document will be the BLM's ROW Grant.

TABLE 3-4
Federal, State, and Local Permits and Authorizations That May Be Required for the Project

I. Federal Permits or Authorizations
U.S. Department of the Interior, BLM
• ROW authorization under Title V of FLPMA
• EIS Record of Decision
• Notice to Proceed
U.S. Department of the Interior, BLM and State Historic Preservation Office/Advisory Council on Historic Preservation
• BLM/SHPO, NHPA Section 106
U.S. Department of the Interior, Fish and Wildlife Service
• Endangered Species Act Section 7 Biological Opinion/Incidental Take Permit

TABLE 3-4
Federal, State, and Local Permits and Authorizations That May Be Required for the Project

II. State of Nevada Permits or Authorizations

Nevada Public Utility Commission

- Utility Environmental Protection Act Permit

Nevada Department of Wildlife

- Special Purpose Permit
- Utility Environmental Protection Act Permit

Nevada Division of Environmental Protection

- Stormwater Discharge Permit (NOI)
- NPDES Temporary Groundwater Discharge Permit
- Temporary Permit for Working in Waterways (formerly known as “Rolling Stock Permit”)

Nevada Division of Water Resources (State Engineer)

- Water Rights Modifications, Possible Change of Place of Use, and Manner of Use Point of Diversion.

Nevada State Fire Marshall

- Hazardous Materials Storage Permit

III. Esmeralda County Permits (as necessary)

Esmeralda County Department of Air Quality

- Dust Control Permit

Esmeralda County Regional Flood Control District

- Drainage Study Approval

Esmeralda County Development Services Department

- Development Agreement
- Special Use Permit

Esmeralda County Fire Department, Fire Prevention Bureau

- Flammable/Combustible Liquid Aboveground Storage Tank Permit

Esmeralda County Public Works Department

- Temporary Sign Permit
- Grading Permit
- Building Permit
- Battery Systems Permit
- Permit for Temporary Structures

Southern Nevada Health District

- Small Commercial Septic System Permit

Notes:

EIS = Environmental Impact Statement
FLPMA = Federal Land Policy and Management Act
NHPA = National Historic Preservation Act
NOI = Notice of Intent
SHPO = State Historic Preservation Office

The studies required to support federal permitting and environmental review include, but are not limited to, identification of biological resources (rare plants, wildlife) in accordance with the federal Endangered Species Act; identification of waters of the United States in accordance

with the federal Clean Water Act; identification of cultural resources in accordance with the National Historic Preservation Act (NHPA); and visual resources, air emissions, and noise assessments conducted as part of the NEPA process. Federal agencies with likely interest in Project review include the U.S. Wildlife Service (USFWS) and the U.S. Army Corps of Engineers (USACE).

State and local permits may also be required for storm water management and air emissions. The Project may require a number of state permits from agencies, including the Nevada Divisions of Wildlife, Forestry, Water Resources, and Environmental Protection; Nevada Department of Transportation; Nevada State Historic Preservation Office; and Public Utilities Commission. The Project also may require local permits from agencies, including the Esmeralda County Department of Air Quality, Development Services Department, Fire Department, and Public Works Department.

3.4 Financial and Technical Capability of the Applicant

Leeward is a growth-oriented renewable energy company that owns and operates a portfolio of 22 renewable energy facilities across nine states, totaling more than 2,000 MW of installed capacity. We are actively developing new renewable energy and energy storage projects in energy markets across the U.S. with 17 GW of projects under development spanning over 100 projects. With projects currently under construction and soon to commence construction, we expect to commercialize over 1,000 MW of renewable energy projects in the next two years.

On April 1, 2021 Leeward closed their acquisition of almost all of First Solar's development portfolio. Leeward is a portfolio company of OMERS Infrastructure, a preeminent global infrastructure investor and investment arm of OMERS, one of Canada's largest defined benefit pension plans with C$105 billion in net assets (as of December 31, 2020).

Leeward has extensive experience in solar project development both in the United States and worldwide. Leeward has successfully completed development and construction activities for several utility scale solar projects in the United States, including the 196MW Desert Big Plain Solar Project in Ohio, the 100MW Union Ridge Solar Project in Ohio and the 30MW Barrilla Solar Project in Texas. For more information on Leeward, please refer to our website at www.leewardenergy.com

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SECTION 4

Construction of the Facilities

4.1 Construction Sequence and Schedule

Construction of the Project, from site preparation and grading to commercial operation, is expected to take up to 36 months to complete. Construction will include the major phases of mobilization, construction grading and site preparation, installation of drainage and erosion controls, PV panel/tracker assembly, and solar field construction.

4.2 Design, Layout, and Installation

Detailed construction design will take place during the final phase of Project permitting. The Site Plan and Technical Drainage Report (TDR) will be submitted to Esmeralda County for review and approval as necessary, and licensed professional surveyors will conduct the final Project boundary surveys and will stake out the Project site design layout before construction.

4.2.1 Major Construction Process Milestones

Major construction process milestones are listed in Table 4-1. This schedule is conceptual and subject to change. It is not anticipated that any necessary NV Energy transmission system improvements will constrain the Project development schedule.

TABLE 4-1
Project Construction Schedule Major Milestones

Activity	Date
Federal Approvals	June 2023
Begin Construction	January 2024
Full Commercial Operation of all PV modules	December 2026

4.2.2 Construction Process Timetable and Sequence

The major construction milestones are included in Table 4-1 above. The sequencing of construction activities is described as part of the construction description sections that follow. The Applicant will develop a more refined construction process timetable as the Project proceeds.

4.2.3 Construction Description

Project construction will begin after all necessary agency approvals have been issued, and preconstruction conditions in the BLM-issued ROW grant and other approvals have been met. Construction will be scheduled to align with the delivery dates negotiated with the utility customers. Prior to any activity on the site, required resource protection plans will be developed, and regulatory and permit conditions will be integrated into the final construction compliance documents.

4.2.3.1 Environmental Clearance

Initial site mobilization activities will include environmental clearance in which site activities are reviewed and approved for compliance with resource protection plans and approved construction-compliance documents.

During the environmental clearance phase, the boundaries of the construction area will be delineated and marked. As necessary, tortoise fencing will be installed around the perimeter of the construction area to prevent tortoise from moving onto the site from adjacent areas. Professional biologists may be used to perform sensitive species surveys, clearances and monitoring, if necessary.

Environmental clearance will occur only during weather conditions permitted for the activity.

4.2.3.2 Site Access and Laydown

Following completion of environmental clearance for the site access and laydown areas, these areas will be prepared for use. Depending on the site preparation technique, organic matter will either be worked into the upper soil layers, or mulched onsite and redistributed into the fill (except under equipment foundations, trenches and roadways) to aid in dust control.

Preconstruction activities for the Project may include installation of tortoise fencing and relocation of desert tortoise. The construction entrance and exit gates will be established. Parking and staging areas will be staked for temporary and permanent building erection at a later stage. Temporary equipment storage and laydown areas will be compacted and marked with temporary stakes and signage.

4.2.3.3 Water Storage Construction

To provide sufficient water for construction activities, temporary storage pond may be constructed. A construction water storage pond with two to four million-gallon capacity may be excavated and lined for the temporary storage of water during the construction period. This will provide sufficient water for dust control during construction without negatively affecting well draw down during peak water usage periods. After the construction period, the construction water storage pond will be re-leveled to grade and the lining removed.

4.2.3.4 Site Preparation

Within the solar field areas, existing vegetation would be worked into the underlying surface soils using the techniques of mowing or “disk and roll” where feasible. Use of conventional grading will be minimized and used only where necessary. The mowing approach would remove above ground vegetation without major impacts to topology or below ground vegetation. The disk and roll approach uses conventional farming techniques and equipment to prepare the site for construction. The solar array field would be prepared using rubber tired tractors with disking equipment and drum rollers with limited use of scrapers to perform micro-grading. In areas where the terrain is not suitable for mowing or disk and roll, grading would be used to prepare the site surface. The desire and intent is not to change the macro-level topography (in order to utilize the existing drainage pattern across the site), but to flatten the surface of the existing topography to provide safe working conditions.

In development areas where “disk and roll” or conventional grading techniques are not implemented, vegetation will be cut to a height of less than 12 inches. Vegetation will be permanently cleared from roadways, access ways and where concrete foundations are used for inverter equipment, substation and the O&M facilities.

In general, plant root systems will be left in place, except where grading and trenching is required for placement of solar module foundations, underground electric lines, inverter and transformer pads, roads and access ways, and other facilities. Vegetation will be maintained to a height of no more than approximately 12 inches as needed for site maintenance and fire-risk management using mechanical and chemical controls.

4.2.3.5 O&M Area Construction

Following environmental clearance and site preparation of the O&M area, construction in the O&M area will commence. If an O&M building is to be constructed, concrete foundations will be poured to support the permanent O&M building and an area adjacent to the building may be paved for parking. The modular steel building will be erected. A 4-inch aggregate base will be installed on all unpaved areas within the O&M area.

Above ground water tanks will be erected and connected to a service pump. The active and reserve septic field will be established and connected to O&M buildings waste system. Temporary construction power will be connected to the O&M building.

Erection of an Esmeralda County dust control sign will be installed at the main entrance gate at this time.

4.2.3.6 Drainage Control

The majority of the Project site will be drained by sheet flow to existing onsite and offsite drainages. A conceptual drainage study is being conducted for the Project. This POD will be updated to incorporate that information once the study is complete.

4.2.3.7 Onsite Substation Construction

The onsite substation will be constructed based on applicable electrical safety codes. The substation will be separately fenced to provide increased security around the medium and high voltage electrical equipment. The onsite substation area will include a drainage collection area, a microwave tower, a control house, and one or more transformers.

The transformer containment area will be lined with an impermeable membrane covered with gravel and will include a drain with a normally closed drain valve. Any storm water or fluid in the containment area will be inspected for a sheen prior to disposal. If a sheen is observed, the tank contents will be removed by vacuum truck to an appropriate disposal site. If no sheen or contaminants are detected, the storm water will be drained on-site. The containment and holding pond system will be designed to accommodate the volume of the dielectric fluid in the transformer plus an allowance for precipitation.

Grounding of the onsite substation will be accomplished by a ground grid designed to meet the requirements of IEEE 80, “IEEE Guide for Safety in AC Substation Grounding.” Final ground grid design will be based on site-specific information such as available fault current and local soil resistivity. Typical ground grids consist of direct buried copper conductors with 8-foot-long copper-clad ground rods arranged in a grid pattern to approximately 3 feet outside of the substation area.

The substation area will be excavated to a depth of 10 feet. A copper grounding grid will be installed and the foundations for transformers and metal structures will be prepared. The area will be backfilled, compacted and leveled followed by the application of 6 inches of aggregate rock base. Equipment installation of the transformers, breakers, buswork and metal dead-end structures will follow. A pre-fabricated control house will be installed to house the electronic components required of the substation equipment.

4.2.3.8 Transmission Line Construction

The Project will utilize overhead 230kV towers or poles for interconnection of the high voltage electrical system. Stringing areas will be established and the location of each tower will be surveyed and staked. Foundations for each tower will be constructed. The 230kV towers will have a foundation excavated depending on the local soil conditions and the purpose of the towers (end and angle structures required deeper foundations). These foundations will be reinforced rebar foundations and backfilled with concrete. After tower erection, conductor stringing and grounding will be performed.

Two types of overhead transmission line poles will likely be erected – steel 230kV poles for interconnection of the high voltage electrical system and wooden or steel monopole 34.5kV poles for collection of the medium voltage electrical system.

Stringing areas will be established and the location of each pole will be surveyed and staked. Foundations for each pole type will be constructed. The 230kV monopoles or “H-frame” structures will have a foundation excavated depending on the local soil conditions and the purpose of the poles (end and angle structures required deeper foundations). These foundations will be reinforced rebar foundations and backfilled with concrete.

After pole erection, conductor stringing and grounding will be performed.

4.2.3.9 PV Equipment Installation

Prior to any construction in PV equipment areas, the environmental clearance and site preparation steps for those areas will be completed. Within each area designated for PV equipment, the construction sequence will follow a generally consecutive order.

The construction of the solar field will proceed in repeated blocks of arrays. Each array will contain solar panels, a PCS and step-up transformer. Within each array, materials for each row of PV modules will be staged next to that row.

- Prepare site using mowing, disk and roll, or conventional grading as necessary
- Install steel posts and table frames
- Install PV modules
- Install concrete footings for inverters, transformers and substation equipment
- Install inverter and transformer equipment
- Perform electrical terminations
- Inspect, test, and commission equipment

Where necessary, trenches will be excavated to a depth of approximately 3 feet and width of 2 to 3 feet. Organic material will be mulched and redistributed on-site except under equipment foundations or as trench backfill material.

Trenches will be backfilled with a sand bed (or appropriate native material) 3 to 4 inches above and below buried cables. The trenches will be further backfilled with native soils and compacted. Excess soil will be redistributed on site and used to provide level ground for equipment foundations for inverters and transformers.

The Project will be constructed using PV modules mounted on single-axis, horizontal tracker systems. The mounting system for the modules requires steel posts driven into the ground

using a vibratory hammer. Steel table frames are then bolted to the driven posts and the modules are mechanically fastened to the tables. Concrete footings and foundations are required for the inverters, transformers and substation equipment.

The inverter/transformer concrete equipment pad will be pre-cast off-site or poured in place to provide a suitable mounting surface for the equipment. A pre-fabricated enclosure containing the inverters and communication equipment is installed on the equipment pad. A 3-phase, medium voltage transformer also will be installed on the equipment pad.

Once all equipment is physically and electrically inspected, PV modules are terminated to the inverters and the transformers are terminated to the underground cabling.

4.3 Approach to Phased Construction and Operations

Construction of Project facilities is described in Section 4.2.3 above.

4.4 Access and Transportation System, Component Delivery, Worker Access

The project site will include three (3) entrances which will be directly off of NV-265 to the south of U.S. Hwy 95/U.S. Hwy 6 (Figure 1-2). One project access way will be located along Emigrant Pass Road, extending in a southwest direction from its intersection with NV-265. Another project access way will be located along Road 53, extending in a southwest direction from its intersection with NV-265. A third project site access will be located along NV-265 in the vicinity of the proposed project substation, near the southeast corner of the project site. The access ways will be graded compacted earth and will be used for delivery of all Project components and will be used by workers traveling to the site for construction. If determined necessary by the Project, for dust control purposes, the access way may be upgraded to aggregate or paved surface.

Construction access road beds will typically be 16 – 25 feet wide. A stabilized entrance/exit will be provided to prevent track out from the construction area. Most construction staff and workers will come daily to the jobsite from within Esmeralda County.

Temporary construction parking will be provided on the site near the O&M area shown on Figure 1-2. This area will provide sufficient parking for the construction workforce traveling to the Project site in their personal vehicles. Parking areas for construction vehicles and laydown areas for construction materials will be prepared inside the solar field area.

The Applicant will prepare a Transportation Management Plan.

4.5 Construction Workforce Numbers, Vehicles, Equipment, Timeframes

The onsite construction workforce will consist of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel. The onsite construction workforce is anticipated to arrive in an average of 500 - 600 vehicles with a peak not expected to exceed 1,300 vehicles at any given time.

Construction generally will occur between 6:30 a.m. and 3:30 p.m., Monday through Friday. Additional hours may be necessary to make up schedule deficiencies, or to complete critical construction activities. For instance, during hot weather, it may be necessary to start work earlier to avoid work during high ambient temperatures. Further, construction requirements will require some nighttime activity for installation, service or electrical connection, inspection and testing activities. Nighttime activities will be performed with temporary lighting.

Construction materials such as concrete, pipe, PV modules, wire and cable, fuels, reinforcing steel, and small tools and consumables will be delivered to the site by truck. Initial grading work will include the use of primarily rubber-tired tractors, tillers and vibratory rollers and limited use of track-driven excavators, graders, dump trucks, and end loaders, in addition to the support pickups, water trucks, and cranes. Construction equipment will be fueled from mobile refueling trucks or temporary above-ground fuel storage tanks. As the Project moves into the next stages of civil work, equipment for foundations and road construction will be brought in, including paving machines (if required), trenching machines, pumps, additional excavators for foundation drilling, tractors, and additional support vehicles.

4.6 Site Preparation

4.6.1 Surveying and Staking

A licensed professional surveyor will conduct a land survey of the Project site and will stake the construction area as needed before construction begins.

4.6.2 Site Preparation: Vegetation Removal and Treatment

Vegetation removal and treatment is discussed in Section 3.1.14 above.

4.6.3 Site Clearing, Grading, and Excavation

Depending on tracker technology and orientation, the Project may require the natural terrain slope to be minimized. Project development plans will strive to minimize the amount of grading and earthwork necessary to construct and operate the Project. Some grading is required for installation of major structures such as the O&M building, and substation. Road and access way development will require grading; however, within the solar field grading activities will occur only where necessary for foundation installation, trenching, and access ways. Grading and excavation requirements are described for each of the primary Project components below.

Solar Field. Within the solar field, some grading will be required for roads and access ways between the solar arrays, and for electrical equipment pads. In general, the design standard for the roads and access ways within the solar field will be consistent with the amount and type of use they will receive. Speed limit for vehicles using these roads will be 15 mph for dust control.

The Perimeter Road will be an all-weather compacted earth surface. This road generally will follow existing perimeter contours.

Within the solar arrays the amount of the grading will be minimal when the panel support foundations are driven. For locations where driven foundations are not feasible, other types of embedded foundations may be employed. Grading also will be required within each solar array to accommodate a level concrete pad to support the inverter and transformer.

Onsite Substation. The onsite substation requires a graded site to create a relatively flat surface for proper operation, with approximately 1% maximum slope in either direction. The substation interior will be covered with aggregate surfacing for safe operation.

O&M Area. O&M area grading will include the area where the O&M building would potentially be constructed. The remaining area will be graded and appropriately surfaced for parking, roads, material storage and the erection of a temporary assembly structure for use during the construction phase of the Project.

Project Access Ways. As described previously, the three site entrances for the Project will be off of NV-265 (Figure 1-2). The road surfaces may be improved to aggregate rock or paved, if necessary, to comply with Esmeralda County requirements.

4.7 Solar Array Assembly and Construction

The assembled solar equipment will be installed on steel posts to which steel table frames will be attached. Trucks will be used to transport the PV modules to the solar field. A small mobile crane may be used to assist construction workings in setting the solar modules on the driven steel posts. Trenching and excavating machines will be used for base trenching, light skiploaders for backfill, and light rollers for compaction. Final solar field assembly will require small cranes, tractors, and forklifts.

4.8 Construction Waste Management

During construction, the primary waste generated will be nonhazardous solid waste. However, some nonhazardous liquid waste and hazardous waste (solid and liquid) also will be generated. All of the hazardous wastes will be generated at the plant site. Typical wastes generated during construction are identified in Table 4-2. The Applicant will prepare a Waste Management Plan that will describe the storage, transportation, and handling of wastes and will emphasize the recycling of construction wastes where possible and will identify the specific landfills that will receive construction wastes that cannot be recycled. Construction wastes will be managed in accordance with the Resource Conservation and Recovery Act (RCRA) (42 USC §6901, et seq. and RCRA's implementing regulations at 40 CFR §260, et seq.) and other applicable state and local regulations.

TABLE 4-2
Wastes Generated During Construction

Waste	Origin	Composition	Classification	Disposal
Scrap wood, steel, glass, plastic, paper	Construction activities	Normal refuse	Nonhazardous	Recycle and/or dispose of in industrial or municipal landfill
Scrap metals	Construction activities	Parts, containers	Nonhazardous	Recycle and/or dispose of in industrial or municipal landfill
Empty hazardous material containers	Operation and maintenance of plant	Drums, containers, totes*	Hazardous and nonhazardous solids	Containers <5 gal will be disposed as normal refuse. Containers >5 gal will be returned to vendors for recycling or reconditioning.
Waste oil filters	Construction equipment and vehicles	Solids	Used Oil	Recycle at a permitted TSDF
Oily rags, oil sorbent excluding lube oil flushes	Cleanup of small spills	Hydrocarbons	Used Oil	Recycle or dispose at a permitted TSDF
Spent lead acid batteries	Construction machinery	Heavy metals	Hazardous	Store no more than 10 batteries (up to 1 year)–recycle off site.
Spent alkaline batteries	Equipment	Metals	Universal waste solids	Recycle or dispose offsite at a Universal Waste Destination Facility
Waste oil	Equipment, vehicles	Hydrocarbons	Used Oil	Dispose at a permitted TSDF
Sanitary waste	Portable toilet holding tanks	Solids and liquids	Nonhazardous liquid	Remove by contracted sanitary service

*Containers include <5-gallon containers and 55-gallon drums or totes
Note: TSDF = Treatment, Storage, and Disposal Facility

4.8.1 Nonhazardous Solid Waste

The following nonhazardous waste streams potentially could be generated from construction of the Project:

- **Paper, wood, glass, and plastics**. During construction, paper, wood, glass, and plastics will be generated from packing materials, waste lumber, insulation, and empty nonhazardous chemical containers. These wastes will be recycled to the extent practical. Waste that cannot be recycled will be disposed of weekly in a municipal landfill. On site, the waste will be placed in dumpsters.
- **Metal**. Metal including steel, packing materials, and empty nonhazardous chemical containers) and aluminum waste (from packing materials and electrical wiring) will be generated during construction. Waste will be recycled where practical. All wastes that that cannot be recycled (empty hazardous materials containers, waste oil) will be deposited in a municipal landfill.
- **Wastewater**. Wastewater generated during construction will include sanitary waste, storm water runoff, equipment wash-down water and water from excavation dewatering during construction (if dewatering is required). These wastewaters may be classified as

hazardous or nonhazardous depending on their chemical quality and handled and disposed of in accordance with applicable law.

4.8.2 Hazardous Waste

Although highly unlikely with precautions and best practices implemented, a small amount of hazardous waste may be generated during construction primarily from small petroleum spills resulting from the operation of heavy equipment and filling of transformer and hydraulic equipment reservoirs. These spills will be cleaned up if they occur and the resultant waste material properly disposed in accordance with federal and state regulations.

Most of the hazardous waste generated during construction will consist of liquid waste, such as water from excavation dewatering (if it contains contaminants), flushing and cleaning fluids.

Wastewaters generated during construction could also be considered hazardous, based on sampling.

A Spill Response Plan for operation of the Project will be developed by the Applicant to protect the environment from spills of petroleum products.

4.9 Gravel, Aggregate, and Concrete Needs and Sources

A small amount of concrete will be poured in place for equipment and building foundations, fence footing and miscellaneous small pads. Aggregate material will be used for the parking lot and substation area (and if determined necessary, for the perimeter road and site entrance).

Concrete, mechanical, and electrical works will be performed with the aid of graders, rollers, front loaders, dump trucks, trenching machines, concrete mixer and pump trucks, cranes, and pick-ups.

4.10 Electrical Construction Activities

Electrical construction will include installation of electrical equipment and necessary infrastructure to energize the equipment. Construction areas will include the Project solar field and interconnecting transmission line.

Electrical construction will consist primarily of the following elements:

- **Equipment**—Installation of all electrical equipment including DC combiner boxes, PCS shelters (including inverters), transformers, circuit breakers, disconnect switches, switchgear and distribution panels, lighting, communication, control, and SCADA equipment.
- **Cables**—Installation of all cables necessary to energize the Project equipment including instrument control wiring. High, medium, and low voltage cables will be routed via cable trays, above grade conduits, below grade conduit in duct bank, and overhead structures as necessary.
- **Grounding**—All equipment and structures will be grounded as necessary. Within the solar field, an appropriate grounding system will be engineered and constructed in order to maintain personnel safety and equipment protection.

- **Telecommunications**—Multiple communication systems will be required for the Project to properly operate, including T-1 internet cables, fiber optic, and telephone. All communications will be installed during electrical construction.

The site will include underground and overhead 34.5kV collection system and an overhead 230kV line. Transmission line characteristics and construction techniques are briefly summarized below, and standard construction techniques that will be implemented also are provided.

4.10.1 34.5kV Collection System

Each Facility will have a collection system connecting PV modules to the substation which includes a combination of underground, aboveground and overhead, DC and AC electrical and communication cables. DC electrical collection lines would connect the PV modules to the inverter. Inverters will convert the DC power into AC power. AC electrical lines will connect inverters to transformers. Transformers will increase the AC power to medium voltage (MV), typically 34.5kV. MV AC electrical lines will connect MV transformers to the high voltage (HV) transformer(s) in the substation. PV combining switchgear (PVCS), Sectionalizing Cabinets (SC) or other electrical combiner boxes may be installed to combine electrical lines on the collection system.

Aboveground collection may include cable tray or messenger wire system designed to meet electrical codes. Cable tray system is rigid structure that will hold a cluster of insulated cables. Messenger cable system is a cable that would support a cluster of insulated cables. Systems would be on module structures and/or on separate posts. Height from ground will vary depending on final cable tray design.

The overhead collection system may contain single or multiple three phase electrical circuits and communication lines on the same structures. Overhead collection systems typically consist of wood or steel poles on monopoles or “H-frame” structures. The height for the collection system structures is approximately 75 feet but may vary based on voltage, ground elevation, crossing of existing or proposed facilities, National Electric Safety code and right-of-way requirements.

The off-site collection system, substation and gen-tie line options will vary for each Facility and each interconnection option as described below.

4.10.2 230kV Gen-Tie Line

The Project will include an approximately 0.4-mile 230kV gen-tie line that will connect with the NV Energy transmission grid through NV Energy’s proposed 230kV Esmeralda substation. The overhead 230kV gen-tie line will be installed on steel structures of up to approximately 150 feet above grade with a minimum ground clearance of 24-35 feet per local and national electrical code requirements. Steel towers will be galvanized steel with a dull gray appearance similar to existing steel poles installed adjacent to the Project. The 230kV gen-tie towers may be either the monopole type or “H-frame” to support interconnection to the transmission system.

4.10.3 Standard Transmission Line Construction Techniques

Standard gen-tie line construction techniques will be used to construct the 230kV gen-tie line and 34.5kV collector lines. Primary stages in transmission line construction are foundation installation, tower installation, and conductor stringing. These stages are briefly described below for each of the transmission line types that will be installed at the site.

Foundation Installation. The 230kV steel towers will be supported by steel-reinforced poured pier concrete foundations which are suitable for the sandy soils conditions at the site. These foundations are constructed by auguring a cylindrical hole using a truck-mounted drilling rig. Reinforcing steel and anchor bolt cages will be installed in the hole and then the hole will be backfilled with concrete. Steel tower foundations will range in size from approximately 4 to 7 feet in diameter, and range in depth from 15 to 40 feet. Larger diameter and deeper foundations will be located where the transmission line turns at an angle of 30 degrees or greater.

Wood poles will be embedded into the ground to a depth of at least 10% of the pole height plus 2 feet. For the Project installation of wood poles is anticipated to require auguring holes approximately 2 feet in diameter and 8 feet deep. Aggregate or high-strength backfill will be used to stabilize the installed poles. One foundation hole for each transmission line structure and directly embedded pole is expected.

Tower/Pole Installation. Poles will be staged either in a designated laydown/stringing area, or they may be delivered and unloaded adjacent to their respective final locations.

Poles will be placed onto their foundations (for wood, placed into their holes) using backhoes or heavy lifter vehicles for the smaller, lighter poles, or a crane for longer poles. The poles will be supported, as necessary, during backfilling or bolting to the foundation to ensure correct pole seating and raking. Taller steel poles, typically those that are over 45 feet long, will be composed of multiple sections that will be stacked on each other and then “jacked” together (aligning the boltings on each pole so that they can be properly fastened).

For dead-end wood poles or turning poles, guys and anchors will be installed with auger trucks placing the anchors. Wood pole dead-ends for a double circuit will possibly be two independent poles, two poles lashed together with guys, or more simply, a steel pole on a drilled pier foundation with davit arms designed to hold the tension of a double circuit.

Conductor Stringing. Conductor stringing will likely be conducted one phase at a time, with all equipment in the same operational place until all phases of that operation are strung. The sequence of conductor stringing operations is summarized below.

- Finger Lines: The finger line is used to pull the later pilot line through travelers installed on each davit arm. The finger line is typically a small diameter synthetic rope that can be pulled by hand or crawler tractor.
- Pilot Lines: The finger line, once in place, is used to pull the pilot line which is a larger synthetic rope or small steel line. This requires a vehicle at each side of the pulling area, a Bullwheel tensioner truck doing the pulling of the pilot line, and a drum puller truck on the other side holding the reel.
- Conductor: Using the pilot line, the conductor is pulled through. Other activities may include offset clipping if suspension insulators are not plumb or splicing together two reels of conductor. Once complete, the traveler equipment will be removed.
- Tensioning: After the conductor is completely strung through a section, the section is tensioned to comply with design specifications. Once the conductor has been tensioned

or loosened to meet the appropriate sag specification given the ambient temperature, the dead-end clamps will be tightened.[1]

Grounding. Ground rods will be hammered into the earth with a jackhammer device attached to a small excavator (such as a Bobcat). Typically, the rods are 8 to 12 feet long and can be longer if needed by joining multiple rods. For the 34.5kV wood poles, a 3-foot square by 2-foot-deep area will be excavated to expose the ground rod for connection to the plant's grounding grid. The poles can then be connected by laying in ground wire below grade to connect to the ground grid via trenching. Ground rods can be connected to the pole or in the case of the steel pole, to the anchor bolts. The 230kV towers may be connected to the overall plant ground grid or remain independent.

It is expected that an area of approximately 100 feet by 150 feet will be required at each 230kV tower location for use as temporary laydown or as a staging area for equipment, towers, and hardware. In general, little to no grading is expected to be required for these areas.

Typical equipment expected to be used for transmission line construction includes: (1) backhoe, (2) truck-mounted tower hole auger, (3) forklift, (4) crane, (5) line truck with air compressor, (6) various pickup and flatbed trucks, (7) conductor reel and tower trailers, (8) bucket trucks, and (9) truck-mounted tensioner and puller.

Onsite substation construction will consist of site grading, concrete equipment foundation forming and pouring, crane-placed electrical and structural equipment, underground and overhead cabling and cable termination, ground grid trenching and termination, control building erection, and installation of all associated systems including, but not limited to HVAC, distribution panels, lighting, communication and control equipment, and lightening protection.

4.11 Aviation Lighting

The Project may be exempt from filing Federal Aviation Administration (FAA) Form 7460 (Notice of Proposed Construction or Alteration) for compliance with the FAA's regulations at 14 CFR Part 77, however further consultation with nearby airports will be conducted to fully understand potential impacts to aviation and, if necessary, make appropriate adjustments to the Project design and layout.

4.12 Construction Water Usage

To provide sufficient water for construction activities, a temporary storage pond may be constructed as part of the Project. A construction water storage pond with two to four million-gallon capacity may be excavated and lined for the temporary storage of water during the construction period. After the construction period, the construction water storage pond will be re-leveled to grade and the lining removed.

An estimated 850-acre feet of water will be required during Project construction for construction-related activities, including dust control. The primary use of the water will be for dust control.

[1] NV Energy will have maximum design tension limits for the connection to the NV Energy owned switch pole. An additional customer owned dead-end pole may be needed to allow a lower tension span at the connection point. The design tension limit depends on the switch design chosen for the project and will be determined during the initial design phase.

4.13 Site Stabilization, Protection, and Reclamation Practices

4.13.1 Erosion and Sediment Control Measures

Appropriate water erosion and dust-control measures will be required to prevent an increased dust and sediment load to ephemeral washes around the construction site.

Soil stabilization measures will be used to prevent soil being detached by storm water runoff. The Applicant will employ BMPs to protect the soil surface by covering or binding soil particles. The Project will incorporate erosion-control measures required by regulatory agency permits and contract documents as well as other measures selected by the contractor. Site-specific BMPs will be designed by the contractor, and associated figures are to be included in the final Project Erosion and Sediment Control Plan.

4.13.2 Sediment Control Measures

Sediment controls are intended to complement and enhance selected erosion control measures and reduce sediment discharges from active construction areas. Sediment controls are designed to intercept and settle out soil particles that have been detached and transported by the force of water. The Project will incorporate sediment control measures required by regulatory agency permits and contract documents as well as other measures selected by the contractor. The Project will implement the practices in the Erosion and Sediment Control Plan.

4.13.3 Dust Control

The Applicant will use water to control dust to comply with Esmeralda County dust control requirements. Where water is insufficient to control dust, soil stabilizers approved by BLM and USFWS, will be used within the fenced solar field to control dust to County standards.

4.13.4 Rehabilitation and Decommissioning Plans

4.13.4.1 Rehabilitation

The Applicant will prepare a Rehabilitation Plan. This plan will be implemented immediately after construction for the areas that are temporarily disturbed, such as portions of the transmission line route that involve disturbance.

4.13.4.2 Decommissioning

The Project facilities have an expected life of 25 years or more. The Applicant will prepare a Decommissioning Plan. In order to ensure that the permanent closure of the facility does not have an adverse effect, the Decommissioning Plan will be developed at least 6 months prior to commencement of site closure activities. The Decommissioning Plan will be developed in coordination with the BLM, with input from other agencies as appropriate. The plan will address future land use plans, removal of hazardous materials, impacts and mitigation associated with closure activities, schedule of closure activities, equipment to remain on the site, and conformance of the plan with applicable regulatory requirements and resource plans. It will be consistent with requirements and goals set for in the Rehabilitation Plan.

SECTION 5

Related Facilities and Systems

5.1 Transmission System Interconnect

5.1.1 Proposed Transmission System

The Project will include an approximately 0.4-mile 230kV gen-tie line that will connect with the NV Energy transmission grid through NV Energy's proposed 230kV Esmeralda substation.

The overhead 230kV gen-tie line will be installed on steel structures of up to approximately 150 feet above grade with a minimum ground clearance of 24-35 feet per local and national electrical code requirements. Steel towers will be galvanized steel with a dull gray appearance similar to existing steel poles installed adjacent to the Project. The 230kV transmission towers may be either the monopole type or "H-frame" to support interconnection to the transmission system.

5.1.2 Ancillary Facilities

5.1.2.1 Interconnection

The Project will include an approximately 0.4-mile 230kV gen-tie line that will connect with the NV Energy transmission grid through NV Energy's proposed 230kV Esmeralda substation.

5.1.3 Status of Power Purchase Agreements

The Applicant intends to sell power from the facility in accordance with a PPA to be negotiated with one or more utilities.

5.1.4 Status of Interconnect Agreement

The Applicant has submitted an application for interconnection to NV Energy and review of this application is in process.

5.1.5 General Design and Construction Standards

The Project will be designed in accordance with federal and industrial standards including American Society of Mechanical Engineers, National Electrical Code (NEC, 2008), International Energy Conservation Code (IECC, 2006), International Building Code (IBC, 2006), Uniform Plumbing Code (UPC, 2006), Uniform Mechanical Code (UMC, 2006), National Fire Protection Association and Occupational Safety and Health Administration (OSHA).

Construction will be in accordance with the federal codes listed above and all applicable state and local codes. Local Esmeralda County codes will include Title 13 – Fire and Fire Prevention, Title 22 – Buildings and Construction, Title 24 – Water, Sewage and Other Utilities and Title 25 – Plumbing and Electrical Regulations as necessary.

5.2 Gas Supply Systems

The Project will not require a natural gas supply system.

5.3 Other Related Systems

5.3.1 Communication System Requirements during Construction and Operation

Multiple communication systems will be used for construction and operation. Hard-wired (land-line) systems required for operation communications will installed as part of the electrical construction activities. These items will include telephone, fiber optics, and T1 internet. The Applicant expects to utilize existing wired or wireless telecommunications facilities. In the event that these facilities are not available in the Project vicinity, the Applicant would supplement with small aperture (less than 1 meter) satellite communications gear.

5.3.2 Project Access Road

The project site will include three (3) entrances which will be directly off of NV-265 to the south of U.S. Hwy 95/U.S. Hwy 6 (Figure 1-2). One project access way will be located along Emigrant Pass Road, extending in a southwest direction from its intersection with NV-265. Another project access way will be located along Road 53, extending in a southwest direction from its intersection with NV-265. A third project site access will be located along NV-265 in the vicinity of the proposed project substation, near the southeast corner of the project site.

The access ways will be graded compacted earth and will be used for delivery of all Project components and will be used by workers traveling to the site during construction. If determined necessary by the Project, for dust control purposes, the access ways may be upgraded to aggregate or paved surface.

Construction access road beds will typically be 16 - 25 feet wide. A stabilized entrance/exit will be provided to clean vehicle wheels prior to exiting the construction area. It is expected that most construction staff and workers will come daily to the jobsite from within Esmeralda County.

SECTION 6

Operation and Maintenance

6.1 Operations Workforce and Equipment

The Project will require a workforce of up to 13 FTE positions (or personnel hours totaling up to 13 FTE positions). This workforce will include administrative and management personnel, operators, and security and maintenance personnel. Employees will be onsite to maintain equipment and provide security. Operation and maintenance will require the use of vehicles including pick-up trucks and trucks and equipment for PV panel washing.

Operation and maintenance will require the use of vehicles and equipment including trucks for panel washing and crane trucks for minor equipment maintenance. Additional maintenance equipment will include forklifts, manlifts, and chemical application equipment for weed abatement and soil stabilizer treatment in the bioremediation area. Pick-up trucks will be in daily use on the site.

At designated intervals, approximately every 10 to 15 years, major equipment maintenance will be performed. On occasions, large heavy-haul transport equipment, including cranes, will be brought on site. No heavy equipment will be used during normal plant operation.

6.2 Operation and Maintenance Needs

The O&M of the solar plant will require up to 13 FTE personnel (or personnel hours totaling up to 13 FTE positions), consisting of plant operators, maintenance technicians, and site security. Maintenance and administrative staff typically work 8-hour days, Monday through Friday. During periods when non-routine maintenance or major repairs are in progress, the maintenance force typically will work evenings when the solar plant is naturally offline.

Prior to Project financing and commencement of construction, long-term maintenance schedules will be developed to include periodic maintenance and overhauls in accordance with manufacturer recommendations.

6.2.1 Periodic Maintenance

Periodic routine maintenance comprises monthly, quarterly, semi-annual, and annual inspections and service. A solar PV project uses no process water, gas, or fuels for the power generation process. The maintenance protocol is mainly routine inspections. The frequency and type of maintenance is described below by equipment type. During the first year of operation, the frequency of inspections will be increased to address settling and electrical termination torque (e.g., for year 1, inspections shown as semi-annually are performed quarterly, inspections shown as annual are performed semi-annually). Routine maintenance procedures are listed in Table 6-1.

TABLE 6-1
Routine Maintenance Protocol

Equipment	Maintenance Interval	Task
PV Modules	Quarterly	• Visually inspect panels for breakage and secure mounting • Visually inspect modules for discoloration • Visually inspect wiring for connections and secure mounting • Visually inspect mounting structure for rust and erosion around foundations • Manually clean localized debris from bird droppings, etc.
	Semi-Annually	• Clean modules if determined necessary
Inverters	Semi-annually	• Perform temperature checks on breakers and electrical terminations • Visual inspection of all major components and wiring harnesses for discoloration or damage • Measure all low voltage power supply levels • Inspect/remove any dust/debris inside cabinet • Inspect door seals • Check proper fan operation • Inspect and clean (replace if necessary) filters • Check electrical termination torque • Check the operation of all safety devices (e-stop, door switches, ground fault detection)
	Annually	• Check all nuts, bolts and connections for torque and heat discoloration • Calibrate control board and sensors • Inspect air conditioning units for proper operation
Medium voltage transformers	Semi-annually	• Perform temperature check • Inspect door seals • Record all gauge readings • Clean any dirt/debris from low voltage compartment
Substation transformers	Semi-annually	• Inspect access doors/seals • Inspect electronics enclosure and sensor wiring • Record all gauge readings
	Annually	• Inspect fans for proper operation • Calibrate temperature and pressure sensors • Pull oil sample for oil screening and dissolved gas analysis.
Breakers and switchgear	Semi-annually	• Inspect for discoloration of equipment and terminations • Inspect door seals
	Annually	• Check open/close operation
Overhead transmission lines	Annually (and after heavy rains)	• Inspect guy wires and tower angle • Visual inspection of supports/insulators • Visual inspection for discoloration at terminations

TABLE 6-1
Routine Maintenance Protocol

Equipment	Maintenance Interval	Task
Roadways	Annually (and after heavy rain)	• Inspect access ways and roads that cross drainage paths for erosion
Vegetation	Semi-annually	• Inspect for localized vegetation control to maintain compliance with applicable fire codes • Apply herbicides as necessary to control noxious weeds
O&M Building	Semi-annually	• Check smoke detectors
	Annually	• Check weather stripping and door/window operation • Check emergency lighting • Inspect electrical service panel
Backup Power	Annually	• Visually inspect backup power system • Perform functional test of backup power system
Fencing	Annually (and after heavy rain)	• Inspect fence or vandalism and erosion at base

Routine cleaning of the PV modules may be required to minimize performance degradation at a level below 3%. As noted above, it is anticipated that the panels will require washing up to twice a year.

No heavy equipment will be used during normal plant operation. O&M vehicles will include trucks for panel washing. Pick-up trucks will be in daily use on the site.

6.3 Emergency Response Planning

The Applicant will prepare an Emergency Response Plan. The plan will contain a section that presents the results of a comprehensive facility hazard analysis and, for each identified hazard, a response plan. The emergency response plan will assign roles and actions for onsite personnel and responders and will designate assembly areas and response actions.

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SECTION 7

Environmental Considerations

7.1 General Description of Site Characteristics and Potential Environmental Issues

The Project site was selected in consideration of avoiding or minimizing environmental impacts. The site is within variance areas identified as part of the BLM's Solar PEIS (BLM/DOE, 2010 and BLM/DOE, 2011). Variance areas are lands that have not been excluded due to resource concerns, where the BLM will consider applications for utility-scale solar energy development on a case-by-case basis. The Project site is located in close proximity to multiple roads, transmission lines, and substations. Good land management practice would encourage location of facilities, such as solar energy generating facilities, near such infrastructure.

The sections that follow include a preliminary discussion of potential environmental issues associated with the Project. The Applicant will coordinate with the BLM and other federal, state and local agencies to more fully understand potential impacts from development at the Project site. The Applicant will conduct additional surveys and prepare relevant reports to facilitate environmental clearance of all areas considered in this POD (and update the POD accordingly). These may include but are not limited to biological and cultural resources surveys and possible visual resources assessments, depending on the presence of suitable key observation points.

7.1.1 Recreation

The Applicant will work with the BLM to more fully understand potential impacts to recreation and if necessary determine appropriate Project design and mitigation measures.

7.1.2 Soil Resources

Impacts on soil resources would occur mainly as a result of ground-disturbing activities (e.g., grading, excavating, and drilling), especially during the Project construction phase. Impacts could include soil compaction, soil horizon mixing, soil erosion and deposition by wind, soil erosion by water and surface runoff, sedimentation, and soil contamination. The Applicant will implement industry standard BMPs and mitigation measure during all Project phases to avoid and minimize impacts to soil resources and associated impacts to air quality, water quality and vegetation.

7.1.3 Water Resources

Water leased or purchased from either a public or private entity would likely require changes in place of use, manner of use and point of diversion approved by the Nevada State Engineer, depending on the current status of the existing rights. Water for construction could be obtained under temporary change applications. Operational water would likely require permanent change application approval by the State Engineer. The Applicant will contact the holders of water rights in the basin and after reaching any agreements to procure water from such holders, file with the State Engineer applications for any needed changes in place of use, manner of use or point of diversion.

The Applicant will undertake a drainage study for the Project area. Results of this study will be used to design appropriate drainage and erosion control structures for the Project and to inform appropriate BMPs and mitigation measures. This POD will be updated to incorporate that information once the study is complete.

7.1.4 Special Status Species

Because this area currently serves as habitat for wildlife and vegetation, the Applicant will conduct detailed natural resources surveys to determine whether species listed as threatened or endangered or designated sensitive under various natural resources conservation programs are present on the Project site. The Applicant will hold discussions with the BLM Tonopah Field Office staff to determine which special status species are likely to occur in the Project area and to determine protocols to follow in conducting field surveys for these species. If surveys determine that the species are present or likely to be present, then a mitigation program will be developed in consultation with the BLM. In addition, as necessary ESA Section 7 consultation will be completed.

7.1.5 Visual Resources

The Applicant will work with the BLM and other management agencies to identify key observation points (KOPs) within the project vicinity and conduct viewshed analyses from the KOPs as necessary to determine potential visual impacts.

7.1.6 Cultural Resources and Native American Concerns

The Project would modify approximately 10,000 acres that are currently undeveloped. Because this area could contain cultural resources, the Applicant will conduct detailed cultural resources surveys to determine whether any prehistoric or historic archaeological sites are present on the Project site. As determined necessary, consultation in accordance with Section 106 of the National Historic Preservation Act will also be completed.

It is not known if any of the Project Area contains sites important to Native American tribes or groups having ties to the Project area. Tribal consultation will be led by the BLM and informed by the cultural resource survey work described above.

7.2 Mitigation Measures Proposed by the Applicant

Applicant Proposed Measures (APMs) include Project design and equipment selection measures proposed as part of the Project to reduce impacts to the surrounding environment. As evidenced by other projects on BLM-administered lands, the Applicant will make a substantial effort to minimize potential impacts to sensitive resources. Such measures are implemented through the design process, to minimize such impacts or avoid them altogether, and also through the development of site-specific management and operation plans. The Applicant will comply with all resource protection measures identified in permit conditions and mitigation plans developed as required by permits and authorizations.

APMs may include the preparation of the following management plans, which will be submitted to and approved by the BLM prior to issuance of notice to proceed on the Project:

- Avian Protection Plan
- Decommissioning Plan
- Emergency Response Plan
- Environmental Compliance Plan
- Fire Management Plan

- Lighting Management Plan
- Rehabilitation Plan
- Site Drainage Plan
- Spill Response Plan
- Pesticide Use Plan
- Erosion and Sediment Control Plan/Water Quality Control Plan
- Transportation Management Plan
- Weed Control Management Plan

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SECTION 8

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Appendix A – Legal Description

Overall Solar Project Area (Minus Gen-tie Line and Access Road) (Should be included in Federal Register) Legal Description

Mount Diablo Meridian, Nevada

Township 2 N, Range 37 E	
Section 23	E1/2SE1/4
Section 24	S1/2NW1/4, S1/2NE1/4, and S1/2
Section 25	N1/2, SE1/4, N1/2SW1/4, and SE1/4SW1/4
Section 26	E1/2NE1/4
Section 36	NE1/4 and NE1/4SE1/4
Township 2 N, Range 38 E	
Section 19	S1/2NW1/4, S1/2NE1/4, and S1/2
Section 20	W1/2
Section 29	W1/2, W1/2NE1/4 and W1/2SE1/4
Section 30	All
Section 31	All
Section 32	W1/2, SE1/4, W1/2NE1/4, W1/2NE1/4NE1/4, and W1/2SE1/4NE1/4
Township 1 N, Range 38 E	
Section 4	W1/2NW1/4NW1/4, SW1/4NW1/4, W1/2SW1/4, and W1/2SE1/4SW1/4
Section 5	All
Section 6	E1/2NW1/4, and E1/2
Section 7	E1/2NE1/4
Section 8	All
Section 9	W1/2, SW1/4NE1/4, W1/2SE1/4, NW1/4NE1/4SE1/4, SW1/4NE1/4SE1/4, SE1/4NE1/4SE1/4 and SE1/4SE1/4
Section 15	NW1/4NW1/4, S1/2NW1/4, SW1/4, W1/2SE1/4, and NE1/2SE1/4
Section 16	All
Section 17	All

Solar Field and Ancillary Facilities- Areas within Overall Solar Project Area (Minus Gen-tie Line and Access Road)

Mount Diablo Meridian, Nevada

Township 2 N, Range 37 E	
Section 23	E1/2SE1/4
Section 24	S1/2NW1/4, S1/2NE1/4, and S1/2
Section 25	N1/2, SE1/4, N1/2SW1/4, and SE1/4SW1/4
Section 26	E1/2NE1/4
Section 36	NE1/4 and NE1/4SE1/4
Township 2 N, Range 38 E	
Section 19	S1/2NW1/4, S1/2NE1/4, and S1/2
Section 20	W1/2
Section 29	W1/2, W1/2NE1/4 and W1/2SE1/4
Section 30	All
Section 31	All
Section 32	W1/2, SE1/4, W1/2NE1/4, W1/2NE1/4NE1/4, and W1/2SE1/4NE1/4
Township 1 N, Range 38 E	
Section 4	W1/2NW1/4NW1/4, SW1/4NW1/4, W1/2SW1/4, and W1/2SE1/4SW1/4
Section 5	All
Section 6	E1/2NW1/4, and E1/2
Section 7	E1/2NE1/4
Section 8	All
Section 9	W1/2, SW1/4NE1/4, W1/2SE1/4, NW1/4NE1/4SE1/4, SW1/4NE1/4SE1/4, SE1/4NE1/4SE1/4 and SE1/4SE1/4
Section 15	NW1/4NW1/4, S1/2NW1/4, SW1/4, W1/2SE1/4, and NE1/2SE1/4
Section 16	All
Section 17	All

Project Access (Should be Included in Federal Register)

Project access is 230 ft long by 80 ft wide with a 180 feet wide flare at the driveway approach totaling 0.5 acres.

Mount Diablo Meridian, Nevada

Township 1 N, Range 38 E	
Section 9	E1/2NW1/4, and E1/2SW1/4
Section 15	SW1/4SE1/4
Section 16	E1/2NW1/4, NE1/4SW1/4, NW1/4SE1/4SW1/4, and SW1/4SE1/4SW1/4

230 kV Transmission Line ROW – Preferred (Should be included in Federal Register)

Mount Diablo Meridian, Nevada

Township 1 N, Range 38 E	
Section 15	N1/2SE/14

230 kV Transmission Line Temporary Stringing Areas – Preferred (Should be Included in Federal Register)

Mount Diablo Meridian, Nevada

Township 1 N, Range 38 E	
Section 15	N1/2SE/14

230 kV Transmission Line ROW – Alternative (Should be included in Federal Register)

Mount Diablo Meridian, Nevada

N/A	

230 kV Transmission Line Temporary Stringing Areas – Alternative (Should be included in Federal Register)

Mount Diablo Meridian, Nevada

Township 1 N, Range 38 E	
Section 15	NE1/4SE1/4, and S1/2SE1/4NE1/4

O&M Area (within Overall Solar Project Area)

Mount Diablo Meridian, Nevada

Township 1 N, Range 38 E	
Section 15	SW1/4NW1/4

Onsite Substation (within Overall Solar Project Area)

Mount Diablo Meridian, Nevada

Township 1 N, Range 38 E	
Section 15	E1/2SW1/4 and W1/2SE1/4

Temporary Staging Area (within Overall Solar Project Area for general construction activities)

Mount Diablo Meridian, Nevada

Township 2 N, Range 38 E	
Section 32	N1/2SE1/4
Section 36	SW1/4NE1/4, and NE1/4SE1/4
Township 1 N, Range 38 E	
Section 9	S1/2SE1/4
Section 15	S1/2SW1/4SW1/4, and S1/2SE1/4SW1/4
Section 17	SE1/4SW1/4SW/14, S1/2SE1/4SW1/4, and S1/2SW/14SE/14

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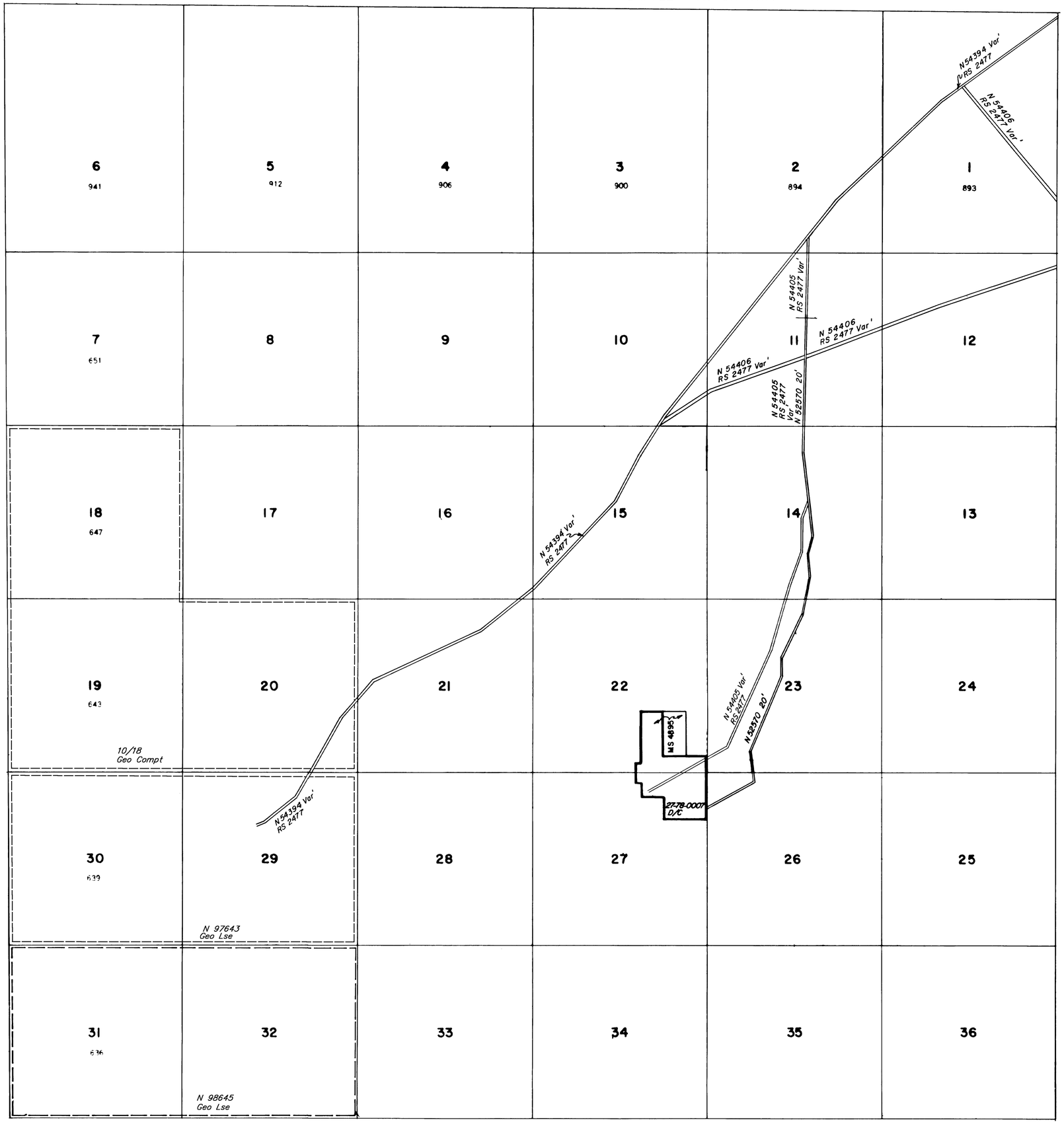
Appendix B – Title Plats

UNSURVEYED TOWNSHIP 1 NORTH RANGE 37 EAST OF THE MOUNT DIABLO MERIDIAN, NEVADA

PROTRACTION DIAGRAM NO 64

ESMERALDA COUNTY BATTLE MTN GR DIST



SCALE

10 5 0 10 20 30 60

30 chains to the inch

WARNING STATEMENT

This plat is the Bureau's representation of the Record of Title and should be used only as a graphic display of the township survey data. Records hereon do not reflect title changes which may have been effected by the lateral movements of rivers or other bodies of water. Refer to the cadastral surveys for official survey information.

STATUS OF PUBLIC DOMAIN LAND AND MINERAL TITLES

MT/USE PLAT

INDEX TO SEGREGATED TRACTS				
RESURVEY	ORIGINAL SURVEY			
TRACT NO	T	R	SEC	SUBDIVISION

FOR ORDERS EFFECTING DISPOSAL OR USE OF UNIDENTIFIED LANDS WITHDRAWN FOR CLASSIFICATION, MINERALS, WATER AND/OR OTHER PUBLIC PURPOSES, REFER TO INDEX OF MISCELLANEOUS DOCUMENTS.

N 56347 Fish Lake II UA

Secs 18, 19, 30-32

CURRENT TO	BY
5/24/02	MS
8/26/10	MS
12/21/10	MS
4/22/11	MS
5/12/15	**MS**
3/13/18	*FC*
9/5/18	*FC*
3/26/19	*DMG*
8/6/19	*FC*
10/22/19	*FC*

N 060, T
T. 1N
R. 37E

PLAT TYPE GEO

UNSURVEYED TOWNSHIP 1 NORTH RANGE 38 EAST OF THE MOUNT DIABLO MERIDIAN, NEVADA

PROTRACTION DIAGRAM NO 64

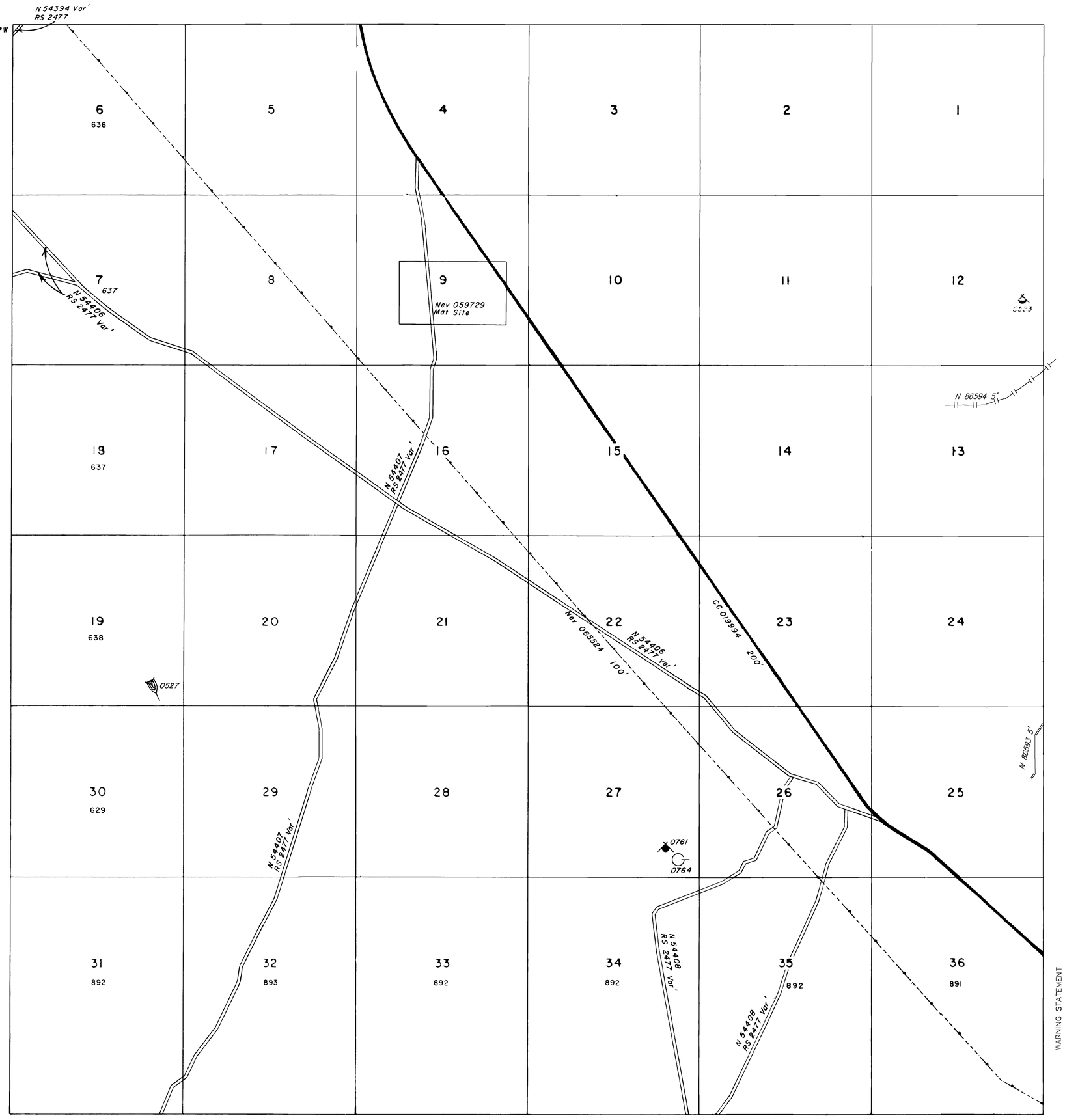
ESMERALDA COUNTY

BATTLE MTN GR DIST

STATUS OF PUBLIC DOMAIN
LAND AND MINERAL TITLES

MT PLAT

Lat. 37°58'39.334"N
Long. 117°49'47.542"W



INDEX TO SEGREGATED TRACTS

RESURVEY	ORIGINAL SURVEY			
TRACT NO	T	R	SEC	SUBDIVISION

FOR ORDERS EFFECTING DISPOSAL OR USE OF UNIDENTIFIED LANDS WITHDRAWN FOR CLASSIFICATION, MINERALS, WATER AND/OR OTHER PUBLIC PURPOSES, REFER TO INDEX OF MISCELLANEOUS DOCUMENTS.

CC 019978 R/W Mat Site affects Tp

CC 019979 R/W Mat Site affects Tp

CURRENT TO	BY	CURRENT TO	BY
5/25/07	SLL		
6/24/09	MS		
10/16/09	MS		

SCALE

10 5 0 10 20 30 60

30 chains to the inch

N-060
T. 1 N
R. 38 E

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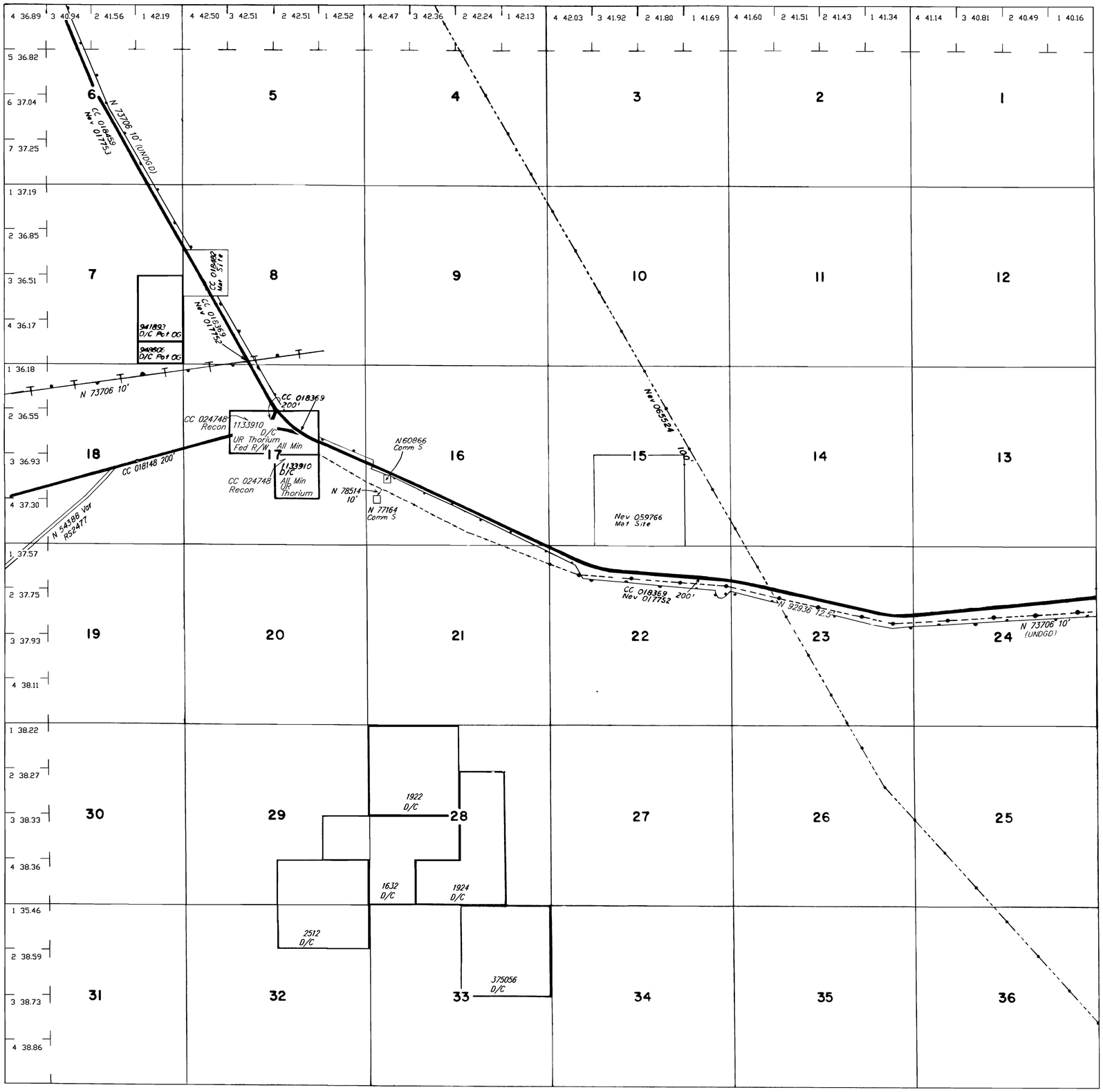
TOWNSHIP 2 NORTH RANGE 37 EAST OF THE MOUNT DIABLO MERIDIAN, NEVADA

ESMERALDA COUNTY
BATTLE MTN GR DIST

STATUS OF PUBLIC DOMAIN
LAND AND MINERAL TITLES

MT PLAT



SCALE
10 5 0 10 20 30 60
30 chains to the inch

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INDEX TO SEGREGATED TRACTS				
RESURVEY	ORIGINAL SURVEY			
TRACT NO	T	R	SEC	SUBDIVISION

FOR ORDERS EFFECTING DISPOSAL OR USE OF UNIDENTIFIED LANDS WITHDRAWN FOR CLASSIFICATION, MINERALS, WATER AND/OR OTHER PUBLIC PURPOSES, REFER TO INDEX OF MISCELLANEOUS DOCUMENTS.

CURRENT TO	BY	CURRENT TO	BY
9/29/11	MS		
7/15/2014	SLP		

OG PLAT

N-060
T. 2N
R. 37E.

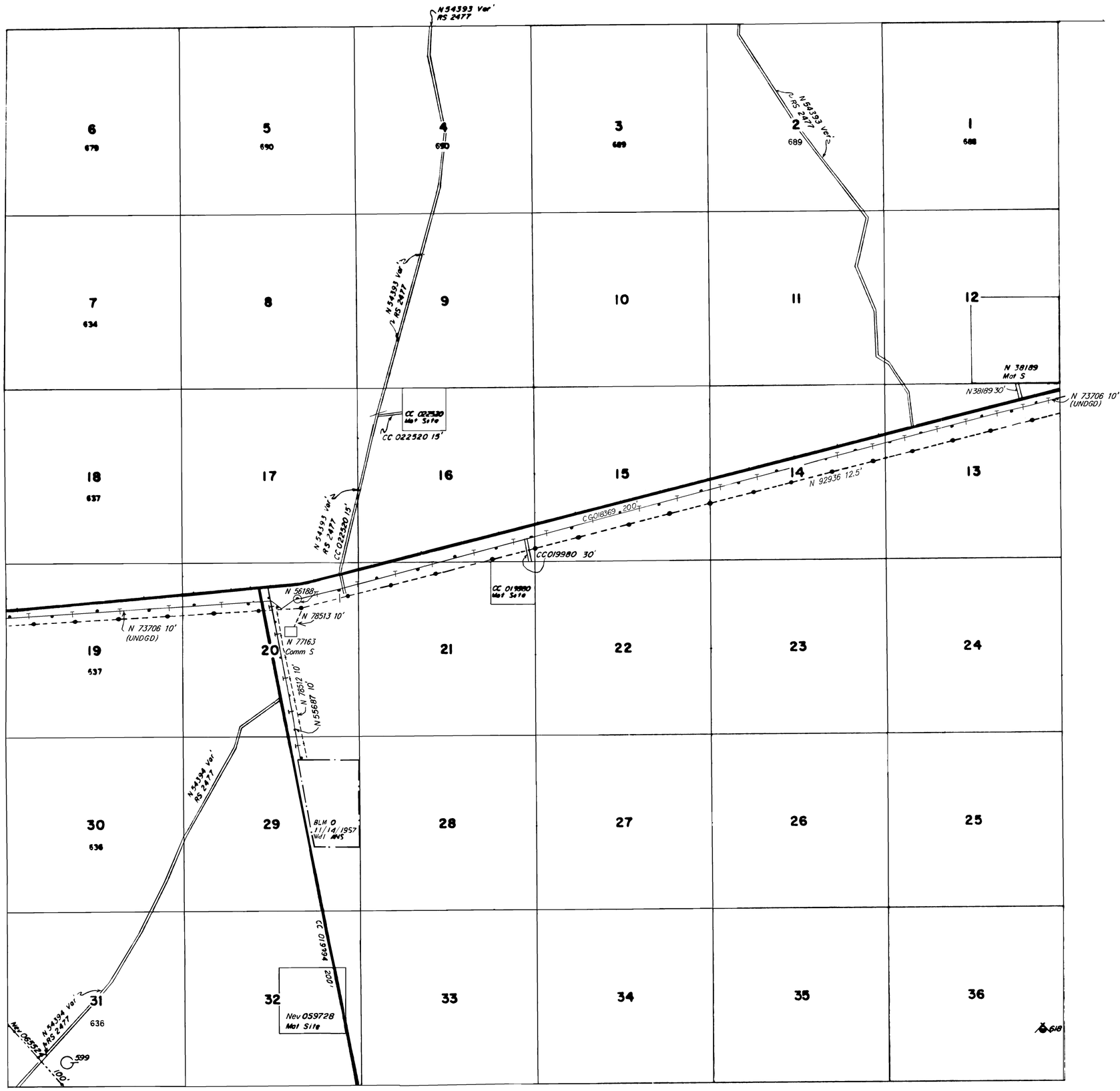
1

UNSURVEYED TOWNSHIP 2 NORTH RANGE 38 EAST OF THE MOUNT DIABLO MERIDIAN, NEVADA

PROTRACTION DIAGRAM NO 64

ESMERALDA COUNTY

BATTLE MTN GR DIST



Lat. 37°58'39.334"N

Long. 117°49'47.542"W

SCALE

10 5 0 10 20 30 60

30 chains to the inch

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STATUS OF PUBLIC DOMAIN LAND AND MINERAL TITLES

MT PLAT

INDEX TO SEGREGATED TRACTS				
RESURVEY	ORIGINAL SURVEY			
TRACT NO	T	R	SEC	SUBDIVISION

FOR ORDERS EFFECTING DISPOSAL OR USE OF UNIDENTIFIED LANDS WITHDRAWN FOR CLASSIFICATION, MINERALS, WATER AND/OR OTHER PUBLIC PURPOSES, REFER TO INDEX OF MISCELLANEOUS DOCUMENTS.

CURRENT TO	BY	CURRENT TO	BY
6/24/09	MS		
7/15/2014	SLA		

GEO PLAT

N-060
T. 2 N
R. 38 E
1

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