GENERAL BIOLOGICAL RESOURCES ASSESSMENT REPORT

MARATHON SOLAR PROJECT

Cougar Buttes USGS 7.5' quadrangle
Section 27, Township 4 North, Range 1 East
APNs 0449-631-02 and 0449-172-75

SAN BERNARDINO COUNTY, CALIFORNIA

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CERTIFICATION

"I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. Field work conducted for this assessment was performed by me or under my direct supervision. I certify that I have not signed a nondisclosure or consultant confidentiality agreement with the project applicant or applicant's representative and that I have no financial interest in the project."

DATE: 6/20/2012 SIGNED: _____

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EXECUTIVE SUMMARY

Marathon Solar, LLC (the Applicant) has retained URS Corporation (URS) to prepare this General Biological Resources Assessment Report for the Marathon Solar Project (Project), a proposed 20-megawatt (MW) alternative current (AC) solar photovoltaic (PV) electrical power generating facility on approximately 130 acres in unincorporated San Bernardino County, California. The site measures approximately 152 acres in size. The proposed Project will connect with an existing Southern California Edison (SCE) 33-kilovolt (kV) transmission line. No new off-site transmission line is proposed.

The Project site supports one vegetation type, creosote bush-white burr sage scrub. No special-status plant species were detected on-site, with the exception of silver cholla (*Cylindropuntia echinocarpa*), pencil cholla (*Cylindropuntia ramosissima*), cottontop cactus (*Echinocactus polycephalus*), Engelmann's hedgehog cactus (*Echinocereus engelmannii*), Joshua tree (*Yucca brevifolia*), and Mojave yucca **(***Yucca schedigera***)**, which maintain no formal sensitivity designation but are granted protection under the California Desert Native Plants Act and the San Bernardino County Development Code.

Wildlife use of this site appears to be limited. Aside from common insects, a total of 15 wildlife species were observed on-site. Two special-status wildlife species were detected on-site, the burrowing owl (*Athene cunicularia*) and the loggerhead shrike (*Lanius ludovicianus*). Both of these species are designated by the CDFG as California Species of Special Concern. Focused surveys for the burrowing owl and Mojave desert tortoise were conducted, and results are presented under separate cover (see URS 2012b). California Natural Diversity Database (CNDDB) forms for this species are included in that report.

A total of two ephemeral drainages were mapped, traversing the site in a south-north direction. Because the site's watershed is intra-state and is isolated from navigable waters, the waters on-site are not subject to federal jurisdiction under the Clean Water Act. However, two ephemeral desert washes totaling approximately 5.3 acres are under state jurisdiction and are subject to the permitting authority of the California Department of Fish and Game and the Colorado River Basin Regional Water Quality Control Board.

SECTION 1.0
INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

The Applicant proposes to construct and operate a 20 megawatt (MW) alternating current (AC) photovoltaic (PV) electrical power generating facility on approximately 130 acres in unincorporated San Bernardino County, California. The proposed Marathon Solar Project (Project) will connect with the existing Southern California Edison (SCE) 33-kilovolt (kV) transmission line that runs north-south along Camp Rock Road (adjacent to the Project's eastern boundary). No new off-site transmission line is proposed. This General Biological Resources Assessment Report presents the results of focused biological field investigations that have been undertaken within the Project site and surrounding vicinity, describes the Project's impacts on biological resources, and identifies feasible mitigation that would reduce impacts to less than significant levels.

The Applicant will submit a Conditional Use Permit (CUP) application to the County of San Bernardino, and the Planning Division of the County Land Use Services Department (Planning) will initiate review of the proposed Project as required under the California Environmental Quality Act (CEQA). The purpose of this General Biological Resources Assessment Report is to present the biological field studies that have been conducted for the Project, and to substantiate the baseline biological conditions within the Project site and surrounding area and Project-related impacts for CEQA purposes. Studies presented in this report include:

- A review of pertinent literature
- Full-coverage plant and wildlife surveys
- Delineation of jurisdictional waters and streambeds
- Joshua tree and California Desert Native Plants Act inventory

In addition to these general studies presented in this General Biological Resources Assessment Report, focused surveys for the Mojave desert tortoise (*Gopherus agassizii*) and burrowing owl (*Athene cunicularia*) were conducted within the Marathon site. Focused survey reports for these species have been prepared under separate cover (URS 2012a and 2012b, respectively).

1.2 PROJECT SITE

The Project site evaluated in this General Biological Resources Assessment Report comprises approximately 152 acres in the Lucerne Valley, in the western Mojave Desert in unincorporated San Bernardino County. The site is located approximately six miles southeast

of the intersection of State Route (SR) 18 and SR 247, which occurs in the unincorporated town of Lucerne Valley. Access to the site can be achieved via Camp Rock Road, which forms the site's eastern border. Joshua Avenue, an unpaved County road, forms the western border of the site. The site's northern and southern borders are not marked by physical features. The site is located within Section 27 Township 4 North, Range 1 East (San Bernardino Base and Meridian), within the Cougar Buttes USGS 7.5-minute series quadrangle. The site is nearly square, with the exception of a 300-foot-by-600-foot indentation in the northeastern corner (see Figure 1).

The project site is comprised of two adjacent parcels, both of which are currently unimproved and vacant. Both parcels are zoned LV/AG (Agriculture), which has a minimum 10-acre lot size and is intended for commercial agricultural operations, agriculture support services, rural residential uses and similar and compatible uses. Under County Code Chapter 82.04, electrical power generation is defined as a transportation, communications and infrastructure use, and is allowed in the AG zone upon approval of a Conditional Use Permit (CUP). The site is privately owned, and is not within or adjacent to any designated sensitive resource areas, ecological reserves, or other formally protected lands.

Elevations within the Project site range from approximately 3,240 to 3,346 feet above mean sea level, with the overall grade sloping gradually from the southeast to the north-northwest at a grade of 3.6 percent. The northern foothills of the San Bernardino Mountains, a major regional mountain range with elevations exceeding 11,000 feet, are located approximately three miles south of the site. The site exhibits microtopography associated with two ephemeral drainage channels that traverse the site, but major landforms and topographic features are absent.

Much of the land surrounding the Project site has been subdivided into large residential lots for rural living, but only a few of these lots have been developed with residences. The closest residence to the Marathon site is located adjacent to the site's western boundary, at the intersection of Joshua Avenue and Cochise Trail. Aside from scattered rural residences, the landscape surrounding the Project site is characterized by relatively intact desert vegetation.

1.3 TAXONOMIC NOMENCLATURE AND SPECIAL-STATUS SPECIES

Sources of taxonomic nomenclature for plants, animals, and vegetation communities used in this General Biological Resources Assessment Report are as follows:

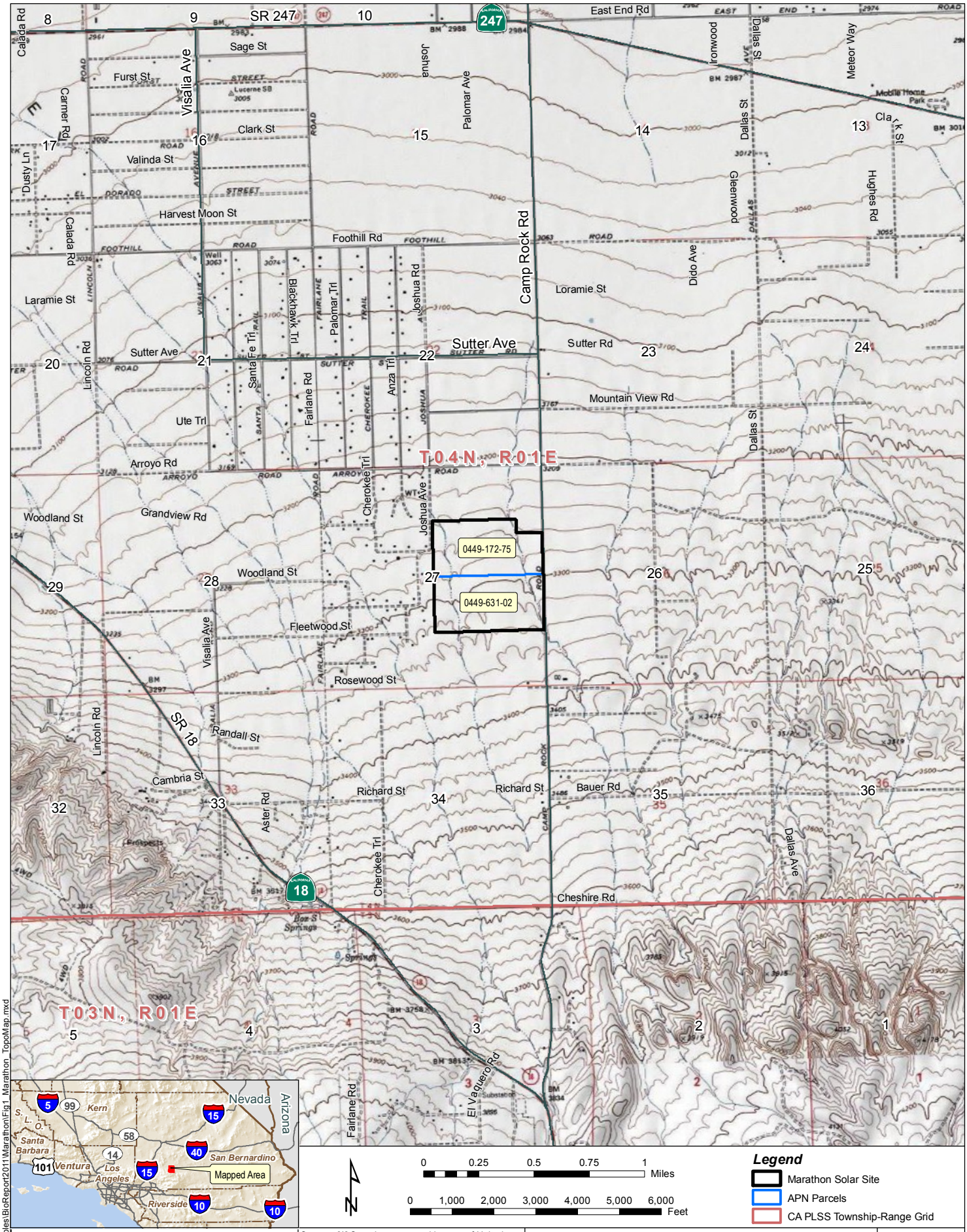
- Plant nomenclature follows *The Jepson Manual, Higher Plants of California* (Hickman 1993) and the Jepson Online Interchange for name changes.
- Reptile nomenclature follows *A Field Guide to Western Reptiles and Amphibians* (Stebbins 2003) and the California Herps website for name changes (California Herps 2011).

- Bird nomenclature follows the American Ornithologists' Union (2011).
- Mammal nomenclature follows *Mammal Species of the World* (Wilson and Reeder 2005).
- Natural vegetation communities were characterized based on *A Manual of California Vegetation, Second Edition* (Sawyer et al. 2009).

The term "special-status species," as used in this General Biological Resources Assessment Report, includes:

- Those plants and wildlife listed, proposed for listing, or candidates for listing as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) under the U.S. Endangered Species Act (ESA).
- Those plants and wildlife species listed or candidates for listing as threatened or endangered by the California Department of Fish and Game (CDFG) under the California Endangered Species Act (CESA).
- Those birds, mammals, reptiles and amphibians, and fishes listed as "fully protected" by the California Fish and Game Code (Sections 3511, 4700, 5050, and 5515, respectively).
- Wildlife species identified by the CDFG as California Species of Special Concern (CSC) or Special Animals (SA).
- Plant species identified by the CDFG as Special Plants (SP).
- Plants occurring on Lists 1, 2, and 4 of the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants (CNPS 2001) and the on-line Inventory of Rare and Endangered Plants (CNPS 2011).

Common avian species that receive protection under the Migratory Bird Treaty Act during the nesting season, but otherwise maintain no sensitivity designation, are not treated as special-status species in this report.



Biological Resources Assessment Report
Marathon Solar Site
San Bernardino County

URS Corporation

Source: [1] Seamless, scanned images of United States Geological Survey (USGS) paper topographic 1:24,000-scale maps by National Geographic TOPO!, [2] California Geospatial Information Library PLS, [3] San Bernardino County Office of the Assessor, [4] ESRI StreetMap USA (2007).

Figure 1. Topographic Map of Project Area

2012

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SECTION 2.0
SUMMARY PROJECT DESCRIPTION

The Applicant proposes to construct a photovoltaic (PV) solar facility on approximately 152 acres. The site is located in the northern half of the southeastern quarter and the southern half of the northeastern quarter of Section 27, Township 4 North, Range 1 East, San Bernardino Base and Meridian, in the Cougar Buttes United States Geological Survey (USGS) quadrangle, County of San Bernardino, California.

The site is bounded by Camp Rock Road directly to the East and Joshua Avenue to the West. Figure 1 shows the local site vicinity, and the inset on this figure shows the regional map for context.

The proposed Project site is situated within the Mojave Desert. The watershed generally slopes in a northwesterly direction, with elevations of approximately 3,351 to 8,190 feet above mean sea level and an overall slope of approximately 14 percent. The site is entirely comprised of creosote bush-white burr sage scrub vegetation.

2.1 PROJECT LOCATION AND LEGAL DESCRIPTION

The proposed Project site is situated in the western Mojave Desert, in the southern Lucerne Valley region of San Bernardino County. The site is about 5.5 miles southeast of the Lucerne Valley community. The primary facility access point is from Camp Rock Road, which runs along the eastern project boundary of the site. Camp Rock Road intersects State Route 18 (SR 18) approximately 2.2 miles south of the proposed Project site.

The project site includes the following APNs:

- 0449-631-02 (78.4 acres, N/2, SE/4, Section 27, T4N R1E, excepting County 50-foot road easement)
- 0449-172-75 (73.78 acres, S/2 NE/4 Section 27, T4N R1E, excepting Parcel 74 (Big Bear Area Regional Wastewater Agency, and excepting County road easement)

2.2 ENVIRONMENTAL SETTING AND SURROUNDING USES

The Mojave Desert is a subsection of the Basin and Range Physiographic Province, which is characterized by long, north-south-trending mountain ranges separated by broad valleys. The site is located on a broad gently sloping bajada of alluvial material originating from the San Bernardino Mountains to the south. Elevation of the Project site ranges from approximately 3,240 feet above sea level (asl) at its northwest corner up to 3,346 asl at its southeast corner.

The topography is generally flat, with a slope of about 3.6 percent towards the north-northwest.

The Project site is bordered to the north by vacant land and the balance pool operated by the Big Bear Area Regional Wastewater Agency, at the project site's northeast corner. Arroyo Road is 0.25 mile to the north. Rosewood Street is 0.25 mile to the south. The vacant land both north and south of the site is subdivided into lots ranging from five to 10 acres in size, but none have been developed. Joshua Street forms part of the western boundary of the project site, and land to the west of Joshua Street is subdivided into five acre lots. About one-quarter of these lots have been developed with single family residences. One residence is located across Joshua Street to the west, and about a dozen others are within one quarter mile of the project site. To the east, across Camp Rock Road, the land is subdivided into lots of 18 to 19 acres in size, but none of these have been developed with residential or other uses.

2.3 EXISTING LAND USES

The project site is currently vacant. The property is zoned LV/AG (Agriculture), which has a minimum 10-acre lot size and is intended for commercial agricultural operations, agriculture support services, rural residential uses and similar and compatible uses. Under County Code Chapter 82.04, electrical power generation is defined as a transportation, communications and infrastructure use, and is allowed in the AG zone upon approval of a Conditional Use Permit (CUP).

2.4 PROJECT LAYOUT AND CONSTRUCTION

The proposed 152-acre solar power generation facility would be comprised of the following major components: non-reflective PV solar module arrays mounted on fixed-tilt or single-axis trackers and a racking system supported by embedded piers The site would also include approximately 20 inverters on small concrete pads, a switching station in an enclosure measuring approximately 200 by 200 feet in plan view, an unmanned communications enclosure measuring approximately 20 by 30 feet in plan view, two Conex boxes for equipment storage, and buried collector lines. Concrete pads would be sized and installed to accommodate their associated equipment (inverters and switchgear). The top-of-concrete elevation would be 6 inches above-grade-level locally to maintain flow away from the foundation.

The site plan and typical elevation are provided in Figure 2 (note: locations of solar panels and other elements within the site may be refined during final design). The layout of the solar panels would be aligned in rows in the north-south direction throughout the site. Each solar panel would be attached to embedded piers using a support structure. The rows of solar panels would be separated by access ways. Internal site circulation would include a 25-foot-wide perimeter gravel road. Maintenance roads with access to the solar panels would be and improved (minimally graded, dirt or gravel) to provide truck access. Upon completion of the

proposed Project, vegetation or dust palliatives may be used if needed to control wind and water erosion during operations.

No off-site improvements are anticipated with the exception of the development of site access points. Typical site access will be 25 feet wide, accommodating 75-foot turning radii in both directions. The proposed site access will include a 75-foot-long drive apron and a roadway section paved with asphalt. The actual depth of roadway sections would be determined during final design based on anticipated loading and traffic indices. However, it is anticipated that the road base course would be a minimum of six inches thick. The top course thickness would be a minimum of two inches thick.

A six foot high chain link security fence topped with one foot of barbed wire will be installed at the property setback. Signs will be installed to achieve the appropriate safety and security as expected in a solar power plant. Proposed signage includes high voltage danger signs, site under surveillance, caution electric shock, etc. Any signs as required by the National Electrical Code will be installed.

The Project's lighting system will provide operation and maintenance personnel with illumination for both normal and emergency conditions. Lighting will be designed to provide the minimum illumination needed to achieve safety and security objectives. Lighting will be directed downward and shielded to focus illumination on the desired areas only to avoid light spillage on adjacent properties. Project lighting will be located at each inverter station and switchyard. Lighting will be no brighter than required to meet safety and security requirements, and the lamp fixtures and lumens will be selected accordingly. All project lighting will be switched and without timers.

Several part-time employees would visit the site periodically (e.g., monthly or bi-monthly) and several times a year the employees or a contractor would visit the site to wash the PV panels. Panel washing would require approximately 2 acre-feet of water per year and, based on an assumed use of medium-sized water tankers, would require approximately 130 truckloads (260 truck trips) for delivery of this water. Water would be purchased from a local purveyor. No on-site wells would be used.

2.5 SUPPORT PEDESTAL DRAINAGE AND EROSION DESIGN

The solar panels would drain freely to the ground. They would be almost parallel to the ground with a slight sloping orientation. In general, rain would run off the lower edge of the PV panel. The edge of the panel would be approximately 24 inches above the ground, and the runoff would be approximately 25 gallons in a 10-year storm (5-minute – 10-year rain event per 200 square feet of panels). This volume of water is expected to run off the panels over a 5-minute period. Based on the volume of water falling from each panel, the height of the fall, and the soil conditions, it is not expected that erosion beyond a micro level will occur. It is expected that water will fall from the PV panels and pond at a drip point before infiltrating or gradually migrating into the existing drainage patterns. If, over time, minor erosion were

noted at the drip points, small gravel pads could be added to help dissipate the energy of the falling water. If minor erosion were noted near the foundations, minor grading could restore support for the individual foundations, and keep surface flows from undermining the foundations in future storm events.

2.6 INCREASE IN IMPERVIOUSNESS DUE TO CONSTRUCTION

Increase in impervious area of the site due to the construction is estimated to be minimal, approximately 9 percent.

2.7 SITE DRAINAGE

A flood map search (FEMA 2011) for Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panel ID number 06071C6600H confirms the proposed Project site area has not been mapped by FEMA for flood zone hazards, and is therefore classified as an "Undetermined Risk Area." The County of San Bernardino also has no flood zone hazard mapping for this area.

Typical of arid regions, the area experiences short-duration, high-intensity rainfall storm events producing potentially high rates of runoff when the initial infiltration rates are exceeded. During these periods the small, incised washes become conduits for water flow.

The soil in the watershed is predominantly Soil Group D. This soil type is characterized as having high runoff potential due to very slow infiltration rates when thoroughly wetted. It is expected that drainage conditions present at the site, which have been formed by past storm events, would not be disturbed and would continue to convey storm flows following project construction. Because construction essentially leaves flow patterns unaltered, mitigation is considered unnecessary for this site.

Based on visual observations during a site visit and the type of facility proposed, it is expected that the proposed solar panel construction would not significantly change offsite runoff characteristics during a major storm event. Because the imperviousness of the site would not be greatly changed as a result of the construction, the impact of increased rainfall runoff due to construction would be negligible. As noted above, the site design indicates that project construction would result in a minor (9 percent) increase in impervious surfaces at the site.

The site topography can be characterized as uniform in surface profile, with a slight slope in a northwesterly direction. Based on field observations, the site is characterized by naturally developed riverine channels that direct rainfall runoff through the site. Some of the existing drainage flow paths would be filled during the development of the site based on the final layout of the solar panels and the project's Conceptual Drainage Plan would redirect their existing flows to other existing drainages. With incorporation of the Conceptual Drainage Plan, the proposed Project is not expected to significantly affect offsite flow patterns.

2.8 PROJECT CONSTRUCTION AND SCHEDULE

Construction of the proposed Project is estimated to require approximately 160-200 workers at its peak. Construction is estimated to start in 2013 and would take approximately nine months to complete. Approximately 80 acre-feet of water would be used during construction for dust suppression and ancillary construction activities. Dust suppression during construction may also involve application of palliatives.

The development of the Project would require limited site grading, with limited impact to existing offsite drainage patterns and overall topography of the site. Minor cuts may be required at the locations of inverters and other equipment to provide level foundations. It is expected that the fill from these cuts will be placed around the pre-cast foundation in order to divert small, localized flows away from the foundation and prevent undermining of the same.

Where grading is required, cut-and-fills are expected be balanced onsite, resulting in minimal import or export of earthen material. A total of approximately 300,000 cubic yards of cut-and-fill may be balanced onsite. Final drainage design will be completed following a detailed topographic site survey overlaid with proposed site development grading.

Areas along major drainage channels outside of the developed footprint will be preserved. Vegetation would be cleared to allow for the construction of the solar panels and access roads. Grubbing would occur on all gravel access roads, and in any areas where the roots would impede the pier structure. The installation of the solar panels also requires trenching along and below access roads for the installation of multiple cable systems. Under and along almost every internal roadway, trenches as deep as 48 inches would house the cables in a sand bed that would be backfilled with excavated material from the site.

Best management practices (BMPs) for erosion control would be used to avoid and minimize impacts on the environment during construction, and, operations and maintenance. For example, gravel pads or other track-out reduction measures at project construction site access points may be used to minimize dirt and mud deposits on public roads, as required to meet stormwater quality regulations and vegetation or dust palliatives may be used if needed to control wind and water erosion during operations. A Water Quality Management Plan that includes a Stormwater Pollution Prevention Plan and an Erosion and Sediment Control Plan would be prepared and implemented to avoid and minimize impacts on water quality during construction and operations.

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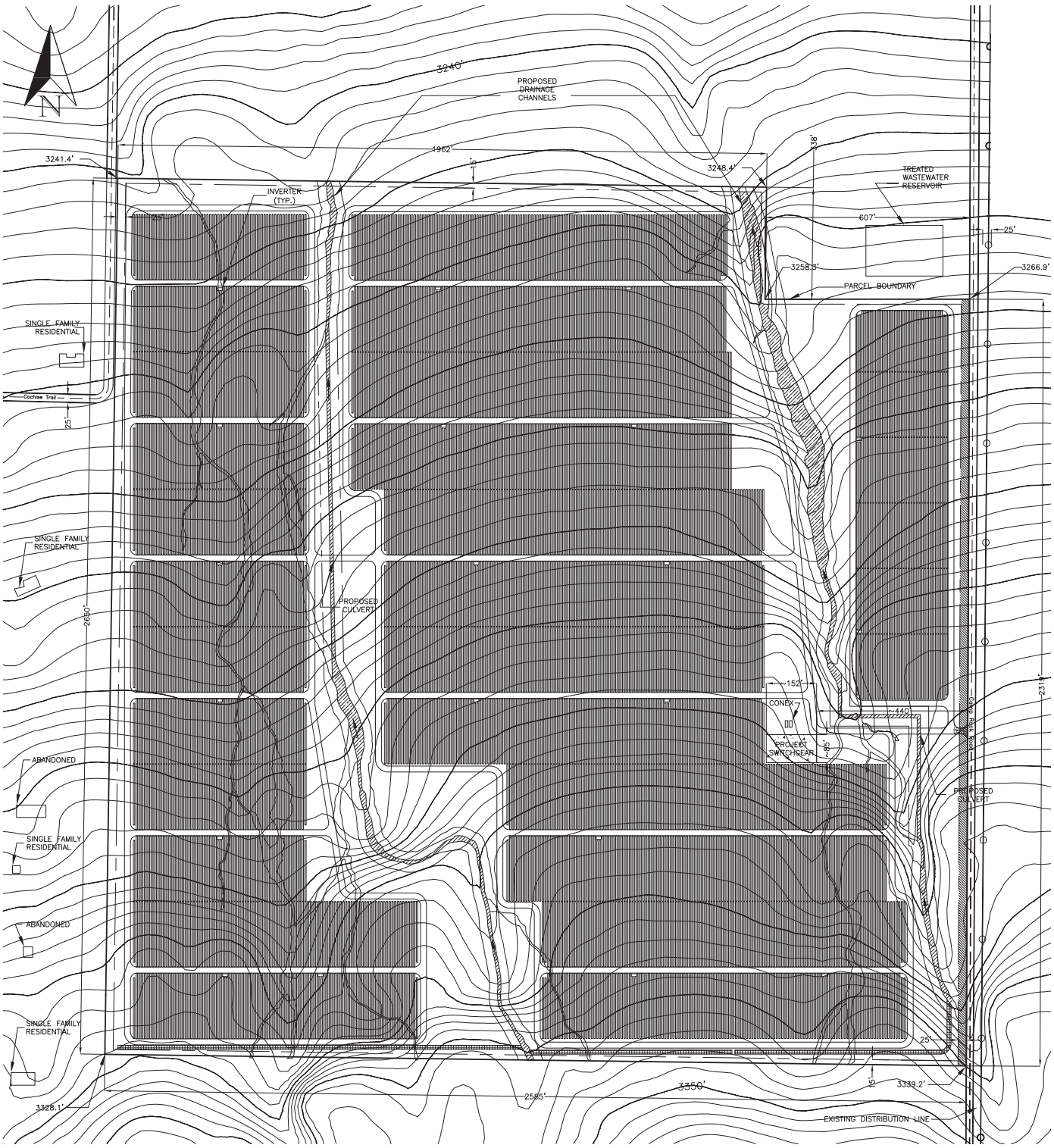


LEGEND

- SETBACK
- ROAD CENTERLINE
- PARCEL BOUNDARY
- PROPOSED DRAINAGE CHANNEL
- CONSTRUCTED CHANNEL
- ASPHALT APRON
- EASEMENT

0 220 440 880

APPROXIMATE SCALE: 1″ = 440′

Site Location

Marathon Solar Project Biological Resources Assessment Report San Bernardino County, CA	**Source:** Lincoln Renewable Energy, LLC June 2012. Document Number: D1-0506-002 Rev. E	**Figure 2.** Proposed Site Plan	2012
URS Corporation			

SECTION 3.0
STUDY METHODS

To document the existing biological conditions within the Marathon site, URS relied upon a review of available literature, as well as seasonally-timed biological field investigations of the site. The methods employed are described below.

3.1 LITERATURE REVIEW

Prior to conducting biological field surveys within the Marathon site, URS biologists performed a literature review to identify sensitive plants, animals, or habitats that could occur within the site. The literature review included topographic maps, aerial photographs, species-specific technical literature, and publicly-available environmental documentation for other recent projects in the region. In addition, a search of the California Native Plant Society (CNPS) Inventory of Rare Plants Database (CNPS 2001 and 2011) and a five-mile radius query of the California Natural Diversity Database (CNDDB; CDFG 2011) were performed. These resources were used to identify documented occurrences special-status plants and wildlife species within or in the vicinity of the Project site. The CNDDB five-mile query also provided locations of designated critical habitat for federally listed species, sensitive natural communities, ecologically sensitive areas, and state-managed lands. The results of the CNDDB query are presented on Figure 3.

Special-status species lists generated from database and literature review were cross-referenced with vegetation and habitat types present on the Project site to create a list of special-status plant and wildlife species with potential to occur on the Project site. Each special-status species with potential for occurrence on or near the Project site is discussed individually in Section 4.4.4 of this General Biological Resources Assessment Report. A broad-scale wildlife movement analysis entitled *South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion* (SC Wildlands 2008) was a primary source for information relating to the role the Project site as a possible wildlife movement corridor.

The information gained through the literature review and subsequent analysis described above was used to determine an appropriate scope of biological field investigations for the site.

3.2 FIELD INVESTIGATIONS

A total of six biological field surveys were conducted within the Marathon site between 2010 and 2012. Field investigations were initiated with a reconnaissance-level survey performed by URS biologists on February 16, 2010, and subsequent investigations included a full-coverage, spring season biological survey, a delineation of jurisdictional waters and streambeds, a Joshua tree (*Yucca brevifolia*) and California Desert Native Plants Act

inventory, and protocol surveys for Mojave desert tortoise (*Gopherus agassizii*) survey, and burrowing owl (*Athene cunicularia*), Phases II and III. The methods used during these efforts are described below. Table 1 Provides a summary of the field investigations.

TABLE 1
FIELD INVESTIGATION SUMMARY

Survey Type	Date	Time	Weather Conditions	Investigators
Reconnaissance-level survey	February 16, 2010	~1000–1700	Temperatures ranged from 15.6°C to 20°C. Winds ranged from calm to 10 mph (NNE).	Cristina Slaughter Ronald Cummings
Full-coverage biological survey	May 5, 2011	~0800–1900	Temperatures ranged from 20°C to 32.8°C. Winds ranged from calm to 14 mph (SW).	David Kisner Kelly Kephart
Delineation of jurisdictional waters and streambeds	September 13, 2011	~1200–1830	Temperatures ranged from 21.7°C to 27.8°C. Winds ranged from 4 mph (ESE) to 19 mph (SE).	Julie Love Greg Hoisington
Joshua tree and California Desert Native Plants Act inventory	October 21, 2011	~0800–1730	Temperatures ranged from 13.9°C to 27.8°C. Winds ranged from calm to 9 mph (N).	Julie Love William Fletcher Chris Munson Natalie Evans
Protocol Mojave desert tortoise survey	April 11–12, 2012	See URS 2012a	Temperatures ranged from 10.5°C to 18°C. Winds ranged from 9 to 15 mph from the west.	Christopher Julian Julie Love William Fletcher
Protocol burrowing owl surveys	April 11–12, 2012 (Phase II), April 17–19, 2012 (Phase III)	See URS 2012b	Temperatures ranged from 10.5°C to 30°C. Winds ranged from 2 to 15 mph from the west.	Julie Love William Fletcher

Note: Weather source (Weather Underground 2012).

3.2.1 Initial Site Reconnaissance

A reconnaissance-level survey was conducted on the site by URS biologists Crissy Slaughter and Ronald Cummings on February 16, 2010 to assess the site for potential biological constraints. The site was surveyed by vehicle from accessible roadways, and areas representative of the site's major vegetative and topographic zones and hydrologic features were investigated on foot. Biological resources and conditions that were visible this time of year and could be identified within the limitations of a reconnaissance-level survey effort (e.g., Joshua trees, ephemeral streams) were documented in the field. Habitat suitability for special-status species was also assessed. Information obtained from the field surveys was

cross-referenced with CNDDB query results and discussed informally with responsible agencies.

3.2.2 Full-coverage Biological Surveys

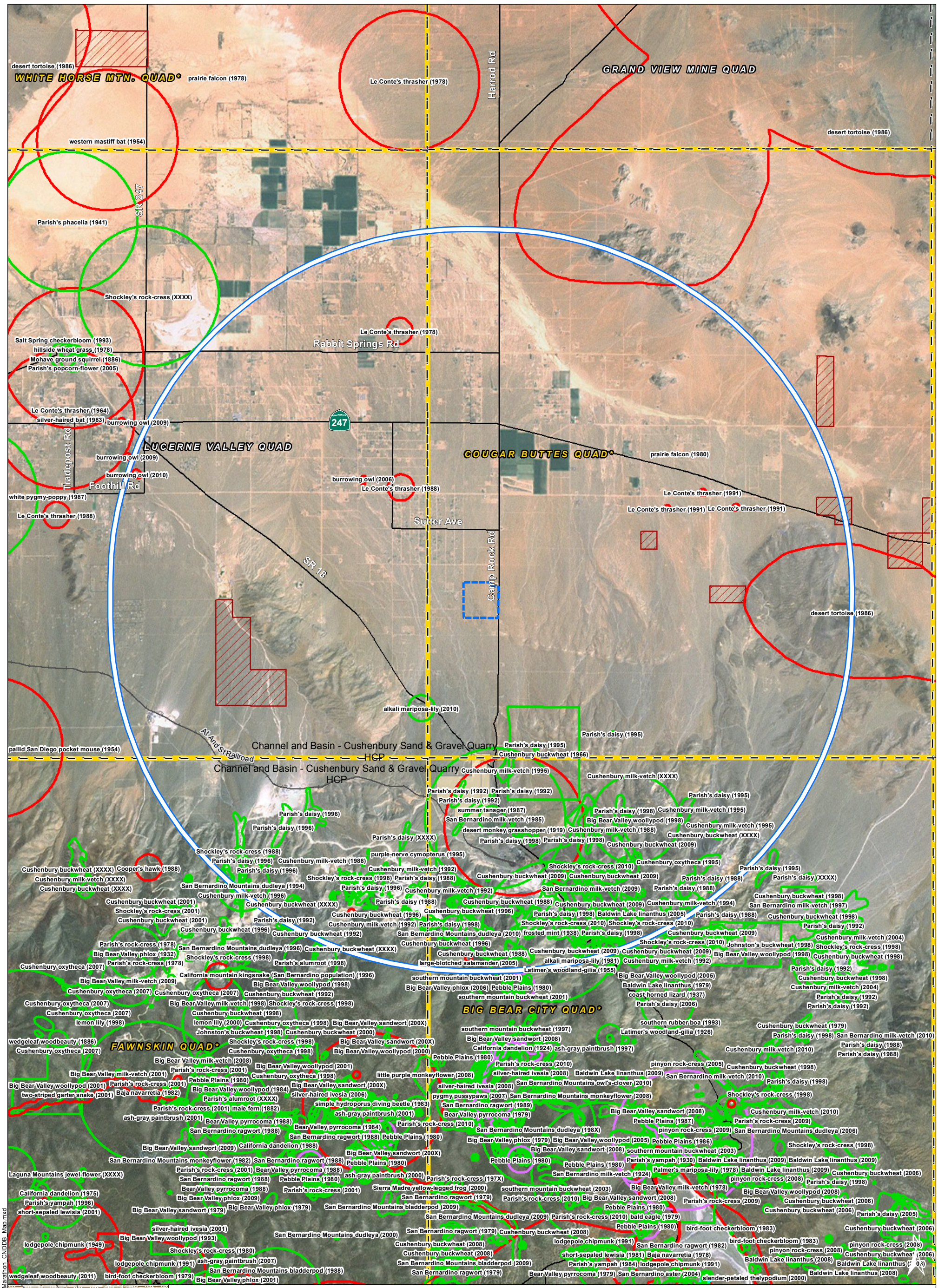
Full-coverage biological surveys of the Marathon site were conducted on May 5, 2011, by URS biologists David Kisner and Kelly Kephart. The biologists walked parallel transects across the site, identifying and documenting all plants and wildlife observed. Wildlife signs, such as distinctive burrows, tracks, scat, carcasses, or other identifying features, were also documented. Where special-status species were detected, the locations were recorded using Global Positioning System (GPS) technology. Because the initial site reconnaissance indicated that the Marathon site has the potential to support the desert tortoise, a federally and state-listed threatened species, transect spacing during the field surveys was limited to ten meters as required by the USFWS survey protocol for this species. Where necessary, biologists collected specimens of plant species observed on-site for taxonomic identification under a microscope.

3.2.3 Delineation of Waters and Streambeds

A formal delineation of waters of the U.S. (including wetlands) and CDFG-jurisdictional streambeds was performed on the Marathon site by URS senior biologists Julie Love and Greg Hoisington on September 13, 2011. This section summarizes the methods used to complete the delineation; a more detailed description is provided in the stand-alone Draft Wetland Delineation and Jurisdictional Determination Report for the Project (URS 2011b). A description of applicable federal and state laws and regulations is also provided for context.

3.2.3.1 <u>Summary of Agency Permitting Authority</u>

Streams and waterways, including ephemeral drainages, dry streambeds, and wetlands, can possess unique ecological functions and values, and are protected from human-induced destruction or degradation by a number of federal and state statutes. The federal and state agencies charged with administering these statutes and their responsibilities are described briefly below. For a more complete description of the Project's regulatory setting with regard to waters and streams, please refer to the Draft Wetland Delineation and Jurisdictional Determination Report for the Project (URS 2011b).



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Biological Resources Assessment Report
Marathon Solar Site
San Bernardino County

URS Corporation

Source: [1] CNDDB August 2011, [2] LADeptOfRegionalPlanning, 11-26-2007, [3] Tele Atlas North America, Inc./Geographic Data Technology, Inc., ESRI (2005-06-01), [4] I-cubed Nationwide Prime - Aerials Express (2009-04-15 image date, 0.3m resolution).

Figure 3. Special-status Species in the Project Vicinity

2012

3.2.3.1.1 U.S. Army Corps of Engineers Responsibility and Jurisdiction. Pursuant to Section 404 of the Clean Water Act (CWA), the U.S. Army Corps of Engineers (USACE) regulates the discharge of dredged and/or fill material into waters of the U.S. Section 404 requires that any person proposing such a discharge first obtain a permit from the USACE. Generally speaking, waters of the U.S. are defined to include navigable waterways and their tributaries and adjacent wetlands. Intrastate waters that are not tributary to navigable waterways are generally not waters of the U.S. The lateral limits of waters of the U.S., in the absence of adjacent wetlands, are defined by the ordinary high-water mark (OHWM) on the stream bank. The USACE's regulations define wetlands using a three-parameter approach, which requires a site to possess a predominance of hydrophytic vegetation, wetland hydrology, and hydric soils to qualify as a wetland.

3.2.3.1.2 Colorado River Basin Regional Water Quality Control Board Responsibility and Jurisdiction. Under Section 401 of the CWA, every applicant for a federal permit or license for any activity which may result in a discharge of dredge or fill material to a water body must obtain a State-issued Water Quality Certification that the proposed activity will comply with state water quality standards (i.e., beneficial uses, water quality objectives, and anti-degradation policy). In California, the State Water Resources Control Board (SWRCB) has delegated the responsibility for issuing Section 401 Certifications to nine Regional Water Quality Control Boards (RWQCB) throughout the state. The Colorado River Basin RWQCB) issues Section 401 Certifications for projects in southern San Bernardino County. Because a Section 404 Permit is a federal permit subject to the terms of Section 401 as described above, the USACE cannot issue Section 404 Permits in the Project region unless the permit applicant also receives a Section 401 Certification from the Colorado River Basin RWQCB.

Because Section 401 of the CWA is restricted to activities requiring a federal license or permit, this section does not apply to activities affecting waters outside federal jurisdiction, such as isolated, intrastate waters. However, the SWRCB has jurisdiction over all "waters of the State," defined as any surface water or groundwater, including saline waters, within the boundaries of the state, under the Porter-Cologne Water Quality Control Act (a state statute). Recent guidance from the SWRCB (2004) requires persons proposing to discharge construction fill into waters of the State to file a Report of Waste Discharge with the appropriate RWQCB and obtain Waste Discharge Requirements authorizing the fill.

3.2.3.1.3 California Department of Fish and Game Responsibility and Jurisdiction. Pursuant to Sections 1600–1616 of the California Fish and Game Code, any entity proposing to divert, obstruct, or substantially alter the bed, bank, or channel of a stream or lake must first obtain a Streambed Alteration Agreement from the CDFG. Regulations promulgated by the CDFG define streams to include bodies of water that flow at least periodically or intermittently through a bed or channel having banks and supporting aquatic life, including watercourses having surface or subsurface flow that supports or has supported riparian vegetation. Jurisdiction under this statute encompasses all portions of the bed, banks, and

channel of any stream, extending laterally to the upland edge of riparian vegetation. The upstream limit of CDFG jurisdiction is the point upstream of which there is no evidence of a defined bed and bank, and riparian vegetation is not present.

3.2.3.2 Delineation Methods

Waters of the U.S., CDFG-jurisdictional streambeds, and waters of the state within the Marathon Project site were delineated using a combination of desktop literature review and field mapping methods. Vegetation mapping within the site was also undertaken during this effort to provide biological context for the delineation data.

3.2.3.2.1 Literature Review for Hydrologic Features. Prior to field efforts, the United States Geologic Survey (USGS) Cougar Buttes, CA 7.5 minute quadrangle map (USGS 1994), the Soil Survey for the San Bernardino County, California, Mojave River Area (USDA-NRCS 1986, USDA-NRCS SSURGO 2008), the National Hydrography Dataset (NHD; USGS 2000), and a high quality aerial photograph of the Project site and the surrounding area (USDA-NAIP 2009) were reviewed to determine the locations of potential hydrologic features. The reconnaissance-level field investigation conducted on February 16, 2010 (described in Section 3.2.1 above) was also relied upon for this purpose.

The USGS 7.5 minute quadrangle map (USGS 1994) and the National Hydrography Dataset (NHD; USGS 2000) indicated the presence of two potential hydrological features on the Project site designated as intermittent streams (shown on Figure 4 with a blue line). During the initial reconnaissance-level survey, no additional intermittent drainages were found on the Project site; however, side drainages for these two features were identified.

3.2.3.2.2 Field Delineation of Potentially Jurisdictional Features. A formal field delineation of waters of the U.S., waters of the state, and CDFG-jurisdictional streambeds was performed within the Marathon site on September 13, 2011 by URS biologists Julie Love and Greg Hoisington. Because it was immediately evident that no areas within the Marathon site exhibited a predominance of hydrophytic vegetation, a formal delineation of wetlands was not conducted. (For federally protected wetlands to be present, a site must exhibit a predominance of hydrophytic vegetation, wetland hydrology, and hydric soils.)

At each potentially jurisdictional watercourse within the Marathon site, the location of the ordinary high water mark (OHWM) was determined in accordance with regulations promulgated by the USACE. The channel banks were examined for signs of flow, terraces, drift deposits, changes in vegetation, and other indicators that would determine the location of the OHWM. The upstream and downstream ends of each drainage were explored, and locations where the drainages either crossed the site boundary (i.e., entered or exited the site) or ceased to exhibit an OHWM were documented. Once the OHWM was identified in the field, the boundary was walked with a Trimble GeoXH Geoexplorer 2008 handheld GPS unit set to collect positional data in a “streaming” fashion. At each drainage feature, average

channel width and depth were estimated in the field and features such substrate type and topography were recorded, and photographs were taken to document site conditions. In addition to the hydrologic features indicated on the USGS and NHD maps and found during the initial reconnaissance-level survey, the entire Project site was surveyed for additional hydrologic features.

Each drainage feature within the Marathon site was examined for the presence of a defined bed, bank, or channel, as these elements indicate that CDFG-jurisdictional streambeds may be present. Upon investigation, it became evident that the OHWM and the top of the stream bank were coterminous in the on-site drainages. Thus, the GIS shapefiles created from the OHWM boundaries were used to determine the boundaries of streambeds within the site.

Following completion of the field delineation, statutory and regulatory criteria were reviewed to determine whether the delineated hydrologic features were subject to state or federal permitting authority. Watershed maps, aerial photographs, and other applicable literature were reviewed to ascertain whether waters identified in the field were tributary to navigable waters. When field data collection was complete, jurisdictional boundaries were downloaded from the Trimble GPS unit and converted into a GIS shape file using ArcGIS software. Properties such as length and acreage of each drainage were calculated through ArcGIS.

3.2.4 Joshua Tree Inventory

Joshua trees (*Yucca brevifolia*) are granted protection under the California Desert Native Plants Act (Section 80001 *et seq.* of the California Food and Agriculture Code), and are also addressed in Sections 88.01.050 and 88.01.060 of the San Bernardino County Development Code. Both of these laws prohibit the removal of Joshua trees without a County-issued permit, and the Development Code contains specific provisions governing the terms under which removal of Joshua trees may be authorized. Generally, these provisions require that all Joshua trees proposed for removal be appropriately transplanted or stockpiled for future transplanting wherever possible. Where removal of “specimen” size trees is requested (defined as having either a circumference at breast height exceeding 50 inches, a height exceeding 15 feet, a bark-like trunk, or a cluster of ten or more trees of any size in close proximity), the Development Code additionally requires a finding that no other reasonable alternative exists for development of the land.

Because the reconnaissance-level biological investigation described in Section 3.2.1 indicated the presence of Joshua trees within the Marathon site, a subsequent field effort was conducted to ascertain the number, location, and characteristics of the trees present. On October 21, 2011, URS scientists Julie Love, William Fletcher, Chris Munson, and Natalie Evans performed a full-coverage inventory of all Joshua trees within the Marathon site. The location of each tree was documented using GPS technology and physical characteristics of the trees were measured and recorded. Tree height was measured using a stadia rod, with one

biologist holding the rod against the tree and another recording the height from a distance, and predetermined height classes were used to expedite the collection of data. Diameter at breast height (4.5 feet above the ground surface) was measured by placing a flexible measuring tape around the trunk of each tree. Where more than one trunk was present at breast height, the largest trunk was measured. Other characteristics, such as apparent vigor and the presence or absence of a bark-like trunk, were visually assessed and recorded. Where multiple trees occurred in very close proximity, a single set of GPS coordinates was recorded to represent the tree cluster. The number of trees present in the cluster, as well as individual measurements of those trees, was documented.

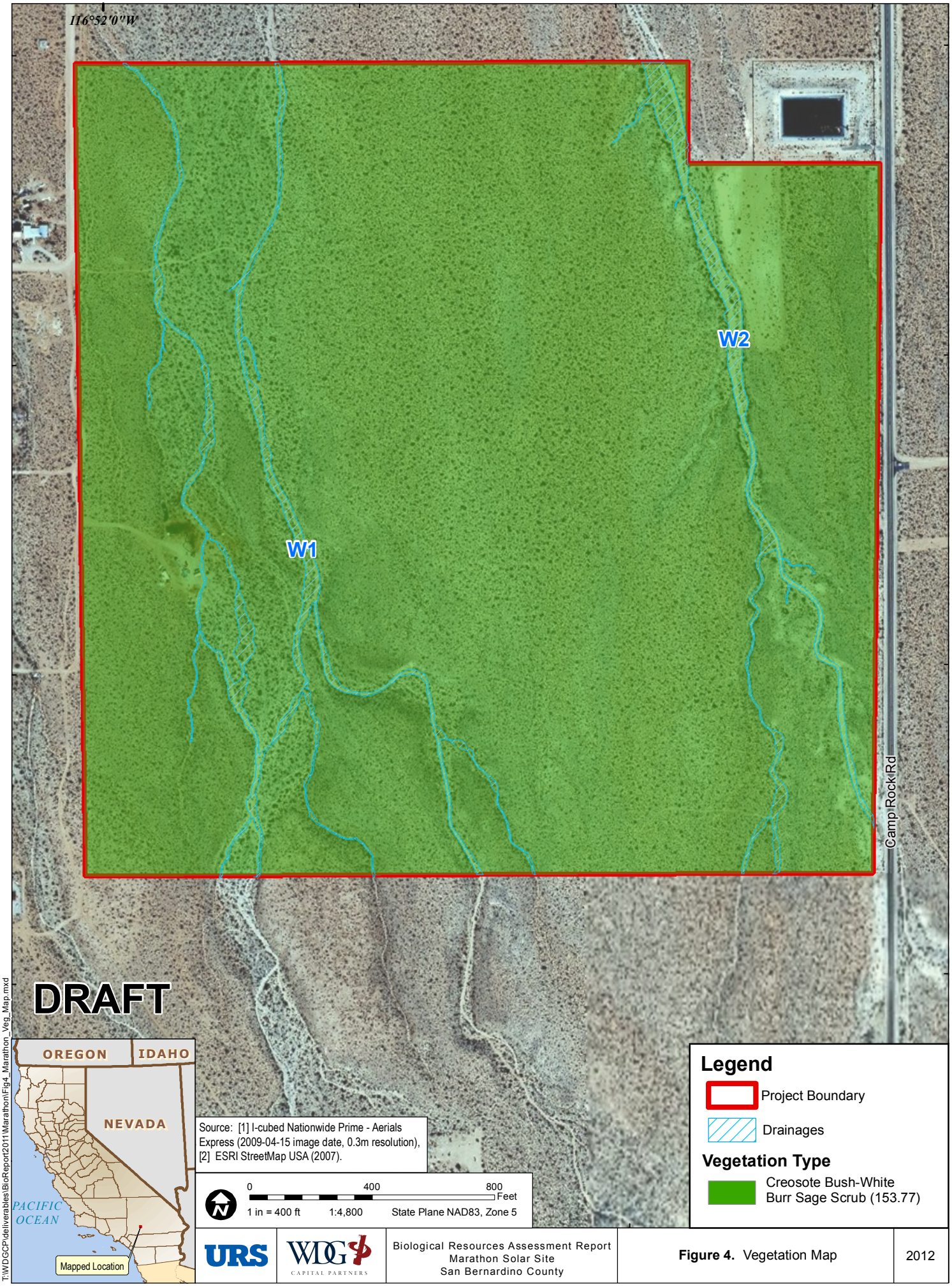
Upon completion of the field inventory, a GIS map of Joshua tree locations was created from the spatial data gathered in the field. Each point within the GIS layer represented a single Joshua tree, and the each point was attributed with the tree's height, circumference, and presence/absence of a bark-like trunk. An additional attribute was included to identify those trees meeting the definition of "specimen" size trees in the County Development Code. The Joshua tree location map was analyzed in conjunction with development plans for the Project to determine the extent of the Project's impacts on Joshua trees.

3.2.5 Protocol Mojave Desert Tortoise Survey

Surveys for the Mojave desert tortoise were conducted in April 2012 in accordance with the USFWS (2010) survey protocol for this species. The surveys consisted of pedestrian transects, spaced at 10-meter intervals, covering the entirety of the Marathon site. For a complete description of the methods employed, please refer to the Focused Desert Tortoise Survey Report for the project (URS 2012a).

3.2.6 Protocol Burrowing Owl Survey

Surveys for the burrowing owl were conducted in April 2012, and adhered to the methods set forth in the CDFG's (1995) *Staff Report on Burrowing Owl Mitigation* and the California Burrowing Owl Consortium's (1993) survey protocol for the species. These methods involve a four-phase survey approach, consisting of a habitat assessment (Phase I), transect surveys to determine burrow locations (Phase II), census and observation of owls present (Phase III), and preparation of a survey report (Phase IV). For a detailed description of the survey methodology, please refer to the Focused Burrowing Owl Report for the project (URS 2012b).



URS | WDG CAPITAL PARTNERS | Biological Resources Assessment Report Marathon Solar Site San Bernardino County | **Figure 4.** Vegetation Map | 2012

SECTION 4.0
EXISTING BIOLOGICAL CONDITIONS

This section presents the results of focused and general biological surveys that were conducted within the Marathon site between February 2010 and October 2011. The survey effort began on February 16, 2010, when a biological reconnaissance survey was conducted to assess the potential for sensitive biological resources and to recommend appropriate future surveys. Based on this initial investigation, and on comments received during early coordination with USFWS and CDFG representatives, a list of recommended surveys was prepared that included:

- A literature review, performed prior to conducting field investigations and intended to identify special-status species with potential to occur on the Project site and any specific survey requirements for those species
- A vegetation map of the Project site, delineating on-site vegetation communities consistent with accepted methods (e.g., Sawyer et al. 2009)
- A delineation of any jurisdictional waters or streambeds within the Project site
- Full-coverage floristic and wildlife surveys of the entire Project site
- Inventory and mapping of all Joshua trees on-site

Biological field investigations for the proposed Project were completed on October 21, 2011. Survey results are described below.

4.1 REGIONAL SETTING

The Project site is located in the Lucerne Valley, at the western edge of the Mojave Desert. Because this area is in proximity to montane, foothill, and desert habitats, the Project region contains plants, plant communities, and animals adapted to each of these general habitat classes.

4.1.1 Topography

The Lucerne Valley is located in the western Mojave Desert, and is bounded by the Granite, Ord, and Rodman Mountains to the north and the San Bernardino Mountains to the south. The San Bernardino Mountains are the largest of these ranges, reaching elevations in excess of 11,000 feet at the top of Mt. San Gorgonio, and receive considerable winter snowfall. Because the Marathon site is located within three miles of the northern edge of the San Bernardino Foothills, slope and drainage within the site is influenced by these mountains. The topography of the Marathon site slopes gradually from the southeast to the northwest, away from the San Bernardino Mountains and towards the floor of the Lucerne Valley.

Topography of the site is relatively flat, and elevations on-site range from 3,240 to 3,346 feet above mean sea level.

4.1.2 Hydrology

According to the Watershed Boundary Dataset prepared by the California Interagency Watershed Mapping Committee (CalWater), which is responsible for watershed mapping and dataset creation in the state of California, the Project site is within the Lucerne Lake hydrologic unit of the Colorado River hydrologic region. More specifically, the site is within the Lucerne Lake planning watershed in the Lucerne Lake super planning watershed (CalWater 2004)[1]. This watershed is not tributary to the ocean or any other water body; rather, surface water either infiltrates into the groundwater basin, evaporates, or flows toward the dry lakebed of Lucerne Lake located to the northwest of the Project site. All flow channels on-site are intermittent or ephemeral and likely only receive stream flow during and following significant rain events. Drainage patterns within the site are well-defined in most cases, with many tributaries and interconnected/braided systems occurring on-site.

4.1.3 Soils

The Project site is located in the Lucerne Valley, which is characterized by relatively flat-lying topography, punctuated by alluvial systems associated with the southern face of the San Bernardino Mountains. The Soil Survey for the San Bernardino County, California, Mojave River Area (USDA-NRCS SSURGO 2008) indicates that four soil types occur within the Project site, including the Arizo, Cajon, Kimberlina, and Trigger series, which are described below. None of the soil series within the Project site are identified as hydric soils by the Soil Survey. The descriptions of these soils below are abridged from the USDA-NRCS Official Soil Series Description database (USDA-NRCS 2011).

4.1.3.1 <u>Arizo Series</u>

The Arizo series (100) consists of very deep, excessively drained soils that formed in mixed alluvium. Arizo soils occur on recent alluvial fans, inset fans, fan apron, fan skirts, stream terraces, and floodplains of intermittent streams and channels. Slopes range from 0 to 15 percent. The mean annual precipitation is approximately 18 cm (7 in) and the mean annual temperature is about 17°C (62°F). Arizo soils tend to be used for rangeland and wildlife habitat. The associated vegetation is mainly creosote bush and white burr sage. These soils

[1] The California Interagency Watershed Map is the State of California's working definition of watershed boundaries. The California Interagency Watershed Map describes California watersheds, beginning with the division of the State's 101 million acres into ten Hydrologic Regions (HR). Each HR is progressively subdivided into six smaller, nested levels: the Hydrologic Unit (HU, major rivers), Hydrologic Area (HA, major tributaries), Hydrologic Sub-Area (HSA), Super Planning Watershed (SPWS), and Planning Watershed (PWS). At the Planning Watershed level (the most detailed level), where implemented, polygons range in size from approximately 3,000 to 10,000 acres. At all levels, a total of 7,035 polygons represent the State's watersheds (CalWater 2004).

are classified as Sandy-skeletal, mixed, thermic Typic Torriorthents (USDA-NRCS 2011). Arizo soils occur in the southwest portion of the Project site.

4.1.3.2 Cajon Series

The Cajon series (115) consists of very deep, somewhat excessively drained soils that formed in sandy alluvium from dominantly granitic rocks. Cajon soils occur on alluvial fans, fan aprons, fan skirts, inset fans, and river terraces. Slopes range from 0 to 15 percent. The average annual precipitation is approximately 15.24 cm (6 in) and the mean annual temperature is approximately 18°C (65°F). Cajon soils are used mostly for range, watershed, and recreation. A few areas are irrigated and are used for growing alfalfa and other crops. The associated vegetation is mostly desert shrubs including creosote bush, saltbush (*Atriplex* spp.), Mormon tea (*Ephedra* spp.), Joshua trees, some Indian ricegrass (*Stipa* [*Achnatherum*] *hymenoides*), annual grasses, and forbs. Cajon soils are classified as mixed, thermic Typic Torripsamments (USDA-NRCS 2011). Cajon soils occur in the northwest and southeast portions of the Project site.

4.1.3.3 Kimberlina Series

The Kimberlina series (137) consists of very deep, well drained soils that formed in mixed alluvium derived dominantly from igneous and/or sedimentary rock sources. Kimberlina soils occur on flood plains and recent alluvial fans. Slopes range from 0 to 9 percent. The average annual precipitation is approximately 15.24 cm (6 in) and the mean annual temperature is approximately 18°C (64°F). Kimberlina soils are used for growing irrigated field, forage, and row crops. Some areas are used for livestock grazing. When not irrigated, the associated vegetation is annual grasses, forbs, and saltbush (*Atriplex* spp.). Kimberlina soils are classified as coarse-loamy, mixed, superactive, calcareous, thermic Typic Torriorthents (USDA-NRCS 2011). Kimberlina soils occur in a small portion of the eastern side of the Project site.

4.1.3.4 Trigger Series

The Trigger series (164) consists of shallow, well drained soils that formed in material weathered from hard sedimentary rocks. Trigger soils occur on uplands. Slopes range from 5 to 50 percent. The average annual precipitation is approximately 10.2 cm (4 in) and the average annual temperature is approximately 17°C (63°F). Trigger soils are used for wildlife habitat, limited grazing, and recreation. The associated vegetation is creosote bush, cactus, annual grasses, and forbs. Trigger soils are classified as Loamy, mixed, superactive, calcareous, thermic Lithic Torriorthents (USDA-NRCS 2011). Trigger soils occur in the eastern portion of the Project site.

4.1.4 Vegetation Communities in the Project Region

The climate of the western Mojave Desert is characterized by cool winter temperatures, warm summer temperatures that are moderated somewhat by the marine influence, with its rainfall occurring almost entirely in the winter (UCSB 2011). Due to its climate, the western Mojave Desert supports a unique desert plant community. Juniper and pinyon pines are found at higher elevations, while creosote bush scrub, yuccas, Joshua trees, grasslands, and cholla are found at lower elevations. In addition, some of the larger washes within the desert support desert riparian woodlands. However, the Joshua tree (*Yucca brevifolia*) is the signature plant of the Mojave Desert and often defines its boundaries.

In the Lucerne Valley, where the Marathon site is located, vegetation is mainly comprised of creosote bush scrub, a vegetation type that is common and widespread throughout the Mojave Desert. Creosote bush scrub maintains no federal or state sensitivity designation. Joshua trees are a common component of the desert vegetation, and some areas contain sufficient density of these trees to be mapped as Joshua tree woodlands. (A recent vegetation classification system [Sawyer et al. 2009] requires Joshua tree cover to exceed one percent for an area to qualify as a Joshua tree woodland). Although the Lucerne Valley generally contains habitats that are common and widespread in the region, some types, such as Joshua tree woodlands, are designated by the CDFG as sensitive natural communities (CDFG 2010).

4.2 VEGETATION COMMUNITY

The Project site is located within the Mojave Desert geographical region, a distinct vegetation region (Sawyer and Keeler-Wolf 1995). The Project site is relatively undisturbed, and native trees and shrubs are abundant with a low lying understory of native and non-native herbaceous species. Vegetation within the site is relatively homogeneous, and is characterized by the presence of a single plant community. While the site contains two ephemeral drainage channels, the species composition in these areas is not substantially different from that in the surrounding uplands. The vegetation on-site is dominated by shrubs with a herbaceous understory, and most closely corresponds with Sawyer et al.'s (2009) creosote bush-white burr sage scrub (*Larrea tridentata-Ambrosia dumosa* shrubland alliance). A detailed description of this vegetation community is provided below. Figure 4 illustrates the extent and location of vegetation communities and ephemeral drainage channels within the Project site.

4.2.1 Creosote Bush-White Burr Sage Scrub

This vegetation community is dominated by shrubs, primarily creosote bush (*Larrea tridentata*) and white burr sage (*Ambrosia dumosa*), which are usually co-dominant in the canopy (Sawyer *et al.* 2009). In California creosote bush-white burr sage scrub is limited to the Mojave Desert, and occurs in Inyo, eastern Kern, northeastern Los Angeles, San Bernardino, Riverside, San Diego, and Imperial counties. This vegetation community usually

occurs at elevations between 75 and 1,200 meters (247 and 3,960 feet), and is commonly observed in minor desert washes, alluvial fans, and on upland slopes (Sawyer *et al.* 2009). Creosote bush-white burr sage scrub is a common and widely distributed vegetation type throughout much of the Mojave desert, and this vegetation maintains no federal, state, or local sensitivity designation.

Within the Marathon site, creosote bush-white burr sage scrub occurs in all areas. While Joshua trees are present throughout the site, they are not among the site's dominant plant species. Dominant species on-site include native shrubs such as creosote bush, white burr sage, cheesebush (*Ambrosia* [*Hymenoclea*] *salsola* var. *salsola*), and Mojave yucca (*Yucca schedigera*). The understory is comprised mainly of non-native herbs such as red brome (*Bromus madritensis* ssp. *rubens*), red-stem fillaree (*Erodium cicutarium*), and Mediterranean grass (*Schismus barbatus*).

4.3 JURISIDCTIONAL WATERS AND STREAMBEDS

As stated previously, the Marathon site is located within the Lucerne Lake watershed. This watershed is not tributary to the ocean or any other water body; rather, all surface flows in the watershed either infiltrate into the groundwater basin, evaporate, or flow toward the dry lakebed of Lucerne Lake to the northwest of the Project site. During a field delineation of jurisdictional features within the site a total of two ephemeral drainages were mapped, traversing the site in a south-north direction. Because the site's watershed is intra-state and is isolated from navigable waters, the waters on-site are not subject to federal jurisdiction under the Clean Water Act. However, the two ephemeral desert washes are under state jurisdiction and are subject to the permitting authority of the CDFG and the Colorado River Basin RWQCB.

4.3.1 Descriptions of Jurisdictional Features

The Lucerne Valley is an arid region, receiving only about 7.5 inches of precipitation annually (Spatial Climate Analysis Service 1998). As a result, the majority of the stream channels that traverse this area exhibit ephemeral hydrology, containing surface flows for only a short duration following storm events. The region's low gradient topography and porous, sandy soils contribute to this phenomenon, as these factors increase the rate at which surface flows infiltrate into the substrate. The absence of relatively permanent surface flows limits the suitability of the on-site drainages for use by wildlife. Use of these features as a source of drinking water is limited to the periods when surface flows are present, and the flow duration is not sufficient to support aquatic and semi-aquatic species such as fishes and amphibians. However, the site's drainages provide topographic structure in an otherwise uniform environment, and these features may be used as travel routes by wildlife crossing the site.

The two jurisdictional streambeds within the Marathon site are described below, and drainage characteristics are summarized in Table 2. Locations of these drainages are illustrated on Figure 4.

TABLE 2
DRAINAGE DESCRIPTIONS

Drainage	Length (Feet)	Width (Feet)	Depth (Feet)	Acreage	Description
W1	2,846	Highly variable, 3 to 10 average, up to 65	0.25 to 3 average, up to 10	2.92	Complex, braided system. Channel is mostly unvegetated, with substrate comprised of loosely consolidated sand and cobbles. Banks are mostly gradual, with some incised banks present.
W2	2,784	Highly variable, 8 to 10 average, up to 87	0.25 to 3 average	2.39	Complex, braided system. Channel is mostly unvegetated, with substrate comprised of loosely consolidated sand, cobbles, and occasional boulders. Banks are sharply defined and vertical.

Note: Length and acreage was determined using GIS, width was determined in the field and using GIS, and depth was determined in the field.

4.3.1.1 Drainage W1

This drainage is identified an intermittent stream on the USGS topographic quadrangle map of the area and occurs in the western portion of the Marathon site. Drainage W1 is a complex, braided system that originates off-site (south) and conveys flows northwest (downstream) and off-site. Drainage W1 has mostly defined, cut banks. Bank heights range from 0.25 feet to 3 feet on average, with heights up to 10 feet. The length of Drainage W1 within the Project site is approximately 2,846 feet, making it the longest on-site drainage, and the width varies from 3 to 10 feet on average, with widths up to 65 feet. Sinuosity is mild, as the channel is relatively straight. The channel bottom is mostly un-vegetated with upland plant species on the banks and the drainage does not support any riparian vegetation. The substrate within the channel bottom is composed mostly of sand.

4.3.1.2 Drainage W2

This drainage is identified as the eastern most intermittent stream on the USGS topographic map. Drainage W2 is comprised of two drainages that originate off-site (south) and merge into one drainage that conveys flows downstream (northwest) and off-site. Drainage W2 has mostly defined cut banks. Bank heights range from 0.25 feet to 3 feet on average. The length of Drainage W2 within the Project site is approximately 2,784 feet and the width varies from 8 to 10 feet on average, with widths up to 87 feet. Sinuosity is mild, as the channel is relatively straight. The channel bottom is mostly un-vegetated with upland plant species on

the banks and the drainage does not support any riparian vegetation. The substrate within the channel bottom is composed mostly of sand.

4.3.2 Extent of Agency Jurisdiction

As described above, the Project site contains two drainages that exhibit bed/bank characteristics. A summary of the total acreage of waters subject to the permitting authority of the USACE, CDFG, and the Colorado River Basin RWQCB is presented below. All jurisdictional areas are displayed on Figure 4 and summarized in Table 3.

TABLE 3
ACREAGES OF JURISDICTIONAL AREAS
WITHIN THE PROJECT SITE

Drainage	Waters of the U.S. (Acres)	Waters of the State (Acres)	CDFG Jurisdictional Streams (Acres)
W1	–	2.92	2.92
W2	–	2.39	2.39
Total Jurisdictional Area	–	5.31	5.31

4.3.2.1 Waters of the United States

Because no hydrophytic vegetation, hydric soil, or wetland hydrology was observed on-site, no USACE-jurisdictional wetlands are present within the Project site. Further, because drainages within the Marathon site are contained within an isolated, intra-state watershed that is not tributary to any navigable body of water, these ephemeral streams are not subject to Clean Water Act jurisdiction pursuant to draft joint regulatory guidance issued by the USACE and U.S. Environmental Protection Agency (USACE/USEPA 2011). Thus, waters of the U.S. do not occur within the Marathon site.

4.3.2.2 Waters of the State

Although they lack federal CWA protection, the site's drainages exhibit defined beds and banks and are waters of the state. The jurisdictional acreage in these areas under the Porter-Cologne Water Quality Control Act was determined to be coterminous with the extent of CDFG jurisdictional streambeds (see Section 4.4.3 below), due to the simple nature of the drainages present and the absence of any aquatic features that would be under the jurisdiction of one agency but not the other. A total of approximately 5.31 acres of waters of the state under the jurisdiction of the Colorado River Basin RWQCB are present on the Project site (see Figure 4).

4.3.2.3 California Department of Fish and Game Jurisdictional Streams

Because they exhibit a defined bed, banks, and channel, Drainages W1 and W2 are subject to the CDFG's permitting authority under Section 1600 *et seq*. of the California Fish and Game Code. Approximately 5.31 acres of CDFG jurisdictional streams are present on the Project site (see Figure 4). As stated above, the boundaries of CDFG-jurisdictional streambeds are coterminous with the limits of waters of the state in this case. As no riparian vegetation is associated with the drainages on-site, vegetation was not used as an indicator of the lateral limits of CDFG jurisdiction.

4.4 PLANTS AND WILDLIFE

During the biological field investigations described in Section 3.2 of this General Biological Resources Assessment Report, biologists recorded the occurrence of over 70 plant and wildlife taxa within the Marathon site. The species detected are described below, with emphasis on those species which are afforded protection by federal, state, or local laws or regulations.

4.4.1 Survey Results – Plant Species

In general, the plant species found on the Project site were native shrubs and trees, with an understory of native and non-native grasses and forbs. No special-status plant species were detected on-site, although several species granted protection under the California Desert Native Plants Act and the San Bernardino County Development Code were identified and mapped. These species included the silver cholla (*Cylindropuntia echinocarpa*), pencil cholla (*Cylindropuntia ramosissima*), cottontop cactus (*Echinocactus polycephalus*), Engelmann's hedgehog cactus (*Echinocereus engelmannii*), Joshua tree (*Yucca brevifolia*), and Mojave yucca **(***Yucca schedigera***)**. A complete list of the plant species observed within the Marathon site is presented in Table 4 below.

4.4.2 Survey Results – Wildlife Species

Based on results of the full-coverage pedestrian transect surveys performed within the Marathon site, wildlife use of this site appears to be limited. The species detected were primarily common, birds, mammals, and reptiles. Due to the absence of intermittent or perennial watercourses, the Marathon site does not contain suitable habitat for aquatic or semi-aquatic animals such as fishes and amphibians. Protocol surveys for the Mojave desert tortoise (see URS 2012a) yielded negative results. Protocol survey for the burrowing owl (see URS 2012b) indicate that at a pair of owls currently occupy a burrow on-site, and may be nesting. A complete list of the wildlife species observed within the Marathon site is presented in Table 5 below.

TABLE 4
PLANT SPECIES OBSERVED WITHIN THE MARATHON SITE

Scientific Name	Common Name	Growth Habit	Dominant Species?
Family Agavecea – Agave			
Yucca brevifolia	Joshua tree	T	N
Yucca schidigera	Mojave yucca	T	Y
Family Asteracea – Asters, Daisies, and Sunflowers			
Acamptopappus sphaerocephalus	Goldenhead	S	N
Ambrosia acanthicarpa	Annual burr sage	AH	N
Ambrosia dumosa	White burr sage	S	Y
Baileya pleniradiata	Woolly desert marigold	PH	N
Chaenactis carphoclinia	Pebble pincushion	AH	N
Encelia farinosa	Brittlebush	S	N
Eriophyllum wallacei	Wallace's woolly daisy	AH	N
Hymenoclea salsola	Cheesebush	S	Y
Malacothrix glabrata	Desert dandelion	AH	N
Perityle sp.	Rockdaisy	AH	N
Rafinesquia neomexicana	Desert chicory	AH	N
Stephanomeria exigua	Wirelettuce	AH	N
Stephanomeria pauciflora	Desert straw	PH	N
Xylorhiza tortifolia	Mohave aster	PH	N
Family Anacardiacea – Sumacs			
Rhus trilobata	Skunkbrush	S	N
Family Boraginacea – Borages			
Amsinckia tessellata	Fiddleneck	AH	N
Cryptantha circumscissa	Cushion cryptantha	AH	N
Nama demissum	Purple mat	AH	N
Phacelia crenulata	Notch leaved phacelia	AH	N
Family Brassicacea – Mustards			
Brassica tournefortii	Sahara mustard	AH	N
Descurainia pinnata	Yellow tansy mustard	AH	N
Lepidium fremontii	Desert allysum	PH	N
Lepidium nitidum	Pepperweed	AH	N
Sisymbrium sp.	Tumble mustard	AH	N
Stanleya pinnata	Desert princesplume	PH	N
Family Cactacea – Cacti			
Cylindropuntia bigelovii	Teddybear cholla	S	N

TABLE 4 (CONTINUED)
PLANT SPECIES OBSERVED WITHIN THE MARATHON SITE

Scientific Name	Common Name	Growth Habit	Dominant Species?
Cylindropuntia ramocissima	Pencil cholla	S	N
Echinocactus polycephalus	Many-headed barrel cactus	S	N
Ferocactus cylindraceus	Barrel cactus	S	N
Opuntia basilaris	Beavertail cactus	S	N
Family Chenopodiacea – Goosefoots			
Grayia spinosa	Hop sage	S	N
Krascheninnikovia lanata	Winterfat	S	N
Cucurbitaceae – Cucumber			
Cucurbita palmata	Coyote melon	PH	N
Family Ephedracea – Ephedras			
Ephedra sp.	Ephedra	S	N
Family Euphorobiacea – Spurges			
Croton californicus	Doveweed	PH	N
Family Fabacea – Legumes			
Psorothamnus arborescens	California dalea	S	N
Psorothamnus fremontii	Fremont indigobush	S	N
Family Geraniacea – Geraniums			
Erodium cicutarium	Red-stem fillaree	AH	Y
Family Krameriacea – Rhatanies			
Krameria erecta	Little leaved ratany	S	N
Family Lamiaceae – Mint			
Scutellaria (Salazaria) mexicana	Paper bag bush	S	Y
Family Loasacea – Eveningstars			
Mentzelia albicaulis	Small flowered blazing star	AH	N
Petalonyx thurberi	Sandpaper plant	AH	N
Family Malvacea – Mallows			
Sphaeralcea ambigua	Apricot mallow	PH	N
Family Nyctaginacea – Four O'Clock			
Abronia villosa	Desert sand verbena	AH	N
Mirabilis multiflora	Desert four o'clock	PH	N
Family Onagracea – Evening Primroses			
Camissonia boothii	Booth's evening primrose	AH	N
Family Orobanchacea – Broomrapes			
Orobanche cooperi	Desert broomrape	PH	N

TABLE 4 (CONTINUED)
PLANT SPECIES OBSERVED WITHIN THE MARATHON SITE

Scientific Name	Common Name	Growth Habit	Dominant Species?
Family Papaveracea – Poppies			
Eschscholzia minutiflora	Pygmy poppy	AH	N
Family Poacea – Grasses			
Achnatherum speciosum	Desert needlegrass	PG	N
Achnatherum hymenoides	Indian ricegrass	PG	N
Bromus madritensis ssp. *rubens*	Red brome	AG	Y
Bromus tectorum	Cheatgrass	AG	N
Pleuraphis rigida	Woolly galleta	PG	N
Schismus barbatus	Mediterranean grass	AG	Y
Family Polemoniacea – Phloxes			
Eriastrum eremicum	Desert woollystar	AH	N
Linanthus filiformis	Yellow gilia	AH	N
Loeseliastrum matthewsii	Desert calico	AH	N
Family Polygonacea – Knotweeds			
Chorizanthe brevicornu	Brittle spineflower	AH	N
Eriogonum fasciculatum var. *polifolium*	California buckwheat	S	N
Eriogonum inflatum	Desert trumpet	PH	N
Eriogonum mohavense	Western Mohave buckwheat	AH	N
Family Ranunculacea – Buttercups			
Delphinium parishii	Parish's delphinium	PH	N
Family Scrophulariacea – Figworts			
Castilleja exserta	Purple owl's clover	AH	N
Family Solanacea – Nightshades			
Datura wrightii	Western jimsonweed	PH	N
Lycium andersonii	Anderson thornbush	S	N
Family Zygophyllacea – Caltrops			
Larrea tridentata	Creosote bush	S	Y

[1] Non-native species.

Notes:
Scientific nomenclature, native status, and habit follows Hickman 1993.
Habit definitions:

AG = annual grass or graminoid	PG = perennial grass or graminoid	S = shrub
AH = annual herb	PH = perennial herb	T = tree

TABLE 5
WILDLIFE SPECIES OBSERVED WITHIN THE MARATHON SITE

Common Name	Scientific Name	Applicable Regulatory Status (Federal/State)
Reptiles		
Western side-blotched lizard	*Uta stansburiana elegans*	None/None
Desert spiny lizard	*Sceloperus magister*	None/None
Zebra-tailed lizard	*Callisaurus draconoides*	None/None
Great Basin whiptail	*Aspidoscelis tigris tigris*	None/None
Birds		
Burrowing owl	*Athene cunicularia*	None/CSC
Red-tailed hawk	*Buteo jamaicensis*	None/None
Turkey vulture	*Cathartes aura*	None/None
Common raven	*Corvus corax*	None/None
Horned lark	*Eremophila alpestris*	None/None
Loggerhead shrike	*Lanius ludovicianus*	None/CSC
Mourning dove	*Zenaida macroura*	None/None
Mammals		
Desert kit fox	*Vulpes macrotis arsipus*	None/None[1]
Desert woodrat	*Neotoma lepida lepida*	None/None
Desert cottontail	*Sylvilagus audobonii*	None/None
Black-tailed jackrabbit	*Lepus californicus*	None/None

[1] The desert kit fox maintains no applicable sensitivity designation; however, CDFG's regulations at 14 CCR 460 prohibit take of this species.

4.4.3 Special-status Species Observed within the Project Site

Two special-status wildlife species, the burrowing owl (*Athene cunicularia*) and the loggerhead shrike (*Lanius ludovicianus*), were detected within the Marathon project site during biological field investigations, and no special-status plants were detected. However, abundant Joshua trees (*Yucca brevifolia*) were documented on-site, and this species is protected by state and local laws despite its lack of a formal sensitivity designation. Several other plants that receive protection under the California Desert Native Plants Act were also detected and mapped. The regulatory status and biology of the Joshua tree burrowing owl, and loggerhead shrike, as well as the documented occurrences of these species within the Agincourt site, are described below.

4.4.3.1 Joshua Tree (*Yucca brevifolia*)

The species is an evergreen monocot endemic to the Mojave Desert, and generally occurs from 600 to 1,800 meters (2,000 to 6,000 feet) elevation. The species prefers well-drained soils, and Joshua tree woodland is often outcompeted by other plant communities in soils where water retention is greater (Royo 1997). Studies conducted in Joshua Tree National Park have indicated that the growth rate for Joshua trees is approximately two feet for every ten years, and that trees can remain in a "juvenile" state (having not produced a flower) for many years (Gossard 1992). Reproduction in this species is achieved through a symbiotic relationship with the yucca moth (in the western U.S., *Tegeticula synthetica*). In this mutualistic partnership, the fruit of the Joshua tree provides the developing seeds that serve as the sole source of food for the moth's larvae (Godsoe et al. 2008). In return, the female yucca moth uses specialized mouth parts to pollinate the Joshua tree's flowers, enabling the consequent production of fruit and seeds. The adult moth travels among blooming Joshua trees collecting pollen, then selects a bloom and lays eggs within the ovary. Several days later, the larval yucca moths hatch and take up residence within the Joshua tree's fruit, where they feed on the plant's seeds. Eventually, the larval moths leave the fruit of the Joshua tree and drop to the ground. The larvae burrow into the desert soil, where each larva creates a cocoon and continues to develop before emerging as an adult moth to repeat the cycle (Sharp 2009).

The Joshua tree has no formal state or federal sensitivity designation. Despite the absence of a formal sensitivity designation, the Joshua tree receives protection under the California Desert Native Plants Act (Section 80001 *et seq.* of the California Food and Agriculture Code) and under Sections 88.01.050 and 88.01.060 of the San Bernardino County Development Code. These laws prohibit the destruction of Joshua trees without a County-issued permit, and require that Joshua trees within lands proposed for development be transplanted. Further, where removal of "specimen" size trees is proposed, the Development Code requires a finding that no reasonable alternative means of developing the land exists. "Specimen" trees are defined to include those Joshua trees meeting the following criteria (San Bernardino County Development Code Section 88.01.050(f)(3)(C)):

1. A circumference measurement equal to or greater than 50 inches measured at 4.5 feet above natural grade level
2. Total tree height of 15 feet or greater
3. Trees possessing a bark-like trunk
4. A cluster of 10 or more individual trees, of any size, growing in close proximity to each other

The October 21, 2011 Joshua tree inventory of the Marathon site, described in Section 3.2.4 of this General Biological Resources Assessment Report, identified a total of 361 individual

Joshua trees within the site. The distribution of Joshua trees within the site is approximately uniform (see Figure 5), and the overall tree density on-site is approximately 2.3 trees per acre. No Joshua trees are present within the drainage channels on-site. The majority of the trees detected (222 of 361 trees) were very young seedlings less than five feet in height, although trees between five and ten feet tall were also relatively abundant (102 of 361 trees). Trees exceeding ten feet in height were substantially less common (37 trees), with only one tree within the Marathon site was more than 15 feet tall. A summary of all Joshua trees detected within the site is provided in Table 6. Appendix B includes details, such as height and diameter at breast height (DBH), for all Joshua trees shown on Figure 5.

TABLE 6
JOSHUA TREES BY HEIGHT CLASS

Height Class	Number of Trees
Greater than 15 feet	1
10 to 15 feet	36
5 to 10 feet	102
Less than 5 feet	222
Total	361

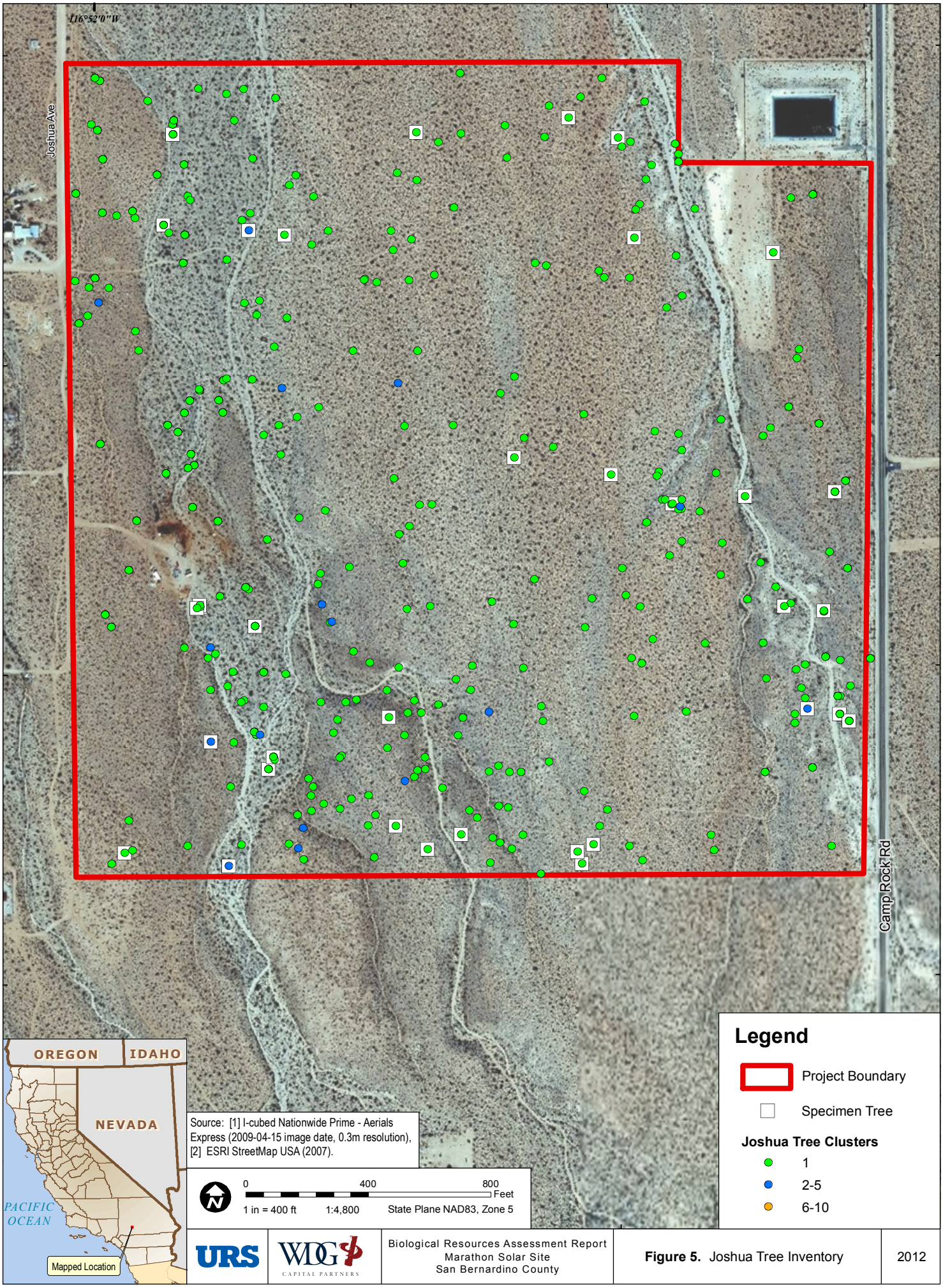
Among the 361 Joshua trees inventoried within the Marathon site, 130 trees met the criteria for "specimen" size trees set forth in the San Bernardino County Development Code. These trees are depicted on Figure 5, and are spatially distributed in a scattered manner throughout the site. A summary of the number of trees on-site meeting each of the County's criteria is presented in Table 7.

TABLE 7
"SPECIMEN" SIZE JOSHUA TREES

Development Code Section 88.01.050(f)(3)(C) Criterion	Number of Trees
Height greater than 15 feet	1
Circumference greater than 50 inches	0
Presence of bark-like trunk	130
Cluster of ten or more trees in close proximity	0
Trees meeting 2 or more criteria	1
Total specimen trees	130

4.4.3.2 Plants Protected by the California Desert Native Plants Act

Although they maintain no federal or state sensitivity designations, a number of the plant species detected within the Agincourt site are protected by the California Desert Native


116°52'0"W
Joshua Ave
Camp Rock Rd
Legend
Project Boundary
Specimen Tree
Joshua Tree Clusters
1
2-5
6-10
OREGON
IDAHO
NEVADA
PACIFIC OCEAN
Mapped Location
Source: [1] I-cubed Nationwide Prime - Aerials Express (2009-04-15 image date, 0.3m resolution), [2] ESRI StreetMap USA (2007).
0
400
800
Feet
1 in = 400 ft
1:4,800
State Plane NAD83, Zone 5
URS
WDG
CAPITAL PARTNERS
Biological Resources Assessment Report
Marathon Solar Site
San Bernardino County
Figure 5. Joshua Tree Inventory
2012
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Plants Act, and by the San Bernardino County Development Code. The California Desert Native Plants Act is intended to prohibit the unlawful harvest of certain native desert plant species, and the species protected are generally either woody or succulent. Protected species identified on-site include four cacti (silver cholla, pencil cholla, cottontop cactus, and Engelmann's hedgehog cactus), and two members of the agave family (Mojave yucca and Joshua tree, discussed in Section 4.4.3.1 above). Harvest of these species must be authorized by the County Sheriff or Agricultural Commissioner through issuance of a permit. Locations of protected species detected within the Agincourt site are shown graphically on Figure 6.

4.4.3.3 Burrowing owl (*Athene cunicularia*, CSC)

The burrowing owl is a small owl that inhabits open, dry, annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Burrowing owls usually nest in burrows excavated by ground squirrels, badgers, or other small or medium-sized mammals, although they may dig their own burrows in soft soil. Their prey consists mostly of insects, small mammals, reptiles, birds, and carrion. In the breeding season, burrowing owls frequently forage hundreds of yards from their burrows, and some have been recorded foraging up to 2 miles from their nests. This has been noted in particular in cases where owls live in small colonies, such as in the Central Valley and the Imperial Valley in California (Gervais et al. 2003; Rosenberg and Haley 2004).

During general biological surveys for the Project a single owl was flushed from a drainage in the western portion of the site. The location of the burrowing owl detected is presented on Figure 7. Additional information regarding the use of the Marathon site by burrowing owls is provided in the Focused Burrowing Owl Survey Report for the project (URS 2012b). A pair of burrowing owls was discovered occupying a burrow during these focused surveys and a CNDDB field survey form for the owls is included in the Focused Burrowing Owl Survey Report. The location of the burrowing owls and burrow detected during these focused surveys are also presented on Figure 7.

4.3.3.4 Loggerhead Shrike (*Lanius ludovicianus*, CSC)

This species can be found in lowlands and foothills throughout California. It is absent or rare in the state in the highest mountain ranges and the north coast. Breeding populations in the north are migratory. The species is a year-round resident in the southern deserts, parts of the south and central coasts, and the Central Valley, where numbers are augmented by migrants from November to February (Heindel 2000; Yosef 1996). Loggerhead shrikes prefer open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches, and require impaling sites, such as thorns, sharp twigs, or barbed wire, for skewering and manipulating their prey. The species nests in densely foliated trees or shrubs and feeds on “arthropods, amphibians, small to medium-sized reptiles, small mammals and birds” (Yosef 1996).

A single loggerhead shrike was incidentally observed perched on a fence near the northern border of the Marathon site by biologists conducting protocol Mojave desert tortoise surveys. The extent to which this species uses the Marathon site is not known, although the site's open, arid scrub habitat is certainly suitable for foraging by this species. Joshua trees and larger creosote bushes may provide at least marginally suitable nesting substrate. A CNDDB field survey form for this occurrence is included in Appendix C.

4.4.4 Special-status Species Not Observed but with the Potential to Occur within the Project Site

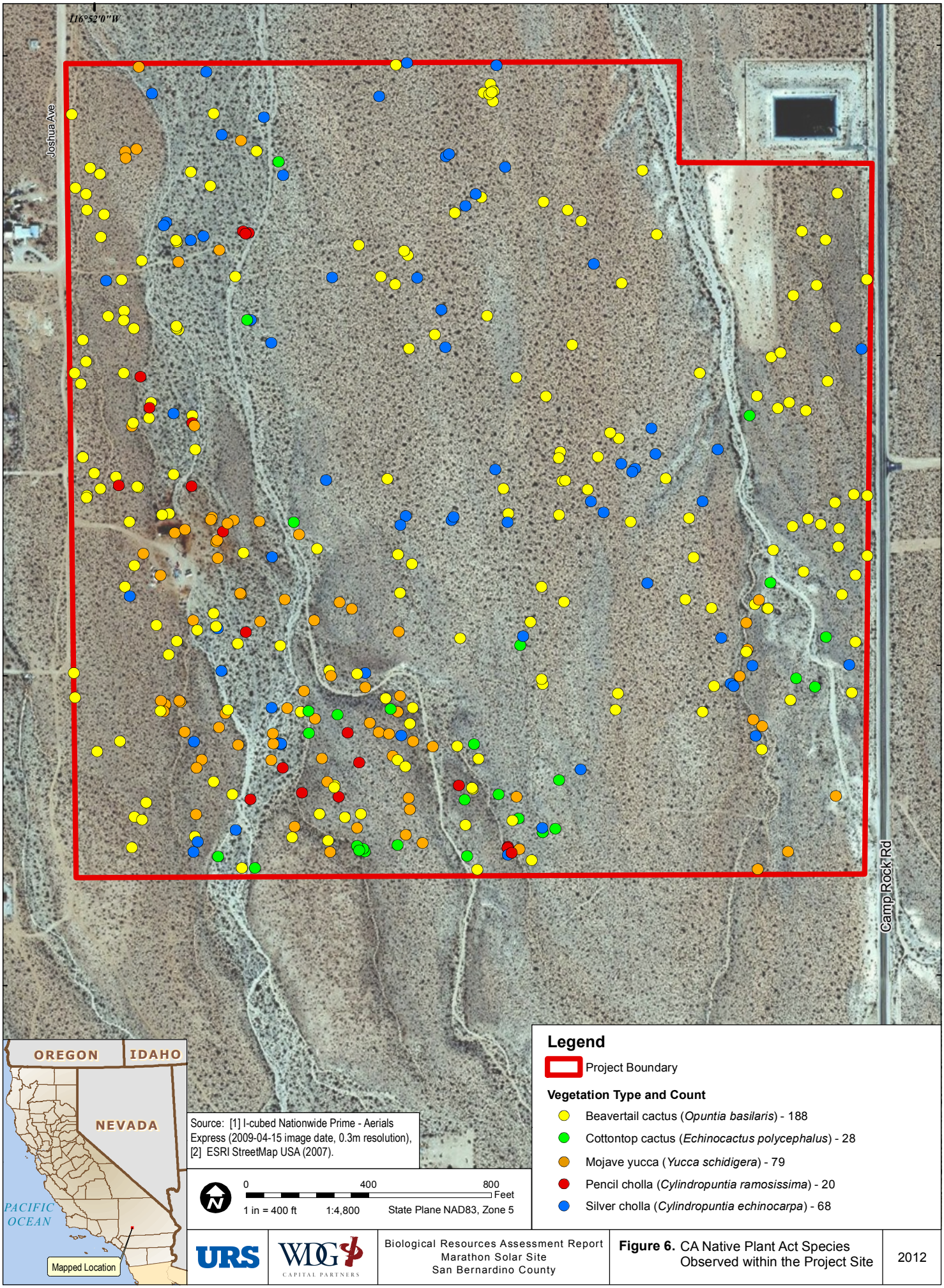
Special-status species and sensitive natural communities not observed on-site but with potential to occur based on range and habitat requirements are discussed below. Figure 3 displays the results of the query of CNDDB records for sensitive plants, native plant communities, and wildlife occurrences within a 5-mile radius of the Project site.

4.4.4.1 Plants

A total of 17 special-status plant species occur within the vicinity of the Marathon site, based on the 5-mile radius query of CNDDB records (See Figure 3) and other sources as described in Section 3.1. However, no special-status plant species were identified during the 2011 full-coverage biological surveys on the Project site. The Marathon site is in close proximity to the San Bernardino Mountains, which support a substantial number of sensitive plants, and the majority of the mapped sensitive occurrences within five miles of the site are located in the mountains. Owing to the substantial differences in elevation, climate, and vegetation communities between the San Bernardino Mountains and the floor of the Lucerne Valley, the majority of these plants have little probability of occurring within the Marathon site. Descriptions of these species including habitat, range restrictions, blooming periods, known occurrences, and an evaluation of potential to occur on-site, are summarized in Table 8.

4.4.4.2 Wildlife

In addition to the burrowing owl and loggerhead shrike, which were observed within the Marathon site and are described in Section 4.4.3 of this General Biological Resources Assessment Report, a total of seven special-status wildlife species have been documented in the vicinity of the Marathon site, based on the 5-mile radius query of CNDDB records (see Figure 3) and other sources described in Section 3.1. Because of the site's proximity to the San Bernardino Mountains, many of the species occurring within five miles of the site are not desert species, and are very unlikely to occur on-site due to the absence of suitable habitat. Among those species for which the site provides suitable habitat, two are birds, which exhibit considerable mobility. The site is also suitable for use by the desert tortoise, a federally and state-listed reptile. Descriptions of these species, including preferred habitat, range restrictions, nesting or breeding periods, locations of known occurrences, and an evaluation



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URS

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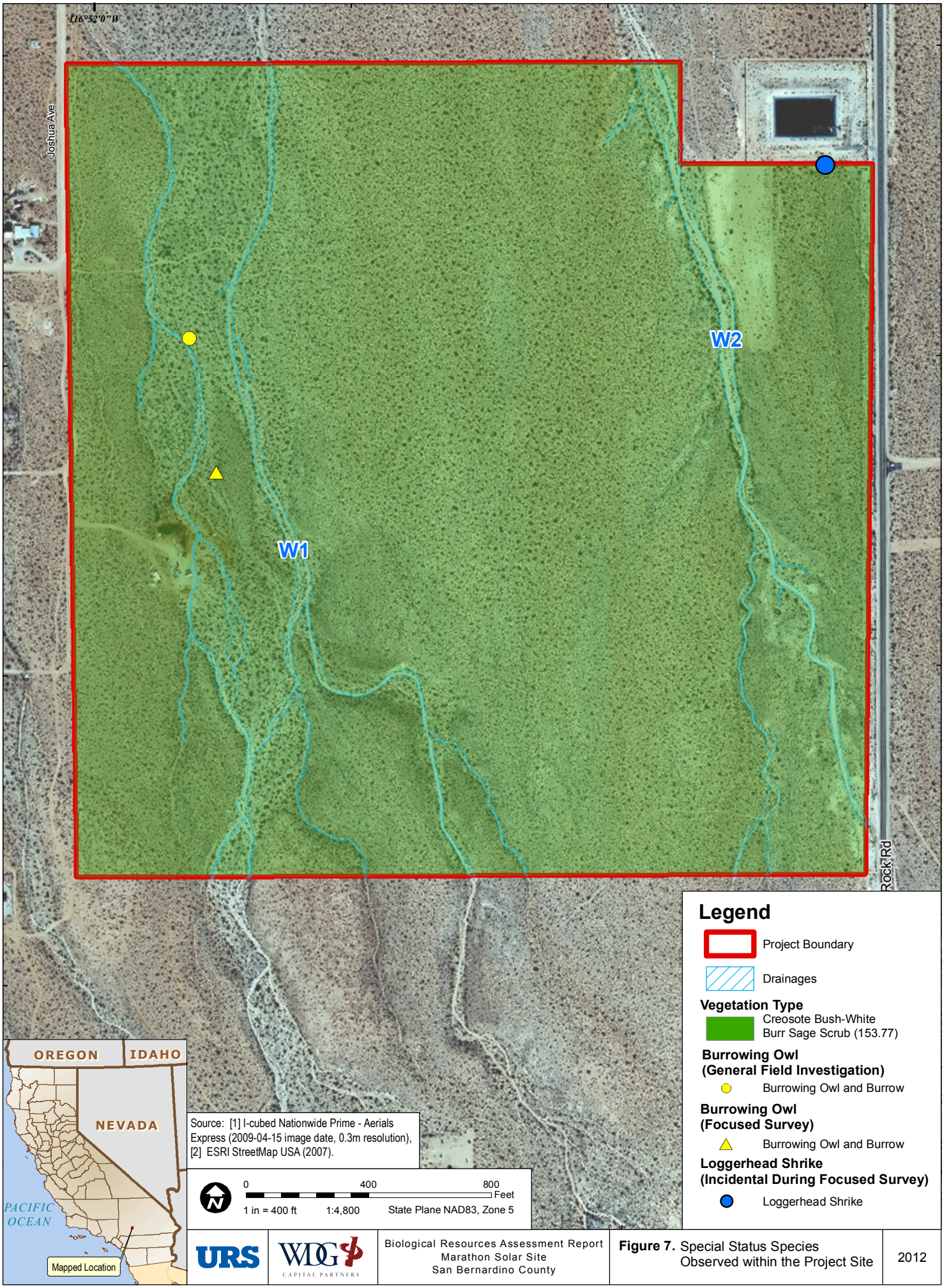
Biological Resources Assessment Report
Marathon Solar Site
San Bernardino County

Figure 6. CA Native Plant Act Species Observed within the Project Site

2012


116°52'0"W
Joshua Ave
Rock Rd
W1
W2
Legend
Project Boundary
Drainages
Vegetation Type
Creosote Bush-White Burr Sage Scrub (153.77)
Burrowing Owl (General Field Investigation)
Burrowing Owl and Burrow
Burrowing Owl (Focused Survey)
Burrowing Owl and Burrow
Loggerhead Shrike (Incidental During Focused Survey)
Loggerhead Shrike
OREGON
IDAHO
NEVADA
PACIFIC OCEAN
Mapped Location
Source: [1] I-cubed Nationwide Prime - Aerials Express (2009-04-15 image date, 0.3m resolution), [2] ESRI StreetMap USA (2007).
0
400
800
Feet
1 in = 400 ft
1:4,800
State Plane NAD83, Zone 5
URS
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Biological Resources Assessment Report
Marathon Solar Site
San Bernardino County
Figure 7. Special Status Species Observed within the Project Site
2012
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TABLE 8
SPECIAL-STATUS PLANTS NOT OBSERVED BUT WITH POTENTIAL TO OCCUR WITHIN THE PROJECT SITE

Scientific Name	Common Name	Regulatory Status	Growth Habit and Blooming Period	Habitat Requirements	Site Suitability/Survey Results	Potential to Occur
Acanthoscyphus parishii var. *goodmaniana*	Cushenbury oxytheca	FE, CNPS 1B.1	Annual herb, May – October	Pinyon and juniper woodland (carbonate, talus) in sandy, carbonate soils from 1,219 to 2,377 meters (4,000 to 7,800 feet) in elevation (CNPS 2011).	No suitable habitat present on-site, suitable elevation not present on-site. Closest occurrences are in the San Bernardino Mountains, most recently from 2001.	Unlikely
Astragalus albens	Cushenbury milk-vetch	FE, CNPS 1B.1	Perennial herb, March – June	Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland in usually carbonate, rarely granitic soils from 1,095 to 2,000 meters (3,500 to 6,560 feet) in elevation (CNPS 2011).	Suitable Joshua tree woodland and Mojavean desert scrub habitat present on-site. Closely suitable elevation range requirements are present on-site. Closest occurrences are in the San Bernardino Mountains, most recently from 2010.	Moderate
Astragalus bernardinus	San Bernardino milk-vetch	CNPS 1B.2	Perennial herb, April – June	Joshua tree woodland, and pinyon and juniper woodland in often granitic or carbonate soils from 900 to 2,000 meters (2,950 to 6,560 feet) in elevation (CNPS 2011).	Suitable Joshua tree woodland habitat present on-site, suitable elevations present on-site. Closest occurrences are in the San Bernardino Mountains, most recently from 2009.	Moderate
Astragalus leucolobus	Big Bear Valley woollypod	CNPS 1B.2	Perennial herb, 1,750 – 2,885 meters	Lower montane coniferous forest, pebble (pavement) plain, pinyon and juniper woodland, and upper montane coniferous forest in rocky soils from 1,750 to 2,885 meters (5,740 to 9,465 feet) in elevation (CNPS 2011).	No suitable habitat present on-site, no suitable elevations on-site. Closest occurrences are in the San Bernardino mountains from 1998.	Unlikely

TABLE 8 (CONTINUED)
SPECIAL-STATUS PLANTS NOT OBSERVED BUT WITH POTENTIAL TO OCCUR WITHIN THE PROJECT SITE

Scientific Name	Common Name	Regulatory Status	Growth Habit and Blooming Period	Habitat Requirements	Site Suitability/Survey Results	Potential to Occur
Astragalus tidestromii	Tidestrom's milk-vetch	CNPS 2.2	Perennial herb, April – July	Mojavean desert scrub in carbonate, sandy or gravelly soils from 600 to 1,585 meters (1,970 to 5,200 feet) in elevation (CNPS 2011).	Suitable Mojavean desert scrub habitat present on-site, suitable elevations present. Closest occurrences are in the San Bernardino Mountains, most recently from 1998.	Moderate
Atriplex parishii	Parish's brittlescale	CNPS 1B.1	Annual herb, June – October	Chenopod scrub, playas, and vernal pools in alkaline soils from 25 to 1,900 meters (80 to 6,230 feet) in elevation (CNPS 2011).	No suitable habitat present on-site, though elevations are suitable. Closest occurrence is in the San Bernardino Mountains (unknown date).	Unlikely
Berberis fremontii	Fremont barberry	CNPS 3	Perennial evergreen, April – June	Chaparral, Joshua tree woodland, and pinyon and juniper woodland in rocky soils from 840 to 1,850 meters (2,755 to 6,070 feet) in elevation (CNPS 2011).	Suitable Joshua tree woodland habitat present on-site, and on-site elevations are suitable. However, the closest documented occurrence in the vicinity dates from 1925.	Unlikely
Boechera dispar	Pinyon rock-cress	CNPS 2.3	Perennial herb, March – June	Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland in granitic, gravelly soils from 1,200 to 2,540 meters (3,940 to 8,330 feet) in elevation (CNPS 2011).	Suitable Joshua tree woodland and Mojavean desert scrub habitat present on-site. Suitable elevations are not present on-site. Closest occurrence is in the San Bernardino Mountains, from 1934.	Unlikely
Boechera shockleyi	Shockley's rock-cress	CNPS 2.2	Perennial herb, May – June	Pinyon and juniper woodland in carbonate or quartzite, rocky or gravelly soils from 875 to 2,310 meters (2,870 to 7,580 feet) in elevation (CNPS 2011).	No suitable habitat present on-site, although elevations are suitable. Closest occurrences are in the San Bernardino Mountains, most recently from 2004.	Unlikely

TABLE 8 (CONTINUED)
SPECIAL-STATUS PLANTS NOT OBSERVED BUT WITH POTENTIAL TO OCCUR WITHIN THE PROJECT SITE

Scientific Name	Common Name	Regulatory Status	Growth Habit and Blooming Period	Habitat Requirements	Site Suitability/Survey Results	Potential to Occur
Cymopterus multinervatus	Purple-nerve cymopterus	CNPS 2.2	Perennial herb, March – April	Mojavean desert scrub, and Pinyon and juniper woodland in sandy or gravelly soils from 790 to 1,800 meters (2,590 to 5,905 feet) in elevation (CNPS 2011).	Suitable Mojavean desert scrub habitat is present on-site, and site elevations are suitable. Closest occurrence is in the San Bernardino Mountains, from 1995.	Moderate
Dudleya abramsii ssp. *affinis*	San Bernardino Mountains dudleya	CNPS 1B.2	Perennial herb, April – June	Pebble (pavement) plain, pinyon and juniper woodland, and upper montane coniferous forest in granitic, quartzite, or carbonate soils from 1,250 to 2,600 meters (4,100 to 8,530 feet) in elevation (CNPS 2011).	No suitable habitat present on-site, and site elevations are not suitable. Closest occurrences are in the San Bernardino Mountain foothills, most recently from 1996.	Unlikely
Erigeron parishii	Parish's daisy	FT, CNPS 1B.1	Perennial herb, May – August	Mojavean desert scrub, and pinyon and juniper woodland in usually carbonate, sometimes granitic soils from 800 to 2,000 meters (2,625 to 6,560 feet) in elevation (CNPS 2011).	Suitable Mojavean desert scrub habitat present on-site, and site elevations are suitable. Closest occurrences are in the San Bernardino Mountain foothills, most recently from 1998.	Moderate
Eriogonum ovalifolium var. *vineum*	Cushenbury buckwheat	FE, CNPS 1B.1	Perennial herb, May – August	Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland in carbonate soils from 1,400 to 2,440 meters (4,595 to 8,005 feet) in elevation (CNPS 2011).	Suitable Joshua tree woodland and Mojavean desert scrub habitat present on-site, but this species occurs at higher elevations. Closest occurrences are in the San Bernardino Mountain foothills, most recently from 2009.	Unlikely

TABLE 8 (CONTINUED)
SPECIAL-STATUS PLANTS NOT OBSERVED BUT WITH POTENTIAL TO OCCUR WITHIN THE PROJECT SITE

Scientific Name	Common Name	Regulatory Status	Growth Habit and Blooming Period	Habitat Requirements	Site Suitability/Survey Results	Potential to Occur
Lilium parryi	Lemon lily	CNPS 1B.2	Perennial bulbiferous herb, July – August	Lower montane coniferous forest, meadows and seeps, riparian forest, and upper montane coniferous forest in mesic soils from 1,220 to 2,745 meters (4,005 to 9,005 feet) in elevation (CNPS 2011)	No suitable habitat present on-site, and site elevations are not suitable. Closest occurrences are in the San Bernardino Mountain foothills, most recently from 2000.	Unlikely
Poliomintha incana	Frosted mint	CNPS 1A	Perennial shrub, June – July	Lower montane coniferous forest in mesic soils from 1,600 to 1,700 meters (5,250 to 5,580 feet) in elevation (CNPS 2011)	No suitable habitat present on-site, and site elevations are not suitable. Closest occurrence is in the San Bernardino Mountains, from 1938.	Unlikely
Saltugilia latimeri	Latimer's woodland-gilia	CNPS 1B.2	Annual herb, March – June	Chaparral, Mojavean desert scrub, pinyon and juniper woodland, and sometimes in washes in rocky or sandy, often granitic, soils from 400 to 1,900 meters (1,315 to 6,235 feet) in elevation (CNPS 2011).	Suitable Mojavean desert scrub habitat is present on-site, and site elevations are suitable for this species. However, the most recent documented occurrence in the vicinity dates from 1955.	Unlikely
Symphyotrichum defoliatum	San Bernardino aster	CNPS 1B.2	Perennial rhizomatous herb, July – November	Cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, valley and foothill grassland (vernally mesic), and near ditches, streams, springs from 2 to 2,040 meters (7 to 6,695 feet) in elevation (CNPS 2011).	No suitable habitat is present on-site, although elevations are suitable. Closest occurrence in the site vicinity dates from 1932.	Unlikely

TABLE 8 (CONTINUED)
SPECIAL-STATUS PLANTS NOT OBSERVED BUT WITH POTENTIAL TO OCCUR WITHIN THE PROJECT SITE

Regulatory Status Definitions:

Federal

FE = Federally listed Endangered.

FT = Federally listed Threatened.

State

SE = State-listed Endangered.

ST = State-listed Threatened.

Other

CNPS = California Native Plant Society.

1A = Presumed extinct/extirpated in California.

1B = Plants that are rare, threatened, or endangered in California and elsewhere.

2 = Rare, threatened, and endangered in California but more common elsewhere.

3 = Plants about which more information is needed.

4 = A watch list of plants of limited distribution.

- .1 = Seriously endangered in California.
- .2 = Fairly endangered in California.
- .3 = Not very endangered in California.

of potential to occur on-site, are summarized in Table 9. Due to its high level of regulatory protection, the desert tortoise (*Gopherus agassizii*) is described in greater detail below.

4.4.4.3 Desert tortoise (*Gopherus agassizii*, FT, ST)

The desert tortoise occurs in the Mojave and Sonoran deserts of southeastern California and southern Nevada, and south through Arizona into Mexico. The Mojave population of this species (all tortoises north and west of the Colorado River) is listed as threatened under the Endangered Species Act, and all wild desert tortoises within California are protected under the California Endangered Species Act. Within the known range, typical habitat for the desert tortoise in the Mojave Desert has been characterized as creosote bush scrub below 1,677 meters (5,500 feet), where precipitation ranges from 5 to 20 centimeters (2 to 8 inches), the diversity of perennial plants is relatively high, and production of ephemeral plants is high (USFWS 2011). The dominant shrub commonly associated with desert tortoise habitat is creosote bush. Other shrubs including white burr sage, cheese bush, desert senna (*Cassia armata*), and Mojave prickly-pear (*Opuntia mojavensis*) provide suitable habitat for the desert tortoise. Desert tortoise spend 95 percent of their lives underground, and moderately friable soil is a requirement for burrow construction. Throughout most of the Mojave Desert, desert tortoises occur most commonly on gently sloping terrain with soils ranging from sand to sandy-gravel and with scattered shrubs, and where there is abundant inter-shrub space for growth of herbaceous plants. Desert tortoises can also be found in steeper, rockier areas throughout their range (USFWS 2011).

The Marathon Project site contains suitable habitat for this species, including abundant creosote bush shrubs, a herbaceous understory, and suitable substrate for burrow construction. The CNDDB indicates that historic occurrences have been present within five miles of the site. Further, the Habitat Conservation Plan (HCP) for the Cushenbury Sand and Gravel Quarry, which is located approximately within five miles of the site, specifically addresses the desert tortoise specifically. Although the site appears to be suitable for this species based on habitat requirements and nearby historical occurrences, survey results indicate that the Mojave desert tortoise does not currently occur within the Marathon project site.

4.4.4.4 Natural Communities

A query of the CNDDB identified occurrences of “pebble plains” within five miles of the Marathon site. Pebble plains are characterized by treeless openings within surrounding montane pinyon-juniper woodland or coniferous forest, where clay soils are covered by quartzite pebbles (USFWS 2008). No specific species composition defines pebble plains, although there are plant species, including several sensitive plants, associated with these areas. Occurrences of pebble plains are included in the CNDDB (CDFG 2011), because they were formally recognized by Holland (1986) as a vegetation type, and the CDFG once

identified pebble plains as a sensitive natural community. However, efforts have been undertaken in recent years (see Sawyer et al. 2009) to classify California's vegetation in a manner more consistent with the National Vegetation Classification Standard (Federal Geographic Data Committee 2008), and the resulting refinements have removed this land cover from classification as a vegetation community. The CDFG's (2010) *List of California Terrestrial Natural Communities*, through which the CDFG designates which vegetation types are considered sensitive, has been updated to reflect these revisions. Thus, pebble plains are no longer formally listed as a sensitive natural community. Further, as pebble plains generally occur at elevations between 6,000 and 9,500 feet (USFWS 2008), more than two thousand feet higher than the highest point within the Marathon site, and because vegetation mapping of the site did not detect pebble plains, the probability for pebble plains to occur on-site is remote.

TABLE 9
SPECIAL-STATUS WILDLIFE NOT OBSERVED BUT WITH POTENTIAL TO OCCUR WITHIN THE PROJECT SITE

Common Name	Scientific Name	Regulatory Status	Nesting/ Breeding Period	Habitat Requirements	Site Suitability/Survey Results	Potential to Occur
Insects						
Desert monkey grasshopper	*Psychomastax deserticola*	SA	Not available	Occurs in very arid environments in the vicinity of the San Bernardino mountains; known to occur on chamise (*Adenostoma fasciculatum*) (CDFG 2011).	Suitable habitat present on-site. Closest documented occurrence is in the San Bernardino Mountains, and dates from 1919.	Unlikely
Amphibians						
Large-blotched salamander	*Ensatina klauberi*	CSC	Fall and Spring, but may also occur throughout the winter	Inhabits moist shaded evergreen and deciduous forests and oak woodlands; found under rocks, logs, other debris; eats a wide variety of invertebrates (California Herps 2011).	No suitable habitat present on-site. Closest occurrence is in the San Bernardino Mountains, and dates from 2005.	Unlikely
Reptiles						
Desert tortoise	*Gopherus agassizii*	FT, ST	March – October	Sandy or gravelly desert habitats, i.e., washes, oasis, canyons, alluvial fans; requires firm but not impenetrable ground for burrows, grasses, cacti, herbs, flowers, legumes. Agriculture renders habitat unsuitable due to soil disturbance (USFWS 2011).	Suitable habitat present on-site. A Habitat Conservation Plan for desert tortoise was prepared for the Cushenberry Sand and Gravel Quarry, located within two miles of the site.	Moderate
Southern rubber boa	*Charina umbratica*	ST	April – June	Inhabits oak-conifer and mixed-conifer forests at elevations between roughly 5,000 to 8,200 ft. where rocks and logs or other debris provide shelter; eats small mammals, birds, and, lizards (California Herps 2011).	No suitable habitat present on-site. Closest occurrence dates from 1993 in the Big Bear City Quadrangle, location suppressed.	Unlikely

TABLE 9 (CONTINUED)
SPECIAL-STATUS WILDLIFE NOT OBSERVED BUT WITH POTENTIAL TO OCCUR WITHIN THE PROJECT SITE

Common Name	Scientific Name	Regulatory Status	Nesting/ Breeding Period	Habitat Requirements	Site Suitability/Survey Results	Potential to Occur
Birds						
Prairie falcon	*Falco mexicanus*	BCC, WL	March – June	Inhabits grasslands, shrub-steppe, deserts, and other open areas of the West up to about 10,000 feet elevation; During the winter, they also reside in cultivated fields, lakeshores, desert scrub; adults feed on birds, small mammals are also important; Most nest on overhanging, south-facing cliffs up to 500 feet high (Cornell 2011).	Suitable habitat for foraging and roosting present on-site, although nesting habitat is absent. Suitable nesting habitat may occur in the San Bernardino Mountains. Closest CNDDB occurrence dates from 1980 in the Cougar Buttes Quadrangle, location suppressed.	Moderate, foraging and roosting only
Le Conte's thrasher	*Toxostoma lecontei*	BCC, CSC	Early February – late June	Permanent resident; gentle to rolling, well-drained slopes bisected with dry washes, conditions found most often on bajadas or alluvial fans; occupied habitats are generally moderately to sparsely vegetated by common saltbush (*Atriplex polycarpa*), and spiny saltbush (*Atriplex confertifolia*) (CDFG 2008). Species nests in shrubs.	Suitable topographic habitat present on-site, although saltbush scrub habitat is not present on-site. Most recent occurrences near the site date from 1991.	Moderate
Yellow-breasted chat	*Icteria virens*	CSC (nesting)	Late April – early August	Occurs as a migrant and summer resident primarily from late March to late September; nesting yellow-breasted chats occupy early successional riparian habitats with a well-developed shrub layer and an open canopy; adults feed predominantly on insects and spiders, wild fruits and berries are also important (CDFG 2008).	No suitable habitat present on-site. Closest occurrence is in the San Bernardino Mountains and dates from 1987.	Unlikely

TABLE 9 (CONTINUED)
SPECIAL-STATUS WILDLIFE NOT OBSERVED BUT WITH POTENTIAL TO OCCUR WITHIN THE PROJECT SITE

Common Name	Scientific Name	Regulatory Status	Nesting/ Breeding Period	Habitat Requirements	Site Suitability/Survey Results	Potential to Occur
Summer tanager	*Piranga rubra*	CSC (nesting)	Mid-May – July	Primarily a summer visitor to California, arriving from mid-April to early May and departing usually in early October; breeds primarily in mature riparian woodland with an extensive canopy of Fremont Cottonwood; forage primarily for large insects through the canopy of tall riparian trees (CDFG 2008).	No suitable habitat present on-site. Closest occurrence is in the San Bernardino Mountains and dates from 1987.	Unlikely

Status Definitions:
Federal
BCC = USFWS Birds of Conservation Concern.
FE = Federally listed Endangered.
FT = Federally listed Threatened.
State
CSC = California Species of Concern.
FP = State Fully Protected.
SE = State-listed Endangered.
ST = State-listed Threatened.
SR = State-listed Rare.
SA = CDFG Special Animal.
WL = CDFG Watch List.

4.5 WILDLIFE MOVEMENT

The ability to move is essential to wildlife survival. On a continuous basis, individuals must move to seek food, shelter, and mates. Offspring must disperse to find new homes. Groups or populations often move seasonally to find favorable conditions, or on short notice to avoid fires and other natural disasters. Wildlife movement is also essential in facilitating gene flow, recolonizing unoccupied habitat after localized extinctions, and allowing species to shift their geographic ranges in response to changing conditions. Disruption of these natural movement patterns by human developments, including roads, fences, removal of suitable habitat, or other impediments can alter these essential ecosystem functions and lead to losses of species and critical environmental values (SC Wildlands 2008).

The Lucerne Valley represents a topographic basin surrounded by mountain ranges, and is bounded by the San Bernardino, Granite, Ord, and Rodman mountains (Penrod *et al.* 2005). Three smaller valleys connect the Lucerne Valley to the rest of the Mojave Desert: the North Lucerne Valley to the north, Fifteen Mile Valley to the west, and Fry Valley to the east. The floor of the Lucerne Valley is comprised primarily of open, desert scrub habitats, and these habitats are similar to those occurring in adjacent portions of the Mojave Desert. Because desert habitats are only marginally suitable for many wildlife species that occur in the area's mountains, much of the wildlife movement in the region occurs within mountainous areas, rather than on the floor of the Lucerne Valley.

Recent studies conducted by Save Connected Wildlands, an organization dedicated to protecting and restoring systems of connected wildlands that support native wildlife and the ecosystems on which they rely, have evaluated the regional habitat linkages that occur in the Lucerne Valley region, including connectivity between the San Bernardino Mountains on the valley's southern edge and the Granite Mountains to the north. These studies (SC Wildands 2008; Penrod *et al.* 2005) identified the mountain ranges surrounding the Lucerne Valley as important core habitat areas for a variety of species, and included modeling to determine the "least cost corridor" for travel by three representative wildlife species (Nelson's bighorn sheep, American badger, and Pacific kangaroo rat) between these ranges. The size and location of the "least cost corridor" accounted for the vegetation communities, elevation, topography, and density of roads present within the corridor, in light of the specific biological needs of the three focal species studied. The results of the corridor analysis indicated that the "least cost" movement corridor for wildlife travelling between the San Bernardino Mountains and the Granite Mountains would traverse Fifteen Mile Valley at its narrowest point (Penrod *et al.* 2005). Thus, the least cost corridor would not pass through the Marathon site, but would traverse the Fifteen Mile Valley approximately eight miles west of the site. A second corridor, found to be suitable for movement of bighorn sheep, occurs approximately six miles east of the Marathon site.

The floor of the Lucerne Valley has little available surface water, lacks substantial vegetative cover, and experiences temperature extremes over a large part of the year. Thus, it is not surprising that most wildlife favors the mountain and foothill regions for travel since these areas are less impacted by human development and feature more topographic and vegetative cover.

Although the Marathon site is not within a large-scale wildlife movement corridor, the potential exists for wildlife to traverse the site during the course of short-range movements in search of food, water, shelter, and mates. The flat terrain and intact habitats within the site and surrounding vicinity allow small and medium-sized mammals to move about freely. Routine, daily or seasonal movements of small and medium-sized animals are generally localized in nature, and are not substantially dictated by the topography of the region. The ephemeral drainage channels present on-site provide some degree of cover, and may be used as north-south wildlife movement routes across the site. Because the site does not support any unique or especially valuable habitat features, such as perennial sources of drinking water, it is unlikely that wildlife are attracted to the site. The relatively small size of the site, and its presence within a relatively homogeneous landscape of similar habitats, further decreases the likelihood that the site functions as an important movement route for wildlife.

SECTION 5.0
PROJECT IMPACTS

Impacts of the proposed Marathon Solar Project on biological resources are addressed below. To facilitate the County's environmental review of the project under CEQA, the analysis is organized to reflect the topics addressed in the Initial Study Checklist (Appendix G to the State CEQA Guidelines).

5.1 IMPACTS TO EXISTING ON-SITE VEGETATION COMMUNITIES AND LAND COVERS

Criterion: Impacts would be significant if the Project would have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

As described in Section 4.2 above, the Marathon site vegetation is comprised of creosote bush-white burr sage scrub vegetation. The Project site provides habitat for a variety of plant and wildlife species that are found throughout the region. To facilitate development of the Marathon project site, existing vegetation within the development envelope would need to be removed. Taller-growing species, such as Joshua trees, inhibit installation of solar panels due to their height and would be removed deliberately during site preparation. Lower-growing species, such as grasses, forbs, and shrubs, would not be removed specifically but would be uprooted or buried during the minor grading activities proposed. Because development of the site would involve soil movement and compaction, and because the proposed solar panels would create shade over much of the site, it is unlikely that new growth of vegetation would occur within the solar arrays following completion of the project. Thus, vegetation losses in the development footprint are presumed to be permanent.

In total, implementation of the proposed Project would result in the permanent loss of approximately 130 acres of creosote bush-white burr sage scrub vegetation, or approximately 86 percent of the vegetation within the Marathon site. The remaining vegetation would not be disturbed during project construction, and would remain in place. Because creosote bush-white burr sage scrub is abundant and widely distributed in the Project region and is not designated as a sensitive natural community, impacts would be ***less than significant***.

5.2 IMPACTS TO JURISICTIONAL WATERS AND STREAMBEDS

Criterion: Impacts would be significant if the Project would have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

Streams and water bodies are protected by several federal and state statutes, and are generally considered to be valuable habitat features. Streams can vary considerably in their characteristics, and different classes of streams provide different hydrologic, biogeochemical, and habitat-related functions. As described in Section 4.3 of this General Biological Resources Assessment Report and illustrated on Figure 4, the Project site contains portions of two unnamed ephemeral washes, which occupy a total of approximately 5.31 acres. Because they are not hydrologically connected to any navigable waters, the streams on-site are not subject to the permitting authority of the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act. However, the streams on-site are regulated by the California Fish and Game Code, which specifies that a Streambed Alteration Agreement must be obtained from the CDFG prior to undertaking an activity that would divert, obstruct, or substantially alter the streambed.

Implementation of the proposed Project would have the potential to substantially alter the drainages on-site through filling and alteration of flow characteristics. At the upstream (southern) edge of the site, constructed stream channels would direct streamflow into the primary channels of drainages W1 and W2. These primary channels would remain in an open and earthen state, although W1 would be narrowed and straightened. A portion of Drainage W1 would flow through a constructed stream channel, rather than through the existing drainage channel, to maximize developable space on-site. The non-primary channels of drainages W1 and W2 would be filled with native material, to allow site development. Culverts would be installed on both drainages at the downstream edge of the site, to allow flows to pass beneath the proposed perimeter access road. The acreages of each drainage that would be eliminated are presented in Table 10. Because the proposed activities would result in permanent losses of jurisdictional waters, these impacts would be ***significant, absent mitigation.*** However, compensatory mitigation through creation, restoration, or enhancement of aquatic resources proposed in mitigation measure BIO-2 could feasibly reduce these impacts to a less than significant level.

TABLE 10
IMPACTS TO JURISDICTIONAL WATERS AND STREAMBEDS

Drainage	Total Jurisdictional Waters[1] On-site (Acres)	Waters to be Filled/Removed (Acres)	Percentage to be Filled/Removed
W1	2.92	1.95	66.78
W2	2.39	0.57	23.85
Total Jurisdictional Area	5.31	2.52	47.46

[1] Waters are subject to the jurisdiction of the CDFG and the Colorado River Basin RWQCB; jurisdictional boundaries are coterminous. No federal jurisdictional waters are present on-site.

5.3 IMPACTS TO PLANTS AND WILDLIFE

Criterion: Impacts would be significant if the Project would have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

As described in Section 4.0 of this General Biological Resources Assessment Report, the Project site is a fairly representative sample of the western Mojave Desert from a biological perspective. The creosote bush-white burr sage scrub vegetation community that comprises the site's vegetative cover supports an assemblage of common desert plants and wildlife, as well as one special-status species: the burrowing owl (*Athene cunicularia*). Common wildlife species that currently utilize the Project site could be impacted by construction and operation of the proposed Project. Generally speaking, impacts could potentially include injury or mortality during construction, and long-term habitat loss due to the conversion to native habitats to a developed condition. These sorts of impacts would potentially affect all species occupying the site, including common and special-status species.

All existing plants within proposed disturbance zones would be eliminated, as these species are immobile. As no special-status plants occur within the Project site, removal of plants would be limited to common species (for an evaluation of impacts to Joshua trees, which maintain no sensitivity designation but are protected by statute, please refer to Section 5.5 of this General Biological Resources Assessment Report). For the wildlife that inhabit the site, ground disturbance would lead to injury and mortality of individuals. The extent to which species would be impacted would be dependent on several factors, including the species' mobility and the extent to which the species relies on the site to meet life history requirements. Species of low mobility, or those that use the site during particularly vulnerable portions of the life history, such as nesting periods, would be expected to sustain greater impacts than highly mobile species or those whose use of the site is transitory. Because the project would disturb approximately 130 acres on the floor of the Lucerne Valley, a relatively homogeneous desert habitat area, regionally abundant plants and wildlife species would not be substantially affected by the Project. Impacts to common plants and wildlife would therefore be ***less than significant.***

Because the potential exists for special-status species that were not detected during biological surveys to occur on the site, it is recommended that pre-construction surveys, as described in mitigation measure BIO-3, be implemented to further reduce the potential for impacts to these species.

5.3.1 Impacts to the Burrowing Owl (*Athene cunicularia*)

The burrowing owl is a California Species of Special Concern, and one owl was detected within the Marathon site during biological field investigations. The individual was detected

during the nesting season; however, because the region contains both resident and migratory burrowing owls, it is currently unclear whether this species' use of the site is year-round or seasonal. Within the Project site, a total of approximately 130 acres of existing natural habitat would be disturbed during construction. Given the homogeneous nature of the Project region, this loss of habitat is not substantial. However, since burrowing owls nest and roost underground, it is possible that adult and juvenile/nestling owls may be killed or injured, or eggs may be destroyed, by being crushed during construction-related ground disturbances. If construction occurs when nestlings are present, adult owls might have the ability to escape, but nestlings likely would not. In addition, disturbances from construction could potentially cause burrowing owls to abandon their nest burrows, leaving nestlings unattended and exposed to injury and mortality. Injury or mortality of burrowing owls during Project construction would be ***significant, absent mitigation.*** Pre-construction survey requirements, such as those described in mitigation measure BIO-3, could feasibly reduce this impact to a less than significant level. Biological monitoring and worker training (mitigation measures BIO-4 and BIO-5) would further reduce this impact. For a more detailed discussion of the project's impact on burrowing owls, please refer to the Focused Burrowing Owl Survey Report for the project (URS 2012b).

5.3.2 Impacts to the Loggerhead Shrike (*Lanius ludovicianus*)

Construction activities within the Project site would include clearing approximately 130 acres of existing natural habitat areas, which may support nesting or foraging loggerhead shrikes. While adult shrikes and fledged juveniles would likely be able to avoid contact with construction equipment in this area, any shrike nestlings present could be exposed to injury or mortality, and any eggs could be destroyed, should vegetation clearing take place in the nesting season. Due to the relatively limited size of the project site, and because the on-site vegetation (creosote bush-white burr sage scrub) is well represented in the project vicinity and throughout the region, loss of loggerhead shrike habitat caused by the project would not have a substantial effect on this species. However, the potential destruction of loggerhead shrike eggs or nestlings during construction in the nesting season would be ***significant, absent mitigation.*** Pre-construction survey requirements, such as those described in mitigation measure BIO-3, could feasibly reduce this impact to a less than significant level. Biological monitoring and worker training (mitigation measures BIO-4 and BIO-5) would further reduce this impact.

5.3.3 Impacts to the Mojave Desert Tortoise (*Gopherus Agassizii*)

Focused Mojave desert tortoise surveys did not identify any evidence of this species onsite but the site is located in suitable habitat. The potential for project-related impacts to Mojave desert tortoises would be limited to individuals that either occupied the site but went undetected during protocol surveys or that were not present on-site during the surveys but colonized the area subsequently. Although unlikely, these impacts would be potentially ***significant, absent mitigation***, due to the very high level of statutory protection afforded this

species. To reduce the likelihood of project-related impacts to Mojave desert tortoise individuals during construction, it is recommended that pre-construction surveys for this species be conducted as described in mitigation measure BIO-3. Biological monitoring and worker training (mitigation measures BIO-4 and BIO-5) would further reduce this impact. With implementation of mitigation measures BIO-3, BIO-4, and BIO -5, impacts to Mojave desert tortoise individuals would be less than significant. For additional information, please refer to the Focused Desert Tortoise Survey Report for the Marathon Solar project (URS 2012a).

5.4 IMPACTS TO WILDLIFE MOVEMENT

Criterion: Impacts would be significant if the Project would interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

As described in Section 4.5 of this General Biological Resources Assessment Report, the Marathon Project site is not within an identified wildlife movement corridor, and the site's location on the floor of the Lucerne Valley makes the site suboptimal as a regional travel route. Use of the site for wildlife movement is mainly limited to short-distance, routine travel. Because of the site's limited size, and because the adjacent lands are equally permeable to travelling wildlife, development of the Project site would not result in obstruction or elimination of important wildlife movement routes. Impacts to wildlife movement would be ***less than significant.***

5.5 CONSISTENCY WITH RESOURCE POLICIES AND ORDINANCES

Criterion: Impacts would be significant if the Project would conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

The proposed Marathon Solar Project has been designed with consideration for the policies and ordinances of San Bernardino County, and the proposed Project is consistent with these policies and ordinances. However, in some instances, these ordinances may impose additional requirements on the Project. Section 88.01.050 of the San Bernardino County Development Code requires that where removal of Joshua trees is proposed, all trees to be removed must be transplanted or stockpiled for future transplanting. Development of the proposed Project would require the removal of 279 Joshua trees, as detailed in Table 11.

TABLE 11
JOSHUA TREES PROPOSED FOR REMOVAL

Tree Type	Trees Present On-site	Trees to be Removed	Percent to be Removed
Non-specimen Joshua Trees	231	172	74.46
Specimen-size Joshua Trees	130	107	82.31
Total	361	279	77.29

As an additional protective measure, Section 88.01.050(f)(3)(C) of the San Bernardino County Development Code requires that the removal of "specimen" size Joshua trees (see Section 4.4 above) cannot be allowed unless there is no reasonable alternative means to develop the land. Development of the proposed Marathon Solar Project would require the removal of 107 "specimen-size" Joshua trees from the site. However, the spatial configuration of these trees is such that developing the site while leaving the trees in place is not feasible. Specimen trees are present on-site at a density of approximately 0.85 trees per acre, and are approximately evenly distributed across the site. Because avoidance of these trees would render the site undevelopable, the proposed development meets the test set forth by the Development Code.

Absent any sort of strategy for salvaging or preserving Joshua trees during site development, the Project would potentially conflict with Sections 88.01.050 and 88.01.060 of the San Bernardino County Development Code. This conflict would represent a ***significant impact, absent mitigation.*** However, development of a Joshua Tree Translocation Plan, per mitigation measure BIO-1, would feasibly ensure consistency with the Development Code and reduce this impact to a less than significant level.

5.6 CONSISTENCY WITH HABITAT CONSERVATION PLANS

Criterion: Impacts would be significant if the Project would conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

The Marathon site is not enrolled in any formal Habitat Conservation Plan (HCP) or Natural Community Conservation Plan. However, several conservation plans have been adopted in the region, and the Project's consistency with these plans is described below.

5.6.1 Cushenbury Sand and Gravel Quarry Habitat Conservation Plan

In 1996, the USFWS granted an Incidental Take Permit to the Cushenbury Sand and Gravel Quarry, a facility located within five miles south of the Marathon site along Camp Rock Road, and the Quarry's permit application included a HCP. The desert tortoise was the only species covered by the HCP associated Incidental Take Permit. Because the provisions of the

Cushenbury Sand and Gravel Quarry HCP are applicable only to the quarry site, activities on the Marathon site are not subject to these provisions. The project would not conflict with the Cushenbury Sand and Gravel Quarry HCP.

5.6.2 West Mojave Plan

In 2006, the BLM adopted the West Mojave Plan, a habitat conservation plan and federal land use plan amendment that presents a comprehensive strategy to conserve and protect sensitive biological resources within approximately 6.2 million acres in the western Mojave Desert while also providing a streamlined program for complying with state and federal endangered species laws. Two state agencies and 15 local jurisdictions, including the County of San Bernardino, worked closely with the BLM during preparation of the West Mojave Plan. The two species of primary importance covered in the West Mojave Plan are the desert tortoise and Mohave ground squirrel. Because these species have not been detected within the Marathon site, the Project would not pose significant conflicts with this plan. It should be noted that the BLM's approval of the West Mojave Plan has been the subject of recent litigation, and that the legal process may necessitate some deviation from the version approved in 2006. Thus, some uncertainty exists regarding the exact terms of this plan.

5.6.3 Desert Renewable Energy Conservation Plan

The Desert Renewable Energy Conservation Plan is a multi-agency effort to organize and plan solar and wind development projects in California's deserts to minimize impacts on natural, cultural, recreational, and aesthetic values. The plan is in preparation by the U.S. Bureau of Land Management, the USFWS, the CDFG, and the California Energy Commission, and is currently in draft form. The planning boundary for this plan has been published, and the Marathon site is within, but very near the boundary of, the planning area. Because this plan has not yet been adopted, its terms are not yet known, and uncertainty exists regarding which development projects or activities would be consistent or inconsistent with the plan. Absent an approved plan, and considering the small size of the Project, it is unlikely that the Marathon Project would conflict with the Desert Renewable Energy Conservation Plan.

SECTION 6.0
MITIGATION MEASURES

Below are recommended mitigation measures to offset potentially significant impacts on biological resources. The measures are provided to inform the County's environmental analysis of the Project under CEQA.

BIO-1 **Joshua Tree Translocation Plan.** As required by the San Bernardino County Development Code, Joshua trees proposed for removal shall be transplanted or stockpiled for future transplanting wherever possible. A Joshua Tree Translocation Plan shall be developed, and shall identify methods, locations, and criteria for transplanting those trees that would be removed during Project construction. An estimate of survivorship shall be included.

BIO-2 **Compensatory Mitigation for Losses of Ephemeral Drainages.** Unavoidable impacts to jurisdictional waters and streambeds shall be offset through the on-site or off-site creation, restoration, or enhancement of aquatic resources. The resources to be created or restored shall be similar in type to the ephemeral washes lost. Compensatory mitigation opportunities shall be identified in coordination with the CDFG. Although the County will presumably assume the role of the CEQA lead agency for the Project, the CDFG is likely to rely on the County's analysis as a responsible agency when a Streambed Alteration Agreement is requested. If possible, the CEQA mitigation shall be sufficient to ensure no net loss of aquatic resource functions or jurisdictional acreage, and to allow CDFG to authorize the streambed modifications required by the Project. Otherwise, additional mitigation may be required to obtain a Streambed Alteration Agreement.

BIO-3 **Pre-construction Surveys.** Pre-construction surveys for burrowing owls, desert tortoise, and nesting birds protected under the Migratory Bird Treaty Act and Section 3503 of the California Fish and Game Code shall be conducted prior to the commencement of Project-related ground disturbance. Appropriate survey methods and timeframes shall be established, to ensure that chances of detecting the target species are maximized. In the event that listed species, such as the desert tortoise, are encountered, authorization from the USFWS and CDFG must be obtained. If nesting birds are detected, avoidance measures shall be implemented to ensure that nests are not disturbed until after young have fledged. Pre-construction surveys shall encompass all areas within the potential footprint of disturbance for the project, as well as a reasonable buffer around these areas.

BIO-4 **Worker Training.** The biological monitor shall conduct an initial training for all construction workers on the biological resources that require protection during construction activities as well as the measures that must be implemented to protect those resources. The biological monitor shall maintain a list of personnel that have received the training and any new personnel shall receive the training prior to commencing construction activities.

BIO-5 **Biological Monitoring.** A biological monitor shall be present during all ground disturbing construction activities to move wildlife out of harm's way when feasible. If any special-status species are observed, the biological monitor shall have the authority to halt construction activities to avoid damaging sensitive resources or violating applicable laws.

SECTION 7.0
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APPENDIX A
SITE PHOTOGRAPHS

Photograph 1. February 2010.
Overview of the project site.

Photograph 2. February 2010
Overview of the project site.

Photograph 3. September 13, 2011.
View to the north, taken from southern project boundary.
Drainage W1 (east fork), facing downstream. APN 0449-631-02.

Photograph 4. September 13, 2011.
View to the north, taken from southern project boundary.
Drainage W1 (middle fork), facing downstream. APN 0449-631-02.

Photograph 5. September 13, 2011.
View to the north, taken from southern project boundary.
Drainage W1 (west fork), facing downstream. APN 0449-631-02.

Photograph 6. September 13, 2011.
View to the south, taken from northern project boundary.
Drainage W1 (east fork), facing upstream. APN 0449-172-75.

Photograph 7. September 13, 2011.
View to the north, domicile on left.
Drainage W1, facing downstream. APN 0449-172-75.

Photograph 8. September 13, 2011.
View to the south, taken from northern project boundary.
Drainage W1 (west fork), facing upstream. APN 0449-172-75.

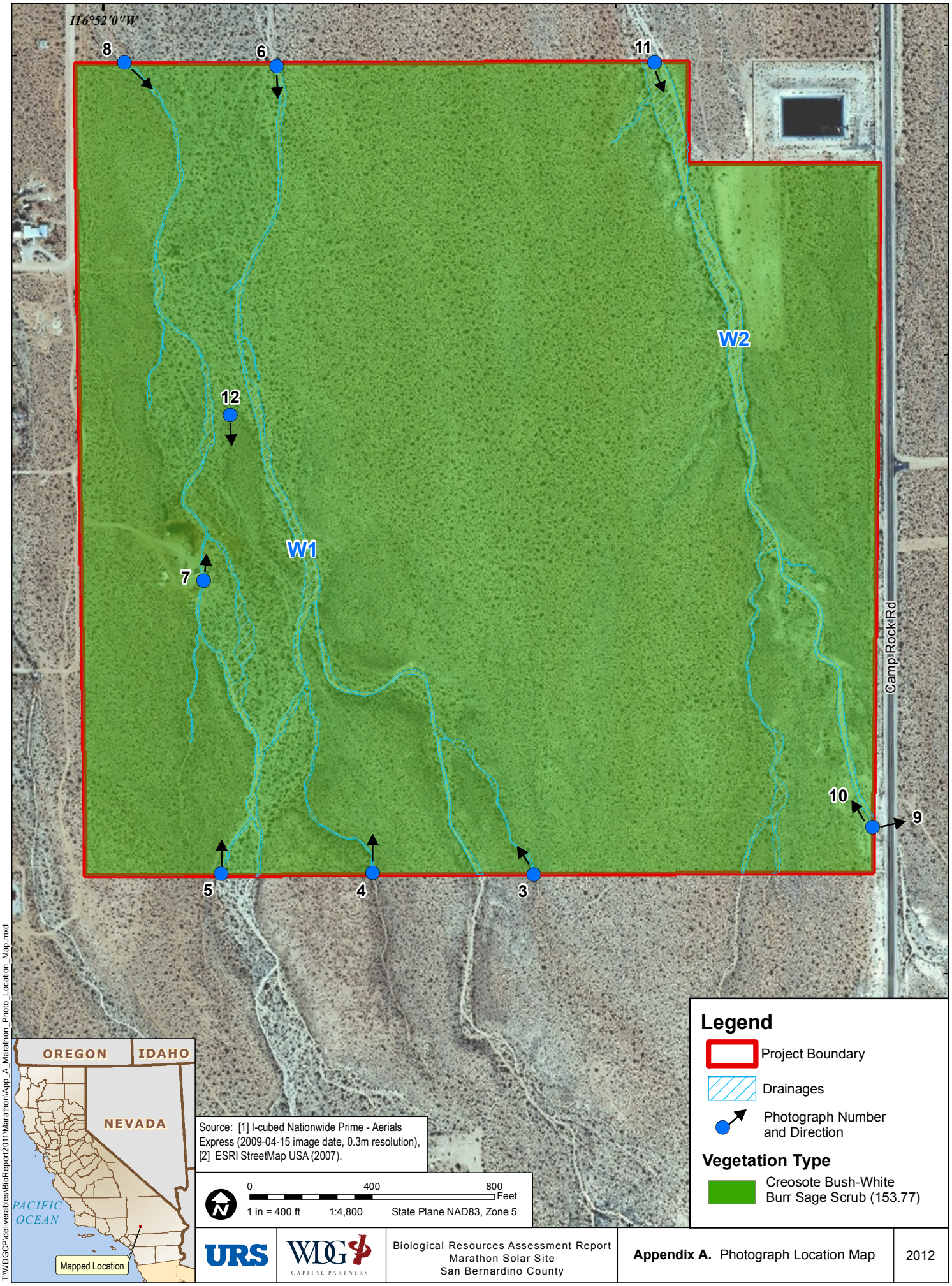
Photograph 9. September 13, 2011.
Culvert located at southeast end of Drainage W2. APN 0449-631-02.

Photograph 10. September 13, 2011.
View to the north, taken from southern project boundary.
Drainage W2, facing downstream. APN 0449-631-02.

Photograph 11. September 13, 2011.
View to the south, taken from northern project boundary.
Drainage W2 (west side of drainage), facing upstream. APN 0449-172-75.

Photograph 12. April 17, 2012.
View to the south, taken from Burrow 1 observation point. View of the pair of burrowing owls observed at Burrow 1. The burrowing owls are roosting on a dead Joshua tree located at the entrance to their burrow. APN 0449-631-02.

APPENDIX B
JOSHUA TREE INVENTORY



URS | WDG CAPITAL PARTNERS | Biological Resources Assessment Report Marathon Solar Site San Bernardino County | **Appendix A.** Photograph Location Map | 2012

APPENDIX C
CALIFORNIA NATURAL DIVERSITY DATABASE FORM

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@dfg.ca.gov

Date of Field Work (mm/dd/yyyy): 04/11/2012

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Lanius ludovicianus*

Common Name: Loggerhead Shrike

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 1 Subsequent Visit? ☐ yes ☑ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☑ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Christopher Julian, URS Corporation
Address: 130 Robin Hill Road, Suite 100
Santa Barbara, CA 93117
E-mail Address: Christopher.Julian@urs.com
Phone: (805) 692-6000

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

1				
# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☑ burrow site ⑨ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

The site is located at APNs 0449-631-02 and 0449-172-75. The site is bounded by Camp Rock Road directly to the East and Joshua Avenue to the West.

County: San Bernardino Landowner / Mgr.: WDG Capital
Quad Name: Cougar Buttes Elevation: 3270ft
T 4N R 1E Sec 17, ____ ¼ of ____ ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS
T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H M S GPS Make & Model Garmin 60CSX
DATUM: **NAD27** **NAD83** **WGS84** Horizontal Accuracy 3 meters meters/feet
Coordinate System: UTM Zone 10 UTM Zone 11 ***OR*** Geographic (Latitude & Longitude)
Coordinates: 512977, 3807635

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

A single loggerhead shrike was incidentally observed perched on a fence near the northern border of the site by biologists conducting protocol Mojave desert tortoise surveys. The on-site habitat/vegetation communities: 1) creosote bush-white burr sage scrub, dominant species include creosote bush (Larrea tridentata), white burr sage (Ambrosia dumosa), cheesebush (Ambrosia salsola var. salsola), Mojave yucca (Yucca schedigera), red brome (Bromus madritensis ssp. rubens), and red-stem fillaree (Erodium cicutarium), and Mediterranean grass (Schismus barbatus).

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ⑨ Excellent ⑨ Good ⑨ Fair ⑨ Poor

Immediate AND surrounding land use: The site is vacant, the site is zoned agriculture

Visible disturbances: A few small rural residences nearby

Threats: the parcels are proposed for development

Comments:

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
Other: Identification in the field by qualified biologists

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☑
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? yes no