DRAFT WATER QUALITY MANAGEMENT PLAN

For compliance with State Water Resources Control Board

Water Quality Order Number 2003-0005-DWQ
(NPDES Permit No. CAS000004)

For

Alamo Solar Site

Prepared for:

E.ON Climate & Renewables North America
20 California Street, Suite 500
San Francisco, CA 94111

APNs 0469-011-68, 0470-011-35, 0470-021-09, 0470-041-01, 0470-051-01, 0470-051-14, 0470-051-15, and 0470-011-35

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April 8, 2013

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Project Site Information

Name of Project: Alamo Solar Site

Project Location: The proposed Project is situated in the unincorporated community of Oro Grande in the western Mojave Desert of San Bernardino County. It is located west of old Route 66 (National Trails Highway) between Victorville and Barstow. The site is about 10 miles northwest of the Victorville. There are three primary access points to the Project site: Heritage Way/Bryman Road; Melrose Avenue; and Turner Road. For purposes of this study, the Project site includes APNs 0469-011-68, 0470-011-35 Parcel 2, 0470-021-09, 0470-041-01, 0470-051-01, 0470-051-14, 0470-051-15. This analysis also includes AON 0470-011-35 Parcel 1, which is not going to be affected by the Project but is included herein because it lies between the Project and the Mojave River drainage.

Size of Significant Re-Development on an Already Developed Site (in feet^2): N/A

Size of New Development (in feet^2): 5,357,880 square feet

Number of Home Subdivisions: N/A

SIC Codes: 4911 Electric Services

Erosive Site Conditions? None

Natural Slope More Than 25%? No

Determination of Project Category

Check the appropriate project category below:

Check below	Categories
	1. New development and/or redevelopment of any commercial or industrial property that creates, adds and/or replaces 100,000 square feet or more of impervious surface. Redevelopment is any land-disturbing activity that results in the creation, addition or replacement of exterior impervious surface area on a previously developed site
	2. New development and/or redevelopment of Automotive repair shops (with SIC codes 5013, 5014, 5541, 7532 - 7534, 7536 - 7539) that creates, adds and/or replaces 5,000 square feet or more of impervious surface.
	3. New development and/or redevelopment of a Retail Gasoline Outlet (RGOs) that creates, adds and/or replaces 5,000 square feet or more of impervious surface.
	4. New development and/or redevelopment of a Restaurant that creates and/or replaces 5,000 square feet or more of impervious surface
	5. New development and/or redevelopment of an uncovered parking lot that creates, adds and/or replaces 5,000 square feet or more of impervious surface, or provides 25 parking spaces exposed to storm water runoff. Parking lot is defined as land area or facility for the temporary storage of motor vehicles.
	6. New development and/or redevelopment of a Single Family Hillside residences.
	7. New development and/or redevelopment project that creates a home subdivision comprised of 10 or more housing units. This category includes developments on public or private land that fall under the planning and building authority of the County.
X	8. The project does not fall into any of the categories described above. It is therefore defined as a Non-Category Project. NOTE: Emergency public safety projects in any of the above-listed categories shall be excluded from the WQMP requirement, if the delay caused due to the WQMP requirement compromises public safety, public health, and/or environmental protection.

SECTION 1
Introduction and Project Description

1.1. Project Information

The Project owner and address is:

E.ON Climate & Renewables North America
20 California Street, Suite 500
San Francisco, CA 94111

1.2. Permits

Permits required for this Project include:

- Conditional Use Permit
- Grading Permit
- Notice of Intent to comply with the NPDES Construction General Permit

1.3. Project Description

The proposed Alamo Solar Project (Project) will be an unmanned facility that will provide solar photovoltaic (PV) power to serve the electrical load requirements of California. The Project will generate approximately 20 megawatts (MW) alternating current (AC) on approximately 95 acres of the 123 acre site. The proposed Project will connect with the existing Southern California Edison (SCE) Victor-Helendale 33 kilovolt (kV) transmission line that runs north-south along National Trails Highway (Route 66). Connecting to the SCE line will require upgrades along the existing 33 kV transmission line. The line will be constructed within an existing SCE easement along an existing roadway. Therefore, no new right of way will be required and very little disturbance will occur to previously undeveloped land due to the proximity of the established roadway.

The Project will require minimal site grading, with a minimal impact to existing drainage patterns and overall topography of the site. Where grading is required, cut-and-fills shall generally be balanced, resulting in minimal import or export of earthen material. Final drainage design will be completed following a detailed topographic site survey overlaid with proposed site development grading. Most of the natural drainage features will be maintained and any grading will be designed to promote sheet flow. After construction is completed, the solar field development will maintain unobstructed sheet flow, with storm water exiting the site in much the same way as in pre-construction conditions. Track racking systems may be used to clear vehicles exiting the site of debris and soil prior to entering the public right-of-way, as required to meet stormwater quality regulations.

No offsite improvements are anticipated with the exception of a short all-weather site access road from an existing dirt road located approximately 1,200 feet south of the site and SCE upgrades to an existing distribution line east of the project site.

The Project is designed to have a useful life of approximately 20 to 30 years, although the life span could be extended by upgrades and refurbishments. In the event that the Project is decommissioned, the solar facility would be removed and the site prepared for subsequent land use.

1.4. Site Description

The Project is situated within the western Mojave Desert and is bordered to the north by agricultural lands; to the east by Bryman/Aster Road, the Atchison, Topeka, and Santa Fe (AT&SF) Railroad, National Trails Highway State Route 66 (Route 66), and agricultural uses and vacant undeveloped lands; to the south by Heritage Way and a combination of rural residential development and fallow agricultural land; and to the west by the upper Mojave River (Lower Slough) and agricultural uses. The location of the Project site is shown on **Figure 1-1**.

(Please note that the Project site shown on the figures in this report reflect the study area selected for analysis; the actual solar facility and its area of disturbance is smaller than shown here.)

The Project is in the South Lahontan Regional Water Quality Board (RWQCB) Hydrologic Basin (Region 6), in the Upper Mojave Hydrologic Area (HA 628.20). The watershed covers an area of approximately 1,545 acres. The Project site location within Lahontan RWQCB is shown on **Figure 1-2**. The receiving water body is the Mojave River. According to the State Water Resources Control Board (SWRCB) website, the segment of the Mojave River adjacent to the Project site is not on the 303(d) list. A flood map search (http://msc.fema.gov/) for Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panel ID numbers 06071C5150H confirms the proposed Project has been mapped by FEMA for flood zone hazards. The northwestern corner of the site lies within the 100 year floodplain of the Mojave River. The FEMA map information is shown on **Figure 1-3** with the conceptual site plan of the Project.

The Project site has a slope of approximately 1 percent overall. The site generally slopes in the northwesterly direction with elevations of approximately 2,513 to 2,492 feet above mean sea level. The Project site ground cover is comprised of Russian Thistle Stand and Mustard Stand vegetation. The soil onsite can be described as having low to moderate runoff potential with moderate to high infiltration rates even when thoroughly wetted.

Figure 1-1: Alamo Site Location Map

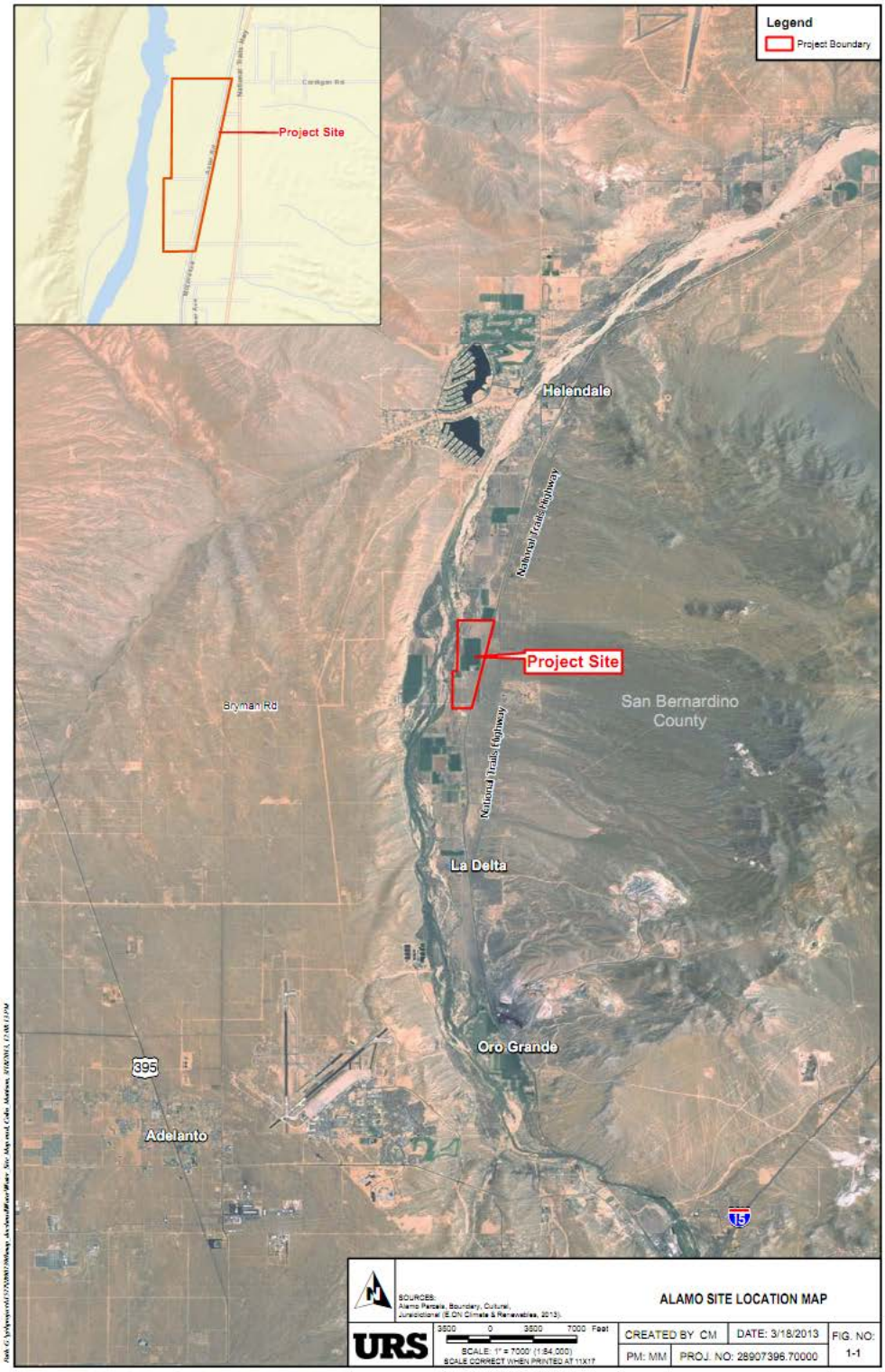


Figure 1-2: Alamo Site Watershed Map

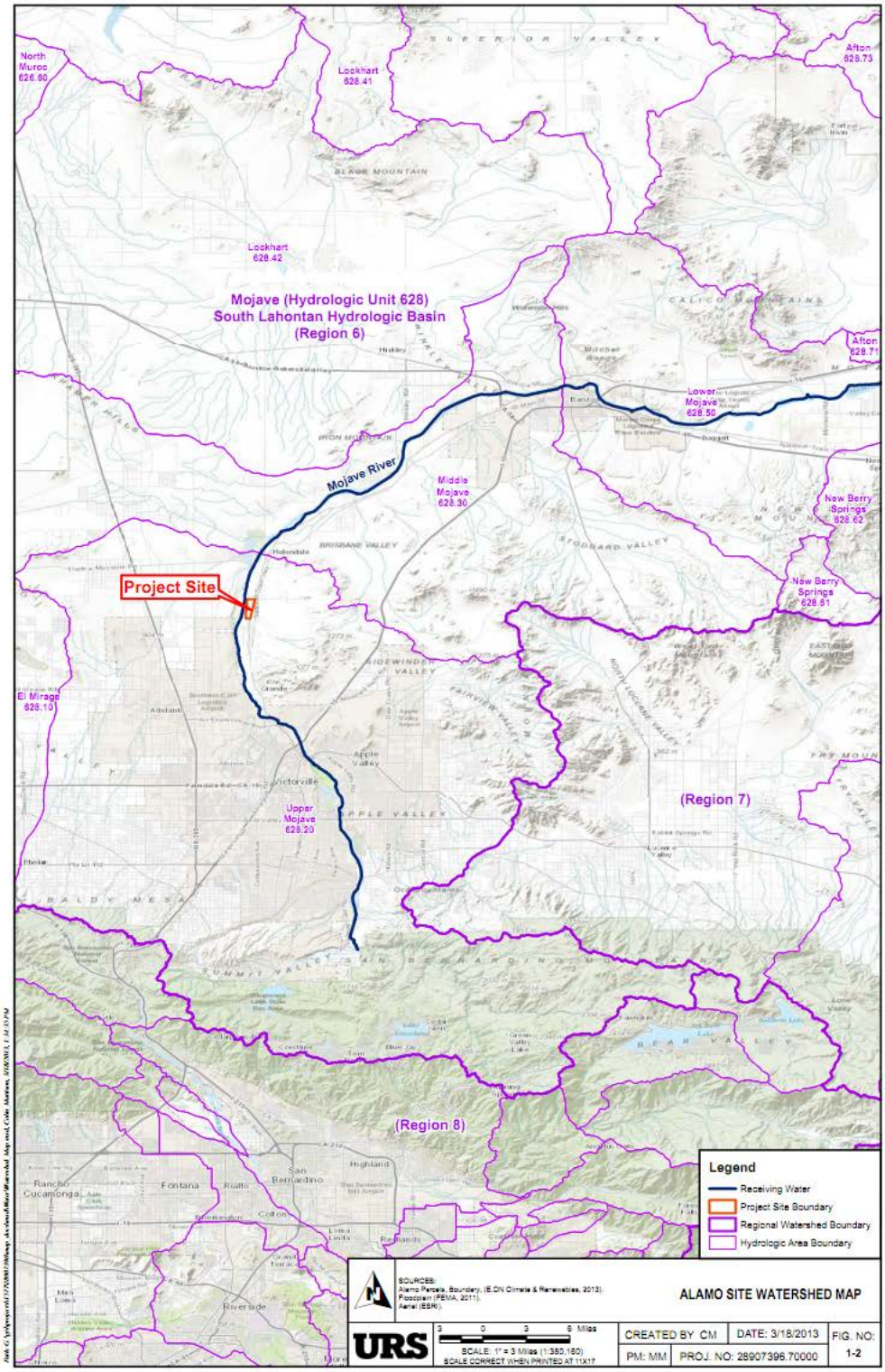
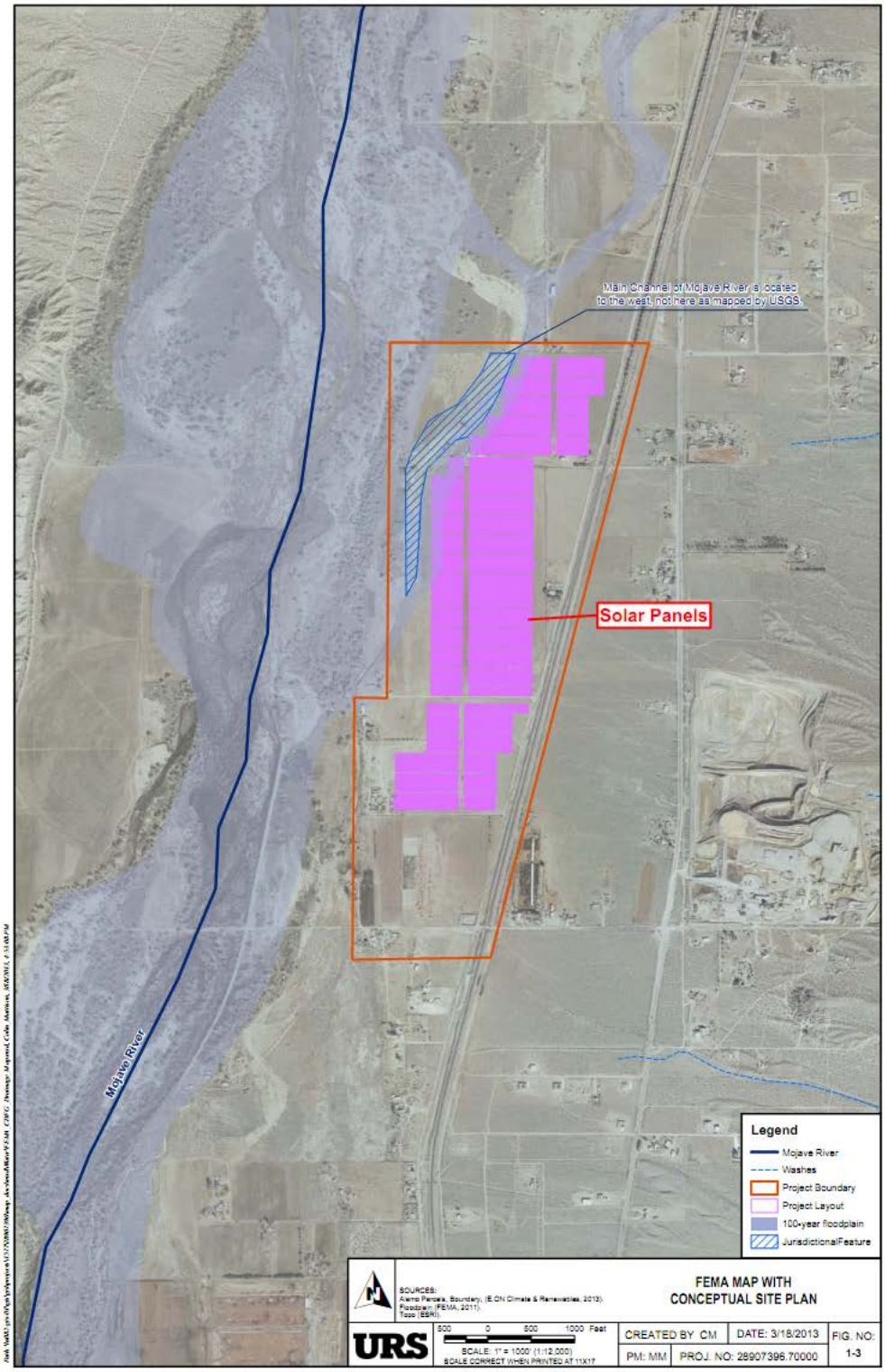


Figure 1-3: FEMA Map with the Conceptual Site Plan



SECTION 2
Pollutants of Concern and Hydrologic Conditions of Concern

2.1 Pollutants of Concern

Currently, the Project site is being used for agricultural purposes. The northern parcel includes an abandoned single-family residence and associated outbuildings that will be removed during construction. Existing land use adjacent to the Project site consists primarily of undeveloped land, agricultural land, County lands, floodway, and a few scattered single-family residences both occupied and abandoned. There is no evidence of legacy pesticides or nutrients in site soil as a result of the past agricultural practices at this time; however, should impacts to soil from agricultural practices be identified on the property during the clearing and grading phase of construction, additional investigation will be performed. Below is a list of existing potential pollutants onsite, which will be removed and properly disposed of in accordance with applicable regulations and prior to construction disturbance or land use changes:

- minor areas of stained soil from previous use of motorized irrigation equipment;
- debris (should hazardous materials or impacts to soil from drums or containers be identified on the property during removal of debris, additional investigation will be performed); and
- farmland structures. Since these structures may contain hazardous building materials (ACM/LBP), they will be inspected prior to demolition. If ACMs and LBP are identified, they will be disposed of during demolition according to appropriate regulations.

The proposed Project is not a typical commercial or industrial development. The Project is designed to provide PV power to serve the electrical load requirements of California. **Table 2-1** from the San Bernardino County Storm Water Program Model Water Quality Management Plan (WQMP) Guidance Manual was used to identify the potential pollutants expected to be generated by the development.

Table 2-1: Pollutant of Concern Summary

Pollutant Type	Expected	Potential	Listed for Receiving Water
Bacteria / Virus (Pathogens)			
Metals	**X[1]**		
Nutrients / Noxious Aquatic Plants			
Pesticides / PCB			
Organic Compounds	**X[1]**		
Sediments / Turbidity / Total Suspended Solids / pH		**X[2]**	
Trash & Debris	**X[3]**		

Pollutant Type	Expected	Potential	Listed for Receiving Water
Oxygen Demanding Substances		X[2]	
Oil & Grease	X[1]		
Other—specify pollutant(s):			

Table Notes:
[1] Metals and petroleum hydrocarbons are associated with the presence of the occasional vehicle onsite.
[2] Sediment and oxygen demanding substances are associated with the natural open area onsite.
[3] Trash and debris are associated with the presence of the occasional maintenance team onsite.

The expected pollutants of concern at this unmanned facility include trash and debris and oil and grease/petroleum hydrocarbons from maintenance personnel and their vehicles. Metals such as copper are also expected because of the presence of vehicles, but personnel are only expected to be onsite a few times per year for maintenance and PV panel washing. Another potential pollutant is sediment from aerial deposition onto the PV panels, but sediment-laden discharge from panel washing will not be allowed to leave the site. Pollutants with regard to landscaping are not anticipated as only native vegetation will be used for re-vegetation of disturbed areas and no fertilizers, fungicides, herbicides, insecticides, or pesticides will be used onsite.

The proposed Project will utilize non-reflective PV solar module arrays mounted on fixed tilt or single-axis trackers and a racking system supported by embedded piers. This type of PV facility is built with relatively few moving parts, which requires minimal maintenance, reducing the potential of equipment lubricants contacting stormwater.

The Mojave Forks Reservoir outlet to the Upper Narrows is the closest segment of the Mojave River on the 303(d) List, located approximately 8.7 miles downstream at Rockview Park. The 303(d) Listed Waterbody is impacted by fluoride, an organic compound, which is not a potential pollutant from this Project. Since the identified pollutants of concern are not causing impairment in the receiving waters, the Project is not required to incorporate treatment control best management practices (BMPs) of medium or high effectiveness in reducing those pollutants.

2.2 Hydrologic Conditions of Concern

The overall goal of the grading design is to keep existing drainage patterns at the site as they are, or as close as possible to their existing condition. **Figure 2-1** shows the general drainage patterns from the Project site to the receiving water. According to the project's preliminary hydrology study, there will be an increase in stormwater flows from pre-development to post-development conditions as a result of the small increase in imperviousness (less than 5-percent) over the Project area. The increase in impervious area is due to the construction of the piles, concrete pads for the inverters, and the access roads. The biggest increase in impervious area will be attributed to the access roads that are expected to increase runoff in the areas where access roads are constructed, but overall, the total area of the access roads will be small in comparison with the entire site. In addition, the access roads will not be hardscaped, but will use all-weather surface materials, which will allow some level of infiltration. Therefore, the

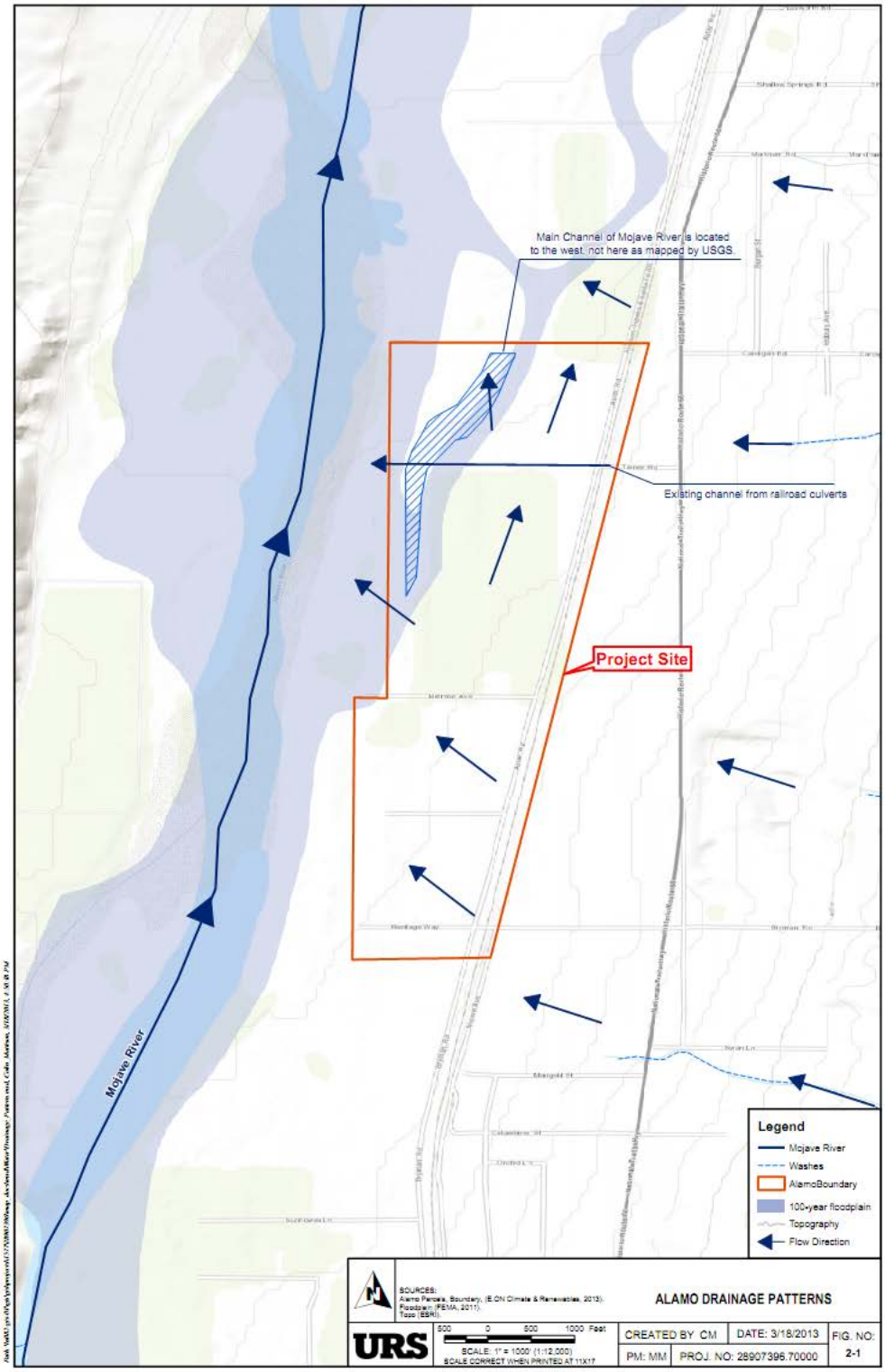
Project design consists of minimal impervious surfaces and no directly connected impervious areas.

Site topography is uniform in surface profile with a slight slope in the northwesterly direction. Under existing conditions, during heavy rain events, small washes onsite become conduits for stormwater flow. Runoff discharges directly to the Mojave River from the western perimeter of the site, but the central to northern part of the site drain to a channel that runs along Turner Road, which directs flows west through the site to the river. Runoff from the watershed upstream of the Project site passes through dual three foot-diameter culverts that run under the railroad track and discharge to the channel. Since this site is bordered on the east by the AT&SF Railroad, which acts as a dam with a controlled discharge from the dual culverts, the slight increase in runoff as a result of construction will cause very little effect on backup. Also, because the flows from the site discharge directly into the Mojave River, the potential to cause concentrated flows downstream as a result of drainage changes at the site is non-existent. Since the results from the preliminary hydrology study demonstrate that the increase in runoff volume associated with Project development is negligible, this does not constitute a Hydrologic Condition of Concern (HCOC).

Prior to construction, the site will be cleared of vegetation, except near the small washes. Some root mass might remain and some of the vegetation might regrow. However, due to the configuration of the solar panels and their blockage of direct sunlight, it is unknown how these plants will survive in the post-construction condition. According to research regarding the interaction between PV systems and extended green roofs, there is data showing that vegetation can thrive under solar panels and actually increase the efficiency of the panels by lowering the ambient temperature. Therefore, this does not constitute an HCOC.

Since none of the pollutants of concern are significant and can be effectively mitigated through the use of site design and source control BMPs (see Sections 3.1 and 3.2), and since there are no HCOCs, no adverse impacts are expected to any downstream waterbodies from this Project or in conjunction with any other projects in the watershed.

Figure 2-1: Alamo Site Drainage Patterns



SECTION 3
Best Management Practice Selection Process

3.1 Site Design BMPs

Site design BMPs act to control peak stormwater runoff discharge rates and velocities. The site design BMPs for the Project incorporate existing vegetation and the soil types on the Project site, which are predominantly soil groups A and B and are characterized as having moderate to low runoff potential. **Table 3-1** contains a listing of all site design BMPs. The table indicates whether the BMP will be used (yes/no). If the BMP is to be used, the table describes how it will be implemented. If the BMP is not to be used, the table provides justification for why it is not applicable.

Table 3-1: Site Design BMPs

1. Minimize Stormwater Runoff, Minimize Project's Impervious Footprint, and Conserve Natural Areas		
Maximize the permeable area. This can be achieved in various ways, including but not limited to, increasing building density (number of stories above or below ground) and developing land use regulations seeking to limit impervious surfaces.		
Yes **X**	No	
Describe actions taken or justification/alternative: Increased imperviousness due to the construction will be limited to the piles, concrete pads for the inverters, and access roads, an increase of approximately less than 5 percent overall.		
Runoff from developed areas may be reduced by using alternative materials or surfaces with a lower Coefficient of Runoff, or "C-Factor".		
Yes **X**	No	
Describe actions taken or justification/alternative: The biggest increase in impervious area will be attributed to the access roads; therefore, stabilized gravel or other all-weather road surface materials will be used to allow some level of infiltration. Minimal solar panel footings using I-beams or other embedded piers will reduce the imperviousness of the site compared to using concrete ballast footings.		
Conserve natural areas. This can be achieved by concentrating or clustering development on the least environmentally sensitive portions of a site while leaving the remaining land in a natural, undisturbed condition.		
Yes **X**	No	
Describe actions taken or justification/alternative: The CDFW building setback is more conservative than the limit of the 100 year floodplain, and governs the setback requirement for site construction. In addition, existing vegetation will be preserved wherever possible especially along the perimeter of the site to act as a buffer zone and provide additional protection for the receiving water.		

Construct walkways, trails, patios, overflow parking lots, alleys, driveways, low-traffic streets, and other low-traffic areas with open-jointed paving materials or permeable surfaces, such as pervious concrete, porous asphalt, unit pavers, and granular materials.		
Yes **X**	No	
Describe actions taken or justification/alternative: Access roads throughout the site will be graded dirt and gravel or other all-weather surfaces without asphalt paving.		
Construct streets, sidewalks, and parking lot aisles to the minimum widths necessary, provided that public safety and a pedestrian friendly environment are not compromised[1]. Incorporate landscaped buffer areas between sidewalks and streets.		
Yes **X**	No	
Describe actions taken or justification/alternative: Roadways have been limited to access roads necessary for maintenance and installation of solar units. Road widths have been limited to the minimum required to safely access the site.		
Reduce widths of street where off-street parking is available[2].		
Yes	No **X**	
Describe actions taken or justification/alternative: The facility will be unmanned. No off-street parking is proposed as part of the site design.		
Maximize canopy interception and water conservation by preserving existing native trees and shrubs, and planting additional native or drought tolerant trees and large shrubs.		
Yes **X**	No	
Describe actions taken or justification/alternative: Native vegetation along major drainages will be largely protected in place and left undeveloped.		
Other comparable site design options that are equally effective.		
Yes **X**	No	
Describe actions taken or justification/alternative: The channel along Turner Road will be protected in place and left undeveloped.		
Minimize the use of impervious surfaces, such as decorative concrete, in the landscape design.		
Yes	No **X**	
Describe actions taken or justification/alternative: No landscaping is proposed as part of the site design and approximately 95 percent of the site will remain pervious.		

[1] Sidewalk widths must still comply with Americans with Disabilities Act regulations and other life safety requirements.

[2] Street widths must comply with life safety requirements for fire and emergency vehicle access.

Use natural drainage systems.		
Yes **X**	No	
Describe actions taken or justification/alternative: Based on the drainage patterns and the runoff calculations performed as part of the drainage study, it was determined that keeping the channel along Turner Road would maintain adequate runoff through the Project site without causing backup for flows upstream or creating concentrated flows downstream.		
Where soils conditions are suitable, use perforated pipe or gravel filtration pits for low flow infiltration.[3]		
Yes	No **X**	
Describe actions taken or justification/alternative: Native soils at the Project site provide good infiltration; hence there is no need for perforated pipes or gravel pits.		
Construct onsite ponding areas, rain gardens, or retention facilities to increase opportunities for infiltration, while being cognizant of the need to prevent the development of vector breeding areas.		
Yes	No **X**	
Describe actions taken or justification/alternative: Onsite ponding areas, rain gardens, or retention facilities are not required, given that runoff is not discharging to an impaired water body and no significant pollutants of concern are associated with this Project.		
2. Minimize Directly Connected Impervious Areas		
Where landscaping is proposed, drain rooftops into adjacent landscaping prior to discharging to the storm drain.		
Yes	No **X**	
Describe actions taken or justification/alternative: No landscaping is proposed as part of the site design.		
Where landscaping is proposed, drain impervious sidewalks, walkways, trails, and patios into adjacent landscaping.		
Yes	No **X**	
Describe actions taken or justification/alternative: No landscaping is proposed as part of the site design.		

[3] However, projects must comply with hillside grading ordinances that limit or restrict infiltration of runoff. Infiltration areas may be subject to regulation as Class V injection wells and may require a report to the USEPA. Consult the Agency for more information on use of this type of facility.

Increase the use of vegetated drainage swales in lieu of underground piping or imperviously lined swales.		
Yes	No **X**	
Describe actions taken or justification/alternative: Runoff will sheet flow offsite; no underground piping or imperviously lined swales are proposed.		

Use one or more of the following:

Yes	No	Design Feature
	X	Rural swale system: street sheet flows to vegetated swale or gravel shoulder, curbs at street corners, culverts under driveways and street crossings
	X	Urban curb/swale system; street slopes to curb; periodic swale inlets drain to vegetated swale/biofilter.
	X	Dual drainage system: First flush captured in street catch basins and discharged to adjacent vegetated swale or gravel shoulder, high flows connect directly to municipal storm drain systems.
X		Other comparable design concepts that are equally effective:

Describe actions taken or justification/alternative:

Runoff from the northern portion of the site shall drain to the existing drainage channel along Turner Road and the rest of the site shall sheet flow westerly to the Mojave River; utilizing natural drainage patterns.

Use one or more of the following features for design of driveways and private residential parking areas:

Yes	No	Design Feature
	X	Design driveways with shared access, flared (single lane at street) or wheel strips (paving only under tires); or, drain into landscaping prior to discharging to the municipal storm drain system.
	X	Uncovered temporary or guest parking on private residential lots may be paved with a permeable surface; or designed to drain into landscaping prior to discharging to the municipal storm drain system.
	X	Other comparable design concepts that are equally effective.

Describe actions taken or justification/alternative:

The Project is not a residential development; therefore, these BMPs are not applicable. The facility will be unmanned, and brief site visits will utilize internal access roads for temporary parking. A dedicated parking lot is considered unnecessary and the entrance is designed to accommodate a 65 foot-long combination tractor/trailer.

Use one or more of the following design concepts for the design of parking areas:		
Yes	**No**	Design Feature
	X	Where landscaping is proposed in parking areas, incorporate landscape areas into the drainage design.
	X	Overflow parking (parking stalls provided in excess of the Agency's minimum parking requirements) may be constructed with permeable paving.
	X	Other comparable design concepts that are equally effective.
Describe actions taken or justification/alternative: The Project is not a typical commercial or industrial development; therefore, these BMPs are not applicable. The facility will be unmanned, and brief site visits will utilize internal access roads for temporary parking. A dedicated parking lot is considered unnecessary.		

3.2 Source Control BMPs

Source control BMPs eliminate or reduce the potential for runoff to pick up and transport pollutants. The source control BMPs for the Project consist of good housekeeping practices implemented through the use of applicable administrative action, training, and proper operation, maintenance and inspection procedures. The potential for oil and grease and heavy metals will be limited because maintenance vehicles will not remain onsite for extended periods of time and will be maintained in good working order. No maintenance or refueling will be done onsite. Any impact associated with maintenance vehicles is anticipated to be negligible as very few vehicles will be visiting the site. Maintenance will occur periodically for panel washing (several times per year) and for general site maintenance (as needed). Washing of panels will be performed to remove aerial deposition of sediment using appropriate water conservation methods; therefore, discharges from panel washing are not expected to leave the site. Finally, trash receptacles will be covered or affixed with lids to prevent offsite transport of debris and to minimize direct contact with precipitation. Trash receptacles will not be located in any area with the potential to receive concentrated flow during a rain event such as the small drainage washes onsite. In order to reduce the possibility of vector problems and bacterial growth, trash storage areas will be cleaned at the end of each maintenance visit. Property owners and employees will be appropriately educated regarding implementation of source control BMPs.

The source control BMPs listed in **Table 3-2** are routine non-structural and structural BMPs, BMPs and alternative material BMPs from the WQMP Guidance Manual, which are applicable to most projects. The table indicates whether the BMP will be used (yes/no). If the BMP is to be used, the table describes how it will be implemented. If the BMP is not to be used due to project characteristics, the table provides justification for why it is not applicable.

Table 3-2: Justification for Source Control BMPs not Incorporated into the Project

Source Control BMP	Used in Project (Yes / No)?	Justification / Alternative*	Implementation Description
Education of Property Owners	Yes		Water quality materials to be made available
Activity Restrictions	Yes		No use of fertilizers, fungicides, herbicides, insecticides, or pesticides onsite and no offsite non-stormwater discharges
Spill Contingency Plan	No	No hazardous materials handled.	
Employee Training/Education Program	Yes		Training for activities that impact water quality
Street Sweeping Private Street and Parking Lots	No	No paved streets or parking lots	
Common Areas Catch Basin Inspection	No	No storm drain infrastructure	
Landscape Planning (SD-10)	No	No landscape design	
Hillside Landscaping	No	No landscape design	
Roof Runoff Controls (SD-11)	No	No roofs	
Efficient Irrigation (SD-12)	No	No irrigation system	
Protect Slopes and Channels	Yes		Channel/washes will be protected from erosion
Storm Drain Signage (SD-13)	No	No storm drain infrastructure	
Inlet Trash Racks	No	No storm drain infrastructure	
Energy Dissipaters	No	No energy dissipater required for the channel outfall	
Trash Storage Areas (SD-32) and Litter Control	Yes		Good housekeeping shall be used
Fueling Areas (SD-30)	No	No refueling onsite	
Air/Water Supply Area Drainage	No	No drainage infrastructure	
Maintenance Bays and Docks (SD-31)	No	No maintenance bays and docks	
Vehicle Washing Areas (SD-33)	No	No vehicle washing onsite	
Outdoor Material Storage Areas (SD-34)	No	No outdoor material storage areas	
Outdoor Work Areas (SD-35)	No	No materials requiring outdoor work areas	
Outdoor Processing Areas (SD-36)	No	No outdoor process equipment operations	
Wash Water Controls for Food Preparation Areas	No	No food preparation onsite	
Pervious Pavement (SD-20)	No	Majority of surfaces to remain pervious	
Alternative Building Materials (SD-21)	No	No buildings onsite	
*Attach additional sheets if necessary for justification			

3.3 Treatment Control BMPs

This Project was determined to be a non-category project, because the biggest increase in impervious area will be attributed to the access roads, which will not be hardscaped, but will be constructed with an alternative material (gravel or other all-weather materials). Since such roads allow some level of infiltration, they will not be equal to 100,000 square feet or more of impervious surface. Therefore, the Project does not fall into any of the categories described in the table on page iv. In addition, this is not a typical commercial or industrial facility. Since this is an unmanned facility with no significant pollutants of concern and since the runoff from this site does not discharge to an impaired waterbody, site design and source control BMPs can effectively eliminate potential pollutant discharges associated with this Project. Therefore, no treatment control BMPs are necessary and none have been selected.

SECTION 4
Operation and Maintenance

Operation and maintenance (O&M) requirements for all site design and source control BMPs are identified within this WQMP. All BMPs will have a start-up date coinciding with the completion of construction.

4.1. O&M Description and Schedule

Personnel responsible for O&M will be the part-time employees who visit the site occasionally (e.g., monthly or bi-monthly) on an as-needed basis for specified maintenance and employees or a contractor who will visit the site to wash the PV panels. The following O&M will be required:

- PV panels will be washed several times a year using as little water as possible for water conservation and so that no sediment-laden discharges leave the site.
- Following major storm events, O&M personnel may visit the site to ensure that no major debris has accumulated in the existing channel that runs through the site as a result of the storm event.
- Trash storage areas will be cleaned at the end of each O&M visit to prevent transport of debris within the fence line and to discourage vector issues.
- The perimeter of the property will be fenced, thus making it difficult for debris to accumulate on the property except along fence lines. Debris accumulated along the fence lines will be cleared during routine O&M visits.
- Roads will be maintained as needed to afford safe access to the property.
- Native vegetation will be protected in place and only cut back if it overshadows the PV panels.
- No fertilizers, fungicides, herbicides, insecticides, or pesticides will be used onsite.

4.2. Inspection & Monitoring

Based on the analysis presented in this report, no treatment control BMPs are required for the site, and only two routine structural source control BMPs (protection of channels and litter control) are applicable. Therefore, there is no need to carry out rigid inspections and monitoring to ensure the BMPs are functioning. However, regular maintenance will be carried out at least semiannually to ensure that debris and sediment accumulated at the site following storm events are cleared. This is specifically important with regard to the existing channel in order to ensure that it remains functional during storm events. The site should be inspected annually to determine if the channel or any of the onsite washes need to be stabilized due to erosion. In addition, consideration should be given to areas under the drip path of the solar panels. If splash erosion is becoming evident, gravel can be used to dissipate the effects. This can be done in conjunction with regular maintenance on the gravel roads, utilizing the same materials and personnel.

4.3. Identification of Responsible Parties that must:

The party responsible for the O&M of each BMP is:

E.ON Climate & Renewables North America
20 California Street, Suite 500
San Francisco, CA 94111
(415) 347-2570

E.ON Point of Contact:
Jennifer Bradford
Office: (415) 523-5569
Mobile: (415) 279-8824

SECTION 5
Funding

The Permit requires that a funding source or sources for the O&M of each treatment control BMP be identified within the WQMP, but no treatment control BMPs are required on this site. Funding for the O&M of the two routine structural source control BMPs (protection of channels and litter control) will be provided by:

E.ON Climate & Renewables North America
20 California Street, Suite 500
San Francisco, CA 94111
(415) 347-2570

E.ON Point of Contact:
Jennifer Bradford
Office: (415) 523-5569
Mobile: (415) 279-8824

SECTION 6
WQMP Certification

- The applicant is required to sign and certify that the WQMP is in conformance with State Water Resources Control Board Order Number 2003-005-DWQ (NPDES Permit No. CAS000004).

- The applicant is required to sign and date the following statement 'word-for-word' certifying that the provisions of the WQMP have been accepted by the applicant, and that the applicant will have the plan transferred to future successors (transferability statement). The certification must be signed by the property owner, unless a written designation by the owner allows a designee to sign on the owner's behalf.

"This Water Quality Management Plan has been prepared for E.ON Climate & Renewables North America, 20 California Street, Suite 500, San Francisco, CA 94111 by URS Corporation. It is intended to comply with the requirements of the County of San Bernardino for Tract/Parcel Map No._____, Condition Number(s) _ requiring the preparation of a Water Quality Management Plan (WQMP). The undersigned is aware that Best Management Practices (BMPs) are enforceable pursuant to the County's Water Quality Ordinance No. 3587. The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the Phase II permit and the intent of the water quality regulations applicable to for San Bernardino County areas within the Colorado River Basin Region. Once the undersigned transfers its interest in the property, its successors in interest and the city/county shall be notified of the transfer. The new owner will be informed of its responsibility under this WQMP. A copy of the approved WQMP shall be available on the subject site in perpetuity. "

"I certify under a penalty of law that the provisions (implementation, operation, maintenance, and funding) of the WQMP have been accepted and that the plan will be transferred to future successors."

_____ _____

Applicant's Signature Date

_____ _____

Applicant's Name Applicant's Telephone Number

Attachment A-1

Maintenance Mechanisms

A-1.1 O&M Plan Required

The Lahontan Regional Water Quality Control Board (Agency) shall not accept stormwater structural BMPs as meeting the WQMP requirements standard, unless an O&M Plan is prepared (Section 4) and a mechanism is in place that will ensure ongoing long-term maintenance of all structural and non-structural BMPs. This mechanism can be provided by the Agency or by the project proponent. As part of project review, if a project proponent is required to include interim or permanent structural and non-structural BMPs in project plans, and if the Agency does not provide a mechanism for BMP maintenance, the Agency shall require that the applicant provide verification of maintenance requirements through such means as may be appropriate, at the discretion of the Agency, including, but not limited to covenants, legal agreements, maintenance agreements, conditional use permits and/or funding arrangements (OC 2003)

A-1.2 Maintenance Mechanisms

1. **Public entity maintenance**: The Agency may approve a public or acceptable quasi-public entity (e.g., the County Flood Control District, or annex to an existing assessment district, an existing utility district, a state or federal resource agency, or a conservation conservancy) to assume responsibility for operation, maintenance, repair and replacement of the BMP. Unless otherwise acceptable to individual Agencies, public entity maintenance agreements shall ensure estimated costs are front-funded or reliably guaranteed, (e.g., through a trust fund, assessment district fees, bond, letter of credit or similar means). In addition, the Permittees may seek protection from liability by appropriate releases and indemnities.

   The Agency shall have the authority to approve stormwater BMPs proposed for transfer to any other public entity within its jurisdiction before installation. The Permittee shall be involved in the negotiation of maintenance requirements with any other public entities accepting maintenance responsibilities within their respective jurisdictions; and in negotiations with the resource agencies responsible for issuing permits for the construction and/or maintenance of the facilities. The Agency must be identified as a third party beneficiary empowered to enforce any such maintenance agreement within their respective jurisdictions.

2. **Project proponent agreement to maintain stormwater BMPs:** The Agency may enter into a contract with the project proponent obliging the project proponent to maintain, repair and replace the stormwater BMP as necessary into perpetuity. Security or a funding mechanism with a “no sunset” clause may be required.

3. **Assessment districts:** The Agency may approve an Assessment District or other funding mechanism created by the project proponent to provide funds for

stormwater BMP maintenance, repair and replacement on an ongoing basis. Any agreement with such a District shall be subject to the Public Entity Maintenance Provisions above.

4. **Lease provisions:** In those cases where the Agency holds title to the land in question, and the land is being leased to another party for private or public use, the Agency may assure stormwater BMP maintenance, repair and replacement through conditions in the lease.

5. **Conditional use permits:** For discretionary projects only, the Agency may assure maintenance of stormwater BMPs through the inclusion of maintenance conditions in the conditional use permit. Security may be required.

6. **Alternative mechanisms:** The Agency may accept alternative maintenance mechanisms if such mechanisms are as protective as those listed above.

Attachment A-2

INSTRUCTIONS FOR COMPLETING THE WATER QUALITY MANAGEMENT PLAN (WQMP) TRANSFER, ACCESS, AND MAINTENANCE AGREEMENT

In order for your project to receive approval, you will need to prepare a WQMP and Stormwater Best Management Practices Transfer, Access and Maintenance Agreement (Maintenance Agreement). ***Please contact the Department of Public Works, Environmental Management Division after the final WQMP is approved, and at least ten (10) business days prior to your project's construction being completed, to receive the current Maintenance Agreement template. You can contact the Environmental Management Division by phone, by calling (909) 387 – 8109, or by email, at evarga@dpw.sbcounty.gov.*** The Maintenance Agreement shall be completed and approved according to the procedure outlined below, and must include the following information and attachments:

1. Provide all written information requested in the Maintenance Agreement template, including project and property owner's signature(s).

2. Attach a legal description of the project location, as well as a legal description of the locations of where all proposed storm water Best Management Practices will be constructed / installed, including a listing of the applicable Assessor's Parcel Numbers (APN). This page will be labeled as "EXHIBIT A, LEGAL DESCRIPTION".

3. Attach an 8.5" x 11" or 8.5" x 14" sized project plan sheet (labeled as "EXHIBIT B, BMP SITE PLAN"), illustrating the proposed stormwater Best Management Practices and maintenance / access points. Cross sections and other pertinent details of such measures shall also be included. (Plan should be legible)

4. Attach a completed Notary page, with notary's wet seal affixed, **and having the following statement inserted on the Notary page**:

   "FOR: Maintenance Agreement, dated_____, for the project known as _____ (APN_____), as described in the WQMP dated_____."

5. Attach a copy of the cover sheet for the most current WQMP that was approved. The cover sheet must display the information that is requested in the most current WQMP Guidance and Template document. Please visit the Environmental Management Division's website for the current WQMP Guidance and Template document (http://www.sbcounty.gov/dpw/land/environmental_mgmt.asp).

6. The completed Maintenance Agreement (along with attachments) shall be submitted for review to:

Department of Public Works
Environmental Management Division
825 E. Third Street, Room 201
San Bernardino, CA 92415-0835

7. Staff at the Environmental Management Division will review the Maintenance Agreement, and request any necessary changes.

8. When the Maintenance Agreement has been approved, the project and property owner(s) must sign the Maintenance Agreement and have his / her signature notarized.

9. The Maintenance Agreement will then be returned to the Environmental Management Division, where appropriate staff will obtain the notarized signature of the Director of Public Works (this may take up to ten (10) business days, depending on the Director's schedule and availability of the notary). Please provide a telephone number where you can be reached when the Maintenance Agreement is ready to be picked up for you to record.

   Please Note: The Director of Public Works will not sign the Maintenance Agreement until the proposed Best Management Practices, as documented in the project WQMP, are constructed / installed, and all outstanding charges and invoices are paid.

10. The fully executed Maintenance Agreement must now be recorded at the San Bernardino County Recorder's Office at:

    222 W. Hospitality Lane (behind the Souplantation restaurant)
    San Bernardino, CA 92415-0018

11. A photocopy of the final recorded Maintenance Agreement must be returned to the Environmental Management Division. You must also show the recorded Maintenance Agreement to the Land Development Division of the Department of Public Works, in order to receive their final approval on your project.

    If during project construction, there are any field changes to the stormwater Best Management Practices and maintenance / access points proposed in the WQMP, then the WQMP must be revised and re-submitted for approval by the County, and a new Maintenance Agreement must also be completed and re-submitted for approval by the County, according to the procedure outlined above.

    If you have any further questions about this process, please call the Environmental Management Division, County Stormwater Program, at (909) 387-8109.

RECORDING REQUESTED BY:

County of San Bernardino
Department of Public Works

AND WHEN RECORDED MAIL TO:

County of San Bernardino
Department of Public Works
825 E. Third Street, Room 201
San Bernardino, CA 92415-0835

SPACE ABOVE THIS LINE FOR RECORDER'S USE

AGREEMENT

THIS PAGE ADDED TO PROVIDE ADEQUATE SPACE FOR RECORDING INFORMATION (Additional Recording Fees Apply)

Water Quality Management Plan and Stormwater Best Management Practices Transfer, Access and Maintenance Agreement

OWNER NAME: Alamo Solar LLC

PROPERTY ADDRESS: The proposed Project is situated in the unincorporated community of Oro Grande in the western Mojave Desert of San Bernardino County. It is located west of old Route 66 (National Trails Highway) between Victorville and Barstow. The site is about 10 miles northwest of the Victorville. There are three primary access points to the Project site: Heritage Way/Bryman Road; Melrose Avenue; and Turner Road.

APN: 0469-011-68, 0470-021-09, 0470-041-01, 0470-051-01, 0470-051-14, 0470-051-15, and 0470-011-35 (Parcel 2 is in the Project area, Parcel 1 is adjacent to the Project area but is included herein for study of flows from the Project)

THIS AGREEMENT is made and entered into in

_____ , California, this _____ day of

_____ , by and between

_____ , hereinafter

referred to as Owner, and the COUNTY OF SAN BERNARDINO, a municipal corporation, located in the County of San Bernardino, State of California, hereinafter referred to as County;

WHEREAS, the Owner owns real property ("Property") in the County of San Bernardino, State of California, more specifically described in Exhibit "A" and depicted in Exhibit "B", each of which exhibits is attached hereto and incorporated herein by this reference;

WHEREAS, at the time of initial approval of development project known as

_____ within the Property described herein, the County required the project to employ Best Management Practices, hereinafter referred to as "BMPs," to minimize pollutants in urban runoff;

WHEREAS, the Owner has chosen to install and/or implement BMPs as described in the Water Quality Management Plan, on file with the County, hereinafter referred to as "WQMP", to minimize pollutants in urban runoff and to minimize other adverse impacts of urban runoff;

WHEREAS, said WQMP has been certified by the Owner and reviewed and approved by the County;

WHEREAS, the Owner is aware that periodic and continuous maintenance, including, but not necessarily limited to, filter material replacement and sediment removal, is required to assure peak performance of all BMPs in the WQMP and that, furthermore, such maintenance activity will require compliance with all Local, State, or Federal laws and regulations, including those pertaining to confined space and waste disposal methods, in effect at the time such maintenance occurs;

NOW THEREFORE, it is mutually stipulated and agreed as follows:

1. All maintenance or replacement of BMPs proposed as part of the WQMP is the sole responsibility of the Owner in accordance with the terms of this Agreement.

2. Owner hereby provides the County of San Bernardino's designee complete access, of any duration, to the BMPs and their immediate vicinity at any time, upon reasonable notice, or in the event of emergency, as determined by the County Director of Public Works, no advance notice, for the purpose of inspection, sampling, testing of the Device, and in case of emergency, to undertake all necessary repairs or other preventative measures at owner's expense as provided in paragraph 3 below. The County shall make every effort at all times to minimize or avoid interference with Owner's use of the Property. Denial of access to any premises or facility that contains WQMP features is a violation of the County Stormwater Ordinance, County Code 3587. If there is reasonable cause to believe that an illicit discharge or breach of the WQMP operation and maintenance commitments is occurring on the premises then the authorized enforcement agency may seek issuance of a search warrant from any court of competent jurisdiction in addition to other enforcement actions.

3. Owner shall use its best efforts diligently to maintain all BMPs in a manner assuring peak performance at all times. All reasonable precautions shall be exercised by Owner and Owner's representative or contractor in the removal and extraction of any material(s) from the BMPs and the ultimate disposal of the material(s) in a manner consistent with all relevant laws and regulations in effect at the time. As may be requested from time to time by the County, the Owner shall provide the County with documentation identifying the material(s) removed, the quantity, and disposal destination.

4. In the event Owner, or its successors or assigns, fails to accomplish the necessary maintenance contemplated by this Agreement, within five (5) days of being given written notice by the County, the County is hereby authorized to cause any maintenance necessary to be done and charge the entire cost and expense against the property and/or to the Owner or Owner's successors or assigns, including administrative costs, attorney's fees and interest thereon at the maximum rate authorized by the County Code from the date of the notice of expense until paid in full.

5. The County may require the owner to post security in form and for a time period satisfactory to the County to guarantee the performance of the obligations stated herein. Should the Owner fail to perform the obligations under the Agreement, the County may, in the case of a cash bond, act for the Owner using the proceeds from it, or in the case of a surety bond, require the sureties to perform the obligations of the Agreement. As an additional remedy, the Director of Public Works may withdraw any previous stormwater-related approval with respect to the property on which BMPs have been installed and/or implemented until such time as Owner repays to County its reasonable costs incurred in

accordance with paragraph 3 above.

6. This agreement shall be recorded in the Office of the Recorder of San Bernardino County, California, at the expense of the Owner and shall constitute notice to all successors and assigns of the title to said Property of the obligation herein set forth, and also a lien in such amount as will fully reimburse the County, including interest as herein above set forth, subject to foreclosure in event of default in payment.

7. In event of legal action occasioned by any default or action of the Owner, or its successors or assigns, then the Owner and its successors or assigns agree(s) to hold the County harmless and pay all costs incurred by the County in enforcing the terms of this Agreement, including reasonable attorney's fees and costs, and that the same shall become a part of the lien against said Property.

8. It is the intent of the parties hereto that burdens and benefits herein undertaken shall constitute covenants that run with said Property and constitute a lien there against.

9. The obligations herein undertaken shall be binding upon the heirs, successors, executors, administrators and assigns of the parties hereto. The term "Owner" shall include not only the present Owner, but also its heirs, successors, executors, administrators, and assigns. Owner shall notify any successor to title of all or part of the Property about the existence of this Agreement. Owner shall provide such notice prior to such successor obtaining an interest in all or part of the Property. Owner shall provide a copy of such notice to the County at the same time such notice is provided to the successor.

10. Time is of the essence in the performance of this Agreement.

11. Any notice to a party required or called for in this Agreement shall be served in person, or by deposit in the U.S. Mail, first class postage prepaid, to the address set forth below. Notice(s) shall be deemed effective upon receipt, or seventy-two (72) hours after deposit in the U.S. Mail, whichever is earlier. A party may change a notice address only by providing written notice thereof to the other party.

12. The Owner its successors and assigns, hereby agrees to save and hold harmless the County, any of its departments, agencies, officers or employees, all of whom while working within their respective authority, from all cost, injury and damage incurred by any of the above, and from any other injury or damage to any person or property whatsoever, any of which is caused by an activity, condition or event arising out of the performance, preparation for performance or nonperformance of any provision of this agreement by the Owner, its agents, or any of its independent contractors.

IF TO COUNTY:	**IF TO OWNER:**
Director of Public Works	_____
825 E. Third Street, Room 201	_____
San Bernardino, CA 92415-0835	_____

IN WITNESS THEREOF, the parties hereto have affixed their signatures as of the date first written above.

OWNER:

Signature: _____

Name: _____

_____
Title

OWNER:

Signature: _____

Name: _____

_____
Title

NOTARIES ON FOLLOWING PAGE

A notary acknowledgement is required for recordation (attach appropriate acknowledgement).

ACCEPTED BY:

GERRY NEWCOMBE, Director of Public Works

Date: _____

Attachment: Standard Notary Acknowledgement

Attachment B

Pollutants of Concern

B-1.1 Pollutants List

- ***Bacteria and Viruses*** – Bacteria and Viruses are ubiquitous microorganisms that thrive under certain environmental conditions. Their proliferation is typically cause by the transport of animal or human fecal wastes from the watershed. Water, containing excessive bacteria and viruses, can alter the aquatic habitat and create a harmful environment for humans and aquatic life. Also, the decomposition of excess organic waste causes increased growth of undesirable organisms in the water.

- ***Metals*** – The primary source of metal pollution in stormwater is typically commercially available metals and metal products. Metals of concern include cadmium, chromium, copper, lead, mercury, and zinc. Lead and chromium have been used as corrosion inhibitors in primer coatings and cooling tower systems. Metals are also raw material components in non-metal products such as fuels, adhesives, paints, and other coatings. At low concentrations naturally occurring in soil, metals may not be toxic. However, at higher concentrations, certain metals can be toxic to aquatic life. Humans can be impacted from contaminated groundwater resources, and bioaccumulation of metals in fish and shellfish. Environmental concerns, regarding the potential for release of metals to the environment, have already led to restricted metal usage in certain applications (OC 2003).

- ***Nutrients*** – Nutrients are inorganic substances, such as nitrogen and phosphorus. Excessive discharge of nutrients to water bodies and streams causes eutrophication, where aquatic plants and algae growth can lead to excessive decay of organic matter in the water body, loss of oxygen in the water, release of toxins in sediment, and the eventual death of aquatic organisms. Primary sources of nutrients in urban runoff are fertilizers and eroded soils.

- ***Pesticides*** - Pesticides (including herbicides) are chemical compounds commonly used to control nuisance growth or prevalence of organisms. Relatively low levels of the active component of pesticides can result in conditions of aquatic toxicity. Excessive or improper application of a pesticide may result in runoff containing toxic levels of its active ingredient (OC 2003).

- ***Polychlorinated Bi-Phenyls (PCB)*** - PCB are synthetic chemicals that were manufactured for use in various industrial and commercial applications - including oil in electrical and hydraulic equipment, and plasticizers in paints, plastics and rubber products - because of their non-flammability, chemical stability, high boiling point and electrical insulation properties. When released into the environment, PCBs do not easily break apart. Instead, they persist for many years, bioaccumulate and bioconcentrate in organisms. The EPA has classified PCBs as probable human carcinogens. Long-term effects of PCB exposure include

harm to the nervous and reproductive system, immune system suppression, hormone disruption and skin and eye irritation.

- **Organic Compounds -** Organic compounds are carbon-based. Commercially available or naturally occurring organic compounds are found in pesticides, solvents, and hydrocarbons. Organic compounds can, at certain concentrations, indirectly or directly constitute a hazard to life or health. When rinsing off objects, toxic levels of solvents and cleaning compounds can be discharged to storm drains. Dirt, grease, and grime retained in the cleaning fluid or rinse water may also adsorb levels of organic compounds that are harmful or hazardous to aquatic life (OC 2003).

- ***Sediments* –** Sediments are solid materials that are eroded from the land surface. Sediments can increase turbidity, clog fish gills, reduce spawning habitat, lower young aquatic organisms survival rates, smother bottom dwelling organisms, and suppress aquatic vegetation growth.

- ***Total Suspended Solids (TSS)*** - The measure of the suspended solids in a water sample includes inorganic substances, such as soil particles and organic substances, such as algae, aquatic plant/animal waste, particles related to industrial/sewage waste, etc. These solids can increase turbidity, clog fish gills, reduce spawning habitat, lower young aquatic organisms survival rates, smother bottom dwelling organisms, and suppress aquatic vegetation growth.

- ***pH*** – pH is an expression of hydrogen ion concentration in water. pH affects most chemical and biological processes in water, and it is one of the most important environmental factors limiting the distribution of species in aquatic habitats. Different species flourish within different ranges of pH, with the optima for most aquatic organisms falling between pH 6.5-8. U.S. EPA water quality criteria for pH in freshwater suggest a range of 6.5 to 9. Fluctuating pH or sustained pH outside this range reduces biological diversity in streams because it physiologically stresses many species and can result in decreased reproduction, decreased growth, disease, or death.

- ***Trash and Debris*** – Trash (such as paper, plastic, polystyrene packing foam, and aluminum materials) and biodegradable organic matter (such as leaves, grass cuttings, and food waste) are general waste products on the landscape. The presence of trash and debris may have a significant impact on the recreational value of a water body and aquatic habitat. Trash impacts water quality by increasing biochemical oxygen demand.

- ***Oxygen-Demanding Substances*** – This category includes biodegradable organic material as well as chemicals that react with dissolved oxygen in water to form other compounds. Proteins, carbohydrates, and fats are examples of biodegradable organic compounds. Compounds such as ammonia and hydrogen sulfide are examples of oxygen-demanding compounds. The oxygen demand of a substance can lead to depletion of dissolved oxygen in a water body and possibly the development of septic conditions. A reduction of dissolved

oxygen is detrimental to aquatic life and can generate hazardous compounds such as hydrogen sulfides.

- ***Oil and Grease*** – Oil and grease in water bodies decreases the aesthetic value of the water body, as well as the water quality. Primary sources of oil and grease are petroleum hydrocarbon products, motor products from leaking vehicles, esters, oils, fats, waxes, and high molecular-weight fatty acids.