LOS ANGELES DEPARTMENT OF WATER AND POWER

OWENS LAKE DUST MITIGATION PROGRAM - PHASE 9/10 PROJECT

Draft Environmental Impact Report

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LA DWP

Owens Lake Dust Mitigation Program
Phase 9/10 Project
Draft Environmental Impact Report

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Section 1
Summary

The City of Los Angeles Department of Water and Power (LADWP) is currently implementing the Owens Lake Dust Mitigation Program (OLDMP) on Owens Lake in order to reduce emissions of particulate matter less than or equal to 10 microns in diameter (PM_{10}). LADWP constructs and operates dust control measures (DCMs) on the lake in compliance with Orders from the Great Basin Unified Air Pollution Control District (GBUAPCD) under the authority of California Health & Safety Code Section 42316, legal settlement agreements with GBUAPCD, lease agreements for use of state lands (administered by the California State Lands Commission (CSLC)), and other regulatory approvals.

LADWP has entered into a Stipulated Judgment with GBUAPCD (Superior Court of the State of California Case No. 34-2013-800001451-CU- WM-GDS). The 2014 Stipulated Judgment resolves disputes between the parties regarding the 2011 Supplemental Control Requirements Determination (SCRD), 2012 SCRD, 2013 SCRD and 2014 SCRD; and requires LADWP to prepare a Remedial Action Plan (RAP) to address the 2011 and 2012 SCRD dust control areas (DCAs) identified by GBUAPCD (GBUAPCD, 2011, 2012). This combined RAP will be for the Phase 9/10 Project and will incorporate the existing 2011 SCRD RAP (Phase 9 Project) and the dust mitigation concepts in development for the 2012 SCRD (Phase 10 Project) areas. The RAP will be consistent with the Project description provided in **Section 3** of this Environmental Impact Report (EIR). The SCRD requirement and procedure are set forth in GBUAPCD Governing Board Order 080128-01 (January 28, 2008) contained in the 2008 Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan (SIP) (2008 SIP; GBUAPCD, 2008a). The Phase 9/10 Project would encompass 3.61 square miles of DCAs and 1.82 square miles of Transition Area for a total Project area of approximately 5.43 square miles.

To comply with the 2011 SCRD, dust mitigation would be constructed on 13 new DCAs totaling 2.86 square miles of Owens Lake. Best Available Control Measures (BACM) proposed to be installed are: 2.072 square miles of Gravel Cover, 0.237 square miles of Managed Vegetation and 0.547 square miles of Shallow Flood. To conserve water use for the OLDMP, the Project also includes the transition of existing Shallow Flood DCA T18S (1.82 square miles) to approximately 0.81 square miles of Gravel Cover and 1.02 square miles of Shallow Flood.

The 2012 SCRD dust control areas were identified by GBUAPCD based on data for the period of July 1, 2010 through June 30, 2011 (GBUAPCD, 2012). To comply with the 2012 SCRD, Gravel Cover would be installed on four DCAs totaling 0.76 square miles of Owens Lake.

In July 2014 an Initial Study was prepared by LADWP based on State California Environmental Quality Act (CEQA) Guidelines Appendix G, to determine whether construction and operation of the proposed Project would result in significant effects on the environment. Impacts to agricultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, mineral resources, noise, population and housing, public services, and recreation were found to less than significant. Impacts to transportation and traffic were found to be less than significant with incorporation of mitigation measures. Aesthetics, air quality and greenhouse gases, biological resources, cultural resources, and land use and planning were carried forward for more detailed analysis as presented in this EIR. A Notice of Preparation (NOP) of the EIR, along with the Initial Study entitled "Owens Lake 2011 SCRD and 2012 SCRD Dust Control Measures Projects", was prepared and filed with the State Clearinghouse on July 17, 2014. The NOP/Initial Study was distributed to 29 entities, including potential responsible and trustee agencies, and interested organizations and individuals including 10 Native American tribal representatives. An additional 27 interested parties received a NOP and link to the Initial Study on LADWP's website. Reference copies were available at LADWP offices in Los Angeles and Bishop, at five libraries in Inyo County, and via a link on LADWP's website.

1.1 PROJECT BACKGROUND

In 1987, USEPA revised the National Ambient Air Quality Standards (NAAQS) by replacing total suspended particulates (TSP) as the indicator for particulate matter with PM_{10}. Also in 1987, the USEPA designated the Owens Valley Planning Area (OVPA), an area extending from north of Independence to south of Olancha, and including Owens Lake, as nonattainment for the NAAQS for PM_{10}. The result of this designation was a plan, developed by GBUAPCD, designed to improve air quality through the reduction of PM_{10} emissions in all of the communities in the Owens Valley. The 1997 Owens Valley PM_{10} Planning Area Demonstration of Attainment SIP (1997 SIP) and associated Board Order 070297-04 to the City of Los Angeles (City) mandated specific particulate matter controls to reduce dust emission from Owens Lake. After negotiation, the City and GBUAPCD entered into a Memorandum of Agreement (1998 MOA) in July 1998 to mitigate dust. The 1998 MOA delineated the dust producing areas on the lake bed that needed to be controlled, specified what measures must be used to control the dust, and specified a timetable for implementation of the control measures. The 1998 MOA identified three control measures as BACM for Owens Lake: Shallow Flooding, Managed Vegetation, and Gravel Cover. The 1998 MOA called for phased implementation to permit the effectiveness of the control measures to be evaluated and modifications to be made as the control measures were being installed.

GBUAPCD relies on Section 42316 as authority for requiring the City to undertake reasonable measures, including studies, to mitigate the air quality impacts of its activities in the production, diversion, storage, or conveyance of water. Under Section 42316, the mitigation measures shall not affect the right of the City to produce, divert, store, or convey water and, except for studies and monitoring activities, the mitigation measures may only be required or amended on the basis of substantial evidence establishing that water production, diversion, storage, or conveyance by the City causes or contributes to violations of state or federal ambient air quality standards. The 1998 Owens Valley PM_{10} Planning Area Demonstration of Attainment SIP (1998 SIP), dated November 16, 1998 and the 2003 Revision to the Owens Valley PM_{10} Planning Area Demonstration of Attainment SIP (2003 SIP), dated November 13, 2003, set forth a series of measures and actions to be taken by the City to reduce particulate emissions from the lakebed.

The first phase of dust control implemented by LADWP was Shallow Flooding – which involved flooding the area to be controlled until it is either inundated with a few inches of water or the soil becomes thoroughly saturated. The 2003 SIP called for LADWP to implement DCMs on 29.8 square miles (approximately 19,072 acres) of the Owens Lake by December 31, 2006. The 2008 SIP revised the 2003 SIP to add 15.1 square miles (approximately 9,664 acres; including 1.9 square miles of study areas) of additional DCMs on Owens Lake. As part of Phase 7 Project, LADWP constructed 10.1 square miles (approximately 6,464 acres) of DCAs by the compliance deadline of October 1, 2010. The 2008 SIP's attainment strategy provides that control of 43 square miles (approximately 27,520 acres) of the Owens Lake will result in OVPA achieving attainment of the PM_{10} NAAQS by 2017. Under the Phase 8 Project, 2.03 square miles (approximately 1,299 acres) of Gravel Cover were installed in the northwest portion of Owens Lake in 2012.

As of late 2014, LADWP is constructing Phase 7a Project of the OLDMP, which includes installation of BACM on approximately 2.6 square miles (approximately 1,664 acres) (original 3.1 square miles minus approximately 0.5 square miles of avoided environmentally sensitive areas) and transition of approximately 3.4 square miles (approximately 2,180 acres) of existing Shallow Flood to a combination of BACM in order to provide water supply for new DCAs. The proposed Phase 9/10 Project would further expand the total area of dust control on the lake by an additional 3.61 square miles (approximately 2,312 acres). With the Phase 8 Project, and after construction of the Phase 7a Project and the Phase 9/10 Project, the area of DCMs on the lake would total approximately 48.6 square miles (approximately 31,104 acres).

1.2 PROJECT OBJECTIVE

The objective of the Phase 9/10 Project is to implement DCMs on Owens Lake to reduce emissions in accordance with applicable laws without increasing water commitments while, to the extent feasible, maintaining existing habitat values, maintaining aesthetic values, providing safe public access, preserving cultural resources, and utilizing existing infrastructure.

1.3 PROJECT LOCATION AND SETTING

The study area for the Phase 9/10 Project is 3.61 square miles of Owens Lake (currently predominantly barren playa) proposed for dust control, 1.82 square miles of existing Shallow Flooding proposed for transition to mix of Shallow Flood and Gravel Cover, and adjacent areas that may be disturbed during Project construction, including: buffer areas around DCAs, roadway improvements, turnouts and other infrastructure, and water supply pipelines. The 110-square-mile Owens Lake is located in Inyo County, California, approximately 5 miles south of the community of Lone Pine and approximately 61 miles south of the city of Bishop. Owens Lake is bounded by State Route (SR) 136 to the north and east, SR 190 to the south, and U.S. Highway (U.S.) 395 to the west. Other nearby communities include Dolomite to the northeast, Keeler to the east, and Cartago and Olancha to the south.

1.4 PROJECT DESCRIPTION

The Phase 9/10 Project is a single project comprised of elements to meet the requirements of both the 2011 SCRD and the 2012 SCRD. To comply with the 2011 SCRD, the Project includes 1,828 acres (2.86 square miles) of new dust mitigation on 13 DCAs and 1,166 acres (1.82 square miles) of transitioned dust control in one DCA for a total area of 2,994 acres (4.68 square miles) (**Figure 1-1**). To comply with the 2012 SCRD, the project includes dust mitigation on another four new DCAs totaling 484 acres (0.76 square miles). Water demand related to implementation of BACM on the new DCAs would be balanced with water conservation measures at an existing DCA, T18S. Installation of BACM would require land leveling; berm creation; gravel application; seeding and planting; installation of surface and/or subsurface irrigation pipelines; excavation for pond creation and installation of associated electrical, mechanical and communication systems.

The Project also includes: construction of drainage management unit pump stations, lateral control valve facilities, and pipe outfalls; new berm and access roads; new rip-rap to improve existing berms; and new submains to convey water from T2-1 DCA to Duck Pond-L1 and C2-L1 DCAs.

Based on analysis conducted for the Project (described in **Section 4.4**), LADWP has identified an environmentally superior alternative (Avoidance Alternative, **Section 5**) in order to reduce impacts on significant cultural resources to less than significant levels, and to reduce dust to the maximum extent feasible. Under the environmentally superior alternative, BACM would not be installed on approximately 278 acres (plus any acreage of significant archaeological sites on federal or private land, or significant sites identified during construction) of the 3.61 square miles of DCAs identified for dust control.

Proposed DCMs on the Phase 9/10 Project DCAs are summarized in **Table 1-1** and described as follows:

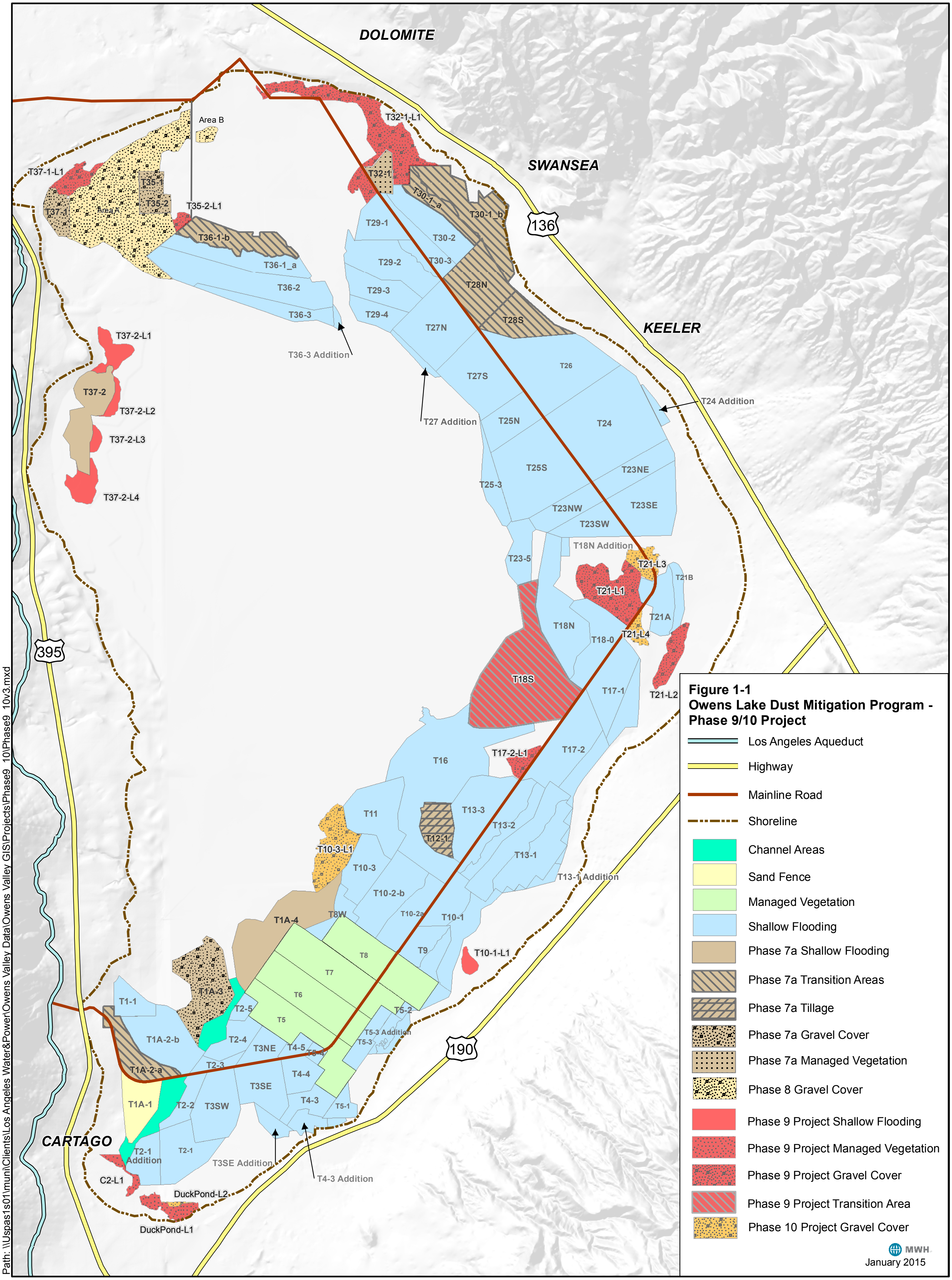


Figure 1-1
Owens Lake Dust Mitigation Program - Phase 9/10 Project

Table 1-1
Phase 9/10 Project Dust Control Areas

DCA	Area (square miles)	Area (acres)	Total Estimated Area of Construction Disturbance (acres)	BACM
Phase 9				
Duck Pond-L1	0.16	101	109	Managed Vegetation
C2-L1	0.08	50	57	Managed Vegetation
T10-1-L1	0.06	41	44	Shallow Flood
T17-2-L1	0.12	76	81	Gravel Cover
T21-L2	0.22	138	146	Gravel Cover
T21-L1	0.58	368	379	Gravel Cover
T37-2-L4	0.19	120	127	Shallow Flood
T37-2-L3	0.05	31	34	Shallow Flood
T37-2-L2	0.06	42	47	Shallow Flood
T37-2-L1	0.18	116	124	Shallow Flood
T35-2-L1	0.05	30	33	Gravel Cover
T37-1-L1	0.18	113	120	Gravel Cover
T32-1-L1	0.94	600	632	Gravel Cover
Phase 9 Totals	**2.86**	**1,828**	**1,934**	
Phase 10				
Duck Pond-L2	0.02	9	11	Gravel Cover
T10-3-L1	0.49	315	326	Gravel Cover
T21-L3	0.16	104	109	Gravel Cover
T21-L4	0.09	56	59	Gravel Cover
Phase 10 Totals	**0.76**	**485**	**506**	

Shallow Flooding - This DCM consists of releasing fresh and/or recycled water into a DCA and allowing it to spread, wet the surface, and thereby suppress windborne dust during the dust season (October 1st to June 30th).

Managed Vegetation – Vegetation on the playa reduces sand motion and soil erosion. Aboveground cover acts as a wind break, lowering the velocity at the playa surface. Managed Vegetation would include areas that are shrub dominated and areas that would be predominantly meadow. In addition to saltgrass, 39 species have been proposed to increase the habitat diversity of the Managed Vegetation areas.

Gravel Cover – This dust control method is a 2-inch-thick layer of coarse gravel over a nonwoven geotextile fabric to prevent gravel from settling into lake bed sediments and thereby losing effectiveness in controlling dust emissions.

Transition Area – Based on habitat assessment, Shallow Flood in T18S would include two deep water ponds (125 and 126 acres) and two shallow ponds (315 and 85 acres). The remainder of T18S (516 acres) would have Gravel Cover installed for dust mitigation. T18S would also include a visitor overlook area as a recreation amenity.

1.5 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Based on the analyses presented in the Initial Study (**Appendix A**), and in **Section 4** of this EIR, **Table 1-2** summarizes the impacts of the proposed Project and the mitigation measures identified to reduce potentially significant effects.

Table 1-2
Summary of Proposed Project Impacts and Mitigation Measures

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Aesthetics	• Reduced views of barren playa and increased views of Gravel Cover. • Improved appearance of 0.24 square miles with the installation of Managed Vegetation with a diversity of plant species. • Temporary lighting confined to construction areas.	Less than Significant	No mitigation required.	Less than Significant
Agriculture and Forest Resources	• No agricultural or forest lands would be disturbed. • No disturbance to active ranches adjacent to the lake.	No Impact	No mitigation required.	No Impact
Air Quality	• Project would substantially reduce dust emissions from Owens Lake; consistent with the applicable air quality plan. • Construction activity and equipment would temporarily emit particulate matter, a nonattainment pollutant. • Construction and maintenance equipment would temporarily emit less than significant levels of reactive organic gases, carbon monoxide, nitrogen oxides, and sulfur oxides.	Significant for dust emissions during Project construction and maintenance Beneficial for particulate matter reductions from Project operations	**Air-1. Fugitive Dust Emissions Control and Minimization.** In compliance with GBUAPCD requirements, a Dust Control Plan shall be implemented during construction. The plan shall specify specific measures to be taken when removing T18S DCA from service. Best available control measures shall be implemented during construction and maintenance activities to minimize emission of fugitive dust from earthwork and travel on unpaved roads and other areas. Best available control measures may include, but would not be limited to: • Temporary sand fences shall be installed where feasible as soon as practicable without delaying Project completion and shall be maintained as necessary until areas of Managed Vegetation have been established. Sand fences may be used temporarily during construction in order to limit the movement of sand from construction zones to adjacent areas of the lake bed. Sand fence would be black fabric with 50 percent porosity that is UV stabilized (Model SF-50 from U.S. Fence, or equivalent) and supported by steel T-posts (approximately 7 feet in height and driven into the ground to a depth of approximately 4 feet, resulting in approximately 3 feet of height for exposed post). Since the fence will not exceed 60 inches in height, wire or monofilament line across the top would not be necessary to reduce perching by predators (corvids). Temporary sand fence shall be maintained and then removed at the completion of construction activities. Sand fences that deteriorate and could potentially create litter on the lake bed shall be repaired or removed. • Water trucks shall be used as necessary and feasible during construction - engineering specifications shall mandate water sprays not less than three times per day on each main access road and temporary or secondary road	Less than Significant

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			that is being used in construction. • Tillage shall be implemented where soil conditions allow. • Placement of a gravel surface on interim staging areas within the DCA used by the contractor. • Construction activities shall cease during high wind events. At a minimum, one or more of the applicable best available control measures shall be used during active operations to minimize fugitive dust emissions from each fugitive dust source type. The final selection of the BACM controls depends upon the final engineering design and construction plans, and GBUAPCD's approval. **Air-2. Low Emissions Tune-ups Schedule.** A schedule of low emissions tune-ups shall be prepared for all equipment operating on site for more than 10 working days. **Air-3. Low-emission Equipment Utilization.** Low-emission equipment/mobile construction equipment shall be used for Project construction to the maximum extent practical, feasible, and available. **Air-4. Low-emission Mobile Vehicle Utilization during Construction.** Low-emission or alternative-fueled mobile vehicles shall be used during Project construction to the maximum extent practical, feasible, and available. In addition, carpooling of construction workers shall be encouraged. **Air-5. Low-emission Mobile Vehicle Utilization during Operation.** Hybrid, low-emission (CA LEV II; PZEV, SULEV; or ULEV) or alternative-fueled mobile vehicles, such as electric or fuel cells, shall be used for the proposed Project site to the maximum extent practical, feasible, and available. In addition, carpooling of operations and maintenance workers shall be encouraged.	
Biological Resources	• Special status bird species, including Snowy Plover, are known for the Project area and could be adversely impacted during Project construction and maintenance activities, including by construction lighting. • Active bird nests of other species could be disturbed by Project construction activity, including by construction lighting. • Project would increase species diversity in Managed Vegetation C2-L1 and DuckPond L-1 DCAs – a beneficial impact.	Significant	**BIO-1. Lake Bed Worker Education Program.** To minimize potential direct impacts to Snowy Plover from construction activities, LADWP shall continue the lake bed worker education program consistent with the previous approach and per CDFW recommendations. The program shall be based on Snowy Plover identification, basic biology and natural history, alarm behavior of the snowy plover, and applicable mitigation procedures required of LADWP and construction personnel. The program shall be conducted by a biologist familiar with the biology of the Snowy Plover at Owens Dry Lake and familiar with special status plant and wildlife species of the Owens Lake basin. The education program shall explain the need for the speed limit in the snowy plover buffer areas and the identification and meaning of buffer markers. All construction, operation, and maintenance personnel working within the Project area shall complete the program prior to their working on the lake bed. A list of personnel who have completed the education program shall be maintained and made available to GBUAPCD and CDFW upon request.	Less than Significant

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
	• Project would maintain and enhance existing habitat values		**BIO-2. Preconstruction Surveys for Snowy Plover.** To minimize potential direct impacts to Snowy Plover within the Project area due to construction activities, LADWP shall conduct a preconstruction survey for Snowy Plover in all potential snowy plover habitat prior to any construction activity that is performed during the Snowy Plover breeding season (March 15 to August 15). Preconstruction surveys shall be performed no more than 7 days prior to the start of ground-disturbing activities. A 200-foot buffer shall be placed around all active snowy plover nests that are discovered within the construction area. This buffer shall protect the plover nest from both destruction and construction noise. Green-colored stakes of less than 60 inches in height shall be used to mark buffer edges, with stakes spaced at approximate cardinal directions. The location of the nest (global positioning system coordinates) and current status of the nest shall be reported within 24 hours of discovery to GBUAPCD and CDFW. Maps of snowy plover nest locations shall be posted at the construction office and made available to all site personnel and GBUAPCD staff, and submitted to CDFW. The activity of the nest shall be monitored by a biological monitor, as per existing guidelines for the North Sand Sheet and Southern Zones dust control projects and any revisions to the monitoring protocol that have been approved by CDFW. Active snowy plover nests shall be monitored at least weekly. The nest buffer shall remain in place until such time as the biological monitor determines that the nest is no longer active and that fledglings are no longer in danger from proposed construction activities in the area. Buffers shall be more densely marked where they intersect project-maintained roads. Vehicles shall be allowed to pass through nest buffers on maintained roads at speeds less than 15 miles per hour, but shall not be allowed to stop or park within active nest buffers. Permitted activity within the nest buffer shall be limited to foot crews working with hand tools and shall be limited to 15-minute intervals, at least 1 hour apart, within a nest buffer at any one time. **BIO-3. Snowy Plover Nest Speed Limit.** To minimize potential direct and cumulative impacts to Snowy Plover and other sensitive biological resources from vehicles construction activities, LADWP shall implement a speed limit of 30 miles per hour within all active construction areas on Owens Dry Lake during construction of dust control measures. Speed limits shall be 15 miles per hour within active snowy plover nest buffers. Designated speed limits for other construction areas outside of active nest buffers shall be maintained at 30 miles per hour where it is determined to be safe according to vehicle capabilities, weather conditions, and road conditions. Site personnel and GBUAPCD staff shall be informed daily of locations where active nest buffers overlap with roads in the construction area. Signs shall be posted that clearly state required speed limits. Speed limit signs shall be posted at all entry points to the lake. The number of speed limit signs shall be kept at a minimum near active snowy plover nest areas to reduce potential perches for raptors and other snowy plover predators and shall be outfitted with Nixalite or the functional equivalent if greater than 72 inches (increased from the original 60 inches) in height at entry points to the lake and 60 inches in height by active snowy plover nest areas.	

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			BIO-4. Lighting Best Management Practices. To minimize indirect impacts to nesting bird species associated with Project lighting during construction activities, LADWP shall institute all best management practices to minimize lighting impacts on nocturnal wildlife consistent with previous requirements and CDFW recommendations. Best management practices include those listed below, and are included in the Project Description of the GBUAPCD 2008 State Implementation Plan Subsequent Environmental Impact Report. Previous construction has occurred during nighttime hours to complete construction schedules and to prevent personnel from working during times of high temperatures. If night work is deemed necessary, then construction crews shall make every effort to shield lighting on equipment downward and away from natural vegetation communities or playa areas, and especially away from known nesting areas for snowy plovers during the nesting season (March 15 to August 15). All lighting, in particular any permanent lighting, on newly built facilities shall be minimized to the greatest extent possible, while still being in compliance with all applicable safety requirements. Required lighting shall be shielded so that light is directed downward and away from vegetation or playa areas. **BIO-5. Preconstruction Surveys for Nesting Birds.** If vegetation removal activities are scheduled to occur during the bird breeding season (January 15 to July 31), pre-construction surveys for bird nests shall be conducted no more than 7 days prior to the start of ground-disturbing activities. Surveys shall be conducted in areas of suitable nesting habitat that will be impacted by construction. Active nests will be marked at a safe distance with visible flagging and the construction crew supervisor will be made aware of these locations. Construction may commence in all areas without active bird nests. All bird nests will remain undisturbed while they are active. After a nest ceases to be active (fledges or fails), and the qualified biologist has made this determination, construction may proceed in the area. If construction is initiated in one breeding season and persists into subsequent breeding seasons, additional surveys are not necessary unless construction activities involve additional vegetation removal.	
Cultural Resources	• Potential exists for presently unidentified significant historic era structures and buildings to be disturbed during Project construction, if any are present in the Project areas. • Project construction has the potential to dislodge, relocate, crush, and otherwise cause substantial adverse changes to unique cultural resources recommended as eligible under the CRHR.	Significant	**CR-1. Avoidance of resources immediately adjacent to the Phase 9/10 Project Areas to the extent feasible – using a 100-foot buffer around archaeological sites.** Construction activities and heavy vehicle travel could inadvertently damage intact portions of cultural resources adjacent to the various Phase 9/10 Project areas. A qualified archaeologist shall prepare maps depicting archaeological sites with a 100-foot buffer as environmentally sensitive areas. The location of the buffer will be noted in the field through survey and a marking system. To avoid identifying the locations of significant cultural resources to the public, no physical barriers will be erected. These maps shall be available for cultural resources monitors and construction crews to use for avoidance during all construction activities and vehicle transportation through the Phase 9/10 Project areas. **CR-2. Cultural Resources on Private Parcels.** As of January 2015, all of the private parcels included in the Phase 9/10 Project have been surveyed for cultural resources. Due to the time delay resulting from securing permissions to survey the sites, evaluations of the significance of observed cultural resources are pending. Prior	Significant for the original Phase 9/10 Project (3.61 square miles of new dust control) Less than significant for the Avoidance Alternative

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
	• Potential exists for presently unidentified significant archaeological resources to be disturbed during Project construction, if any are present in the Project areas. • The Project has the potential to directly destroy unevaluated, but potentially unique, paleontological resources or sites. • The Project has the potential to disturb unanticipated human remains, if any are present in the Project areas.		to construction on private lands, a qualified archaeologist shall conduct evaluative testing (Phase II investigation), if recommended by the Project archaeologist. Under the Avoidance Alternative to the proposed Project, the treatment plan for significant archaeological resources identified on private parcels shall describe avoidance/preservation in place. If the Avoidance Alternative is not adopted, and the proposed Project for the entire 3.61 square miles of dust control is adopted by LADWP, and if avoidance of significant archaeological resources on private parcels is deemed infeasible, a data recovery plan shall be implemented for the resources and the impact on archaeological resources would be significant with mitigation. **CR-3. Cultural Resources Construction Monitoring Program.** Impacts to surface and subsurface cultural resources not previously identified shall be mitigated through preparation of a cultural resources monitoring program and its implementation during construction or other ground-disturbing activities. The Cultural Resources Construction Monitoring Program shall include: • The retention of a qualified archaeologist to implement a monitoring and recovery program. The “qualified archaeologist” shall meet the U. S. Secretary of the Interior’s Historic Preservation Professional Qualification Standards for Archaeology. The qualifications of the archaeologist shall be submitted to the responsible agency (CSLC) for approval. • The Lone Pine Paiute-Shoshone tribe shall be contacted prior to the start of Project construction. Qualified Lone Pine Paiute-Shoshone cultural resources monitors shall be afforded an opportunity to be present during earthwork and excavation activities associated with construction of the Phase 9/10 Project. • The qualified archaeologist shall be required to secure a written agreement with a recognized museum repository, such as the University of California, Riverside, regarding the final disposition and permanent storage and maintenance of any unique archaeological resources or historical resources recovered as a result of the archaeological monitoring, as well as corresponding geographic site data that might be recovered as a result of the specified monitoring program. The written agreement shall specify the level of treatment (i.e., preparation, identification, curation, cataloging, etc.) required before the collection would be accepted for storage. • The qualified archaeologist shall provide cultural resources awareness training prior to the start of construction for all construction personnel. Construction personnel shall be briefed on procedures to be followed in the event that a unique archaeological resource, historical era building or structure, or human remains are encountered during construction. A training log shall be kept on-site throughout the construction period. The qualified archaeologist will also prepare and distribute informative Fact Sheets regarding archaeological and Native American sensitivities that provide samples of possible finds and procedures to be followed in the	

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			event of a discovery. The Fact Sheet will also have relevant contact information for the archaeologist, including a telephone number where they can be reached by the construction contractor, as necessary. • The qualified archaeologist shall monitor ground-disturbing activities, including trenching, grading, and other earth-moving activities in each of the Phase 9/10 Project DCAs, including C2-L1, Duck Pond-L1 (including an access road), T10-1-L1 (including an access road), T17-2-L1, T21-L1, T21-L2, T32-1-L1, T35-2-L1, T37-1-L1, T37-2-L1, T37-2-L2, T37-2-L3, T37-2-L4, Duck Pond-L2, T10-3-L1, T21-L3, and T21-L4. In T18S DCA, which was previously disturbed by shallow flooding, the qualified archaeologist will determine monitoring locations and frequency. Monitors will move among construction locations as directed by LADWP in consultation with the cultural resources manager and the construction contractor. Backfilling and removal of previously constructed berms composed of previously disturbed soils generally will not require monitoring. In those areas, it will be up to the discretion of the archaeological monitor to determine which areas will require monitoring and how frequently. The archaeologist will consult with LADWP and LADWP will halt work briefly in a single location as necessary to examine soils and possible archaeological features. The archaeologist shall coordinate with the construction manager to divert work around the discovery of any potentially significant archaeological resource, if any are encountered. In the event of a cultural resources discovery, avoidance measures such as staking a 100-foot buffer (or in case of human remains, steel plating) will be used to prohibit or otherwise restrict access to sensitive areas until a qualified archaeologist can assess the significance of the find according to CRHR criteria. If the resource is determined to be significant, the qualified archaeologist shall prepare and implement a treatment plan in consultation with LADWP. Construction will not recommence in the area until authorized to do so by LADWP. If significant historic era buildings or structures are newly identified during construction activities, then Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) documentation would be prepared to reduce impacts below a level of significance. Under the Avoidance Alternative to the proposed Project, the treatment plan for newly discovered significant archaeological resources will describe avoidance/preservation in place. If the Avoidance Alternative is not adopted, and the proposed Project for the entire 3.61 square miles of dust control is adopted by LADWP, and if avoidance of newly discovered significant archaeological resources is deemed infeasible, a data recovery plan shall be implemented for the resources and the impact on archaeological resources would be significant with mitigation. • If construction personnel discover a cultural resource in the absence of an archaeological monitor, construction shall be halted within 100 feet of the	

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			find, and a qualified archaeologist shall be contacted to perform Phase II excavations to evaluate the resource and recommend the appropriate treatment. If the resource is determined to be significant, the qualified archaeologist shall prepare and implement a treatment plan in consultation with LADWP. Construction will not recommence in the area until authorized by LADWP. • The qualified archaeologist shall ensure that all construction personnel are informed of the requirements to notify the Inyo County coroner within 24 hours of the discovery of human remains on state lands (as required by Public Resources Code 5097). • The coordinates of artifacts, features, and sites will be obtained by the archaeologist, and artifacts from ineligible sites and isolated artifacts discovered during construction will be collected, cataloged, and placed in a dry and secure temporary storage area until the end of the Project, when they will be given to the CSLC for dissemination to the Lone Pine Paiute-Shoshone Reservation. Any artifacts that may be collected from CRHR-eligible sites will be curated at the repository at University of California, Riverside. • The qualified archaeologist shall maintain daily monitoring logs during ground-disturbing activities that shall be submitted weekly to LADWP. A complete set of the daily monitoring logs shall be kept on site throughout the ground-disturbing activities and be available for inspection. The daily monitoring log shall indicate the area monitored, the date, assigned personnel including tribal representatives, and the results of monitoring, including the recovery of archaeological resources, sketches of recovered materials, photographic record, and associated geographic site data. In addition, progress reports that describe new discoveries and issues in the field shall be submitted weekly to LADWP. Within 120 days of the completion of the archaeological monitoring, a monitoring report shall be submitted to LADWP, CSLC, and to the EIC at the University of California, Riverside. The report, when submitted to LADWP, shall signify the completion of the program to mitigate impacts to unique archaeological resources or historical resources. **CR-4. Unanticipated Discovery of Human Remains.** Upon the discovery of human remains, there shall be no further excavation or disturbance of the site or any areas that are reasonably suspected to overlie adjacent human remains until the following conditions are met: • The Inyo County Coroner has been informed and has determined that no investigation of the cause of death is required. • If the remains are of Native American origin, the Native American Heritage Commission (NAHC) will be contacted. In consultation with the Most Likely Descendant, the NAHC and qualified archaeologist shall determine the	

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			treatment and disposition of the human remains and any associated grave goods, with appropriate dignity, as provided in Public Resources Code Section 5097.98. Avoidance of human remains shall be considered to the extent feasible. • If the remains are not of Native American origin, the Inyo County Coroner will make a determination as to the disposition of the remains. Ground-disturbing activities may continue once compliance with all relevant sections of the California Health and Safety Code have been addressed and authorization to proceed issued by the Inyo County Coroner and LADWP. **CR-5. Paleontological Resources Construction Monitoring Program.** Impacts to surface and subsurface paleontological resources not previously identified shall be mitigated through preparation of a written paleontological monitoring plan to be implemented during construction ground-disturbances, including trenching, grading, and other earth-moving activities. Backfilling and removal of previously constructed berms composed of previously disturbed soils would not require monitoring. LADWP shall require that construction monitoring, salvage, and recovery of unique paleontological resources is consistent with standards for such recovery established by the Society of Vertebrate Paleontology (SVP). The Paleontological Resources Construction Monitoring Program shall include: • LADWP shall retain a qualified paleontologist to implement the mitigation plan and maintain professional standards of work. A "qualified paleontologist" is defined as a practicing scientist who meets the qualifications established by the SVP. The qualifications of the paleontologist shall be submitted to the responsible agency (CSLC) for approval. • The qualified paleontologist shall be required to secure a written agreement with a recognized repository, regarding the final disposition, permanent storage, and maintenance of any significant fossil remains and associated specimen data and corresponding geologic and geographic site data that might be recovered as a result of the specified monitoring program. The written agreement shall specify the level of treatment (i.e., preparation, identification, curation, cataloging, etc.) required before the collection would be accepted for storage. In addition, a technical report shall be completed. The final disposition of paleontological resources recovered on State lands must be approved by the CSLC. • The paleontological monitor may be a qualified paleontologist or a cross-trained archaeologist or geologist working under the supervision of a qualified principal paleontologist. The function of the monitor is to identify potential resources and recover them with appropriate scientific data. • LADWP shall require the qualified paleontologist to provide a paleontological resources briefing prior to the start of construction for all construction personnel. Construction personnel shall be briefed on	

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			procedures to be followed in the event that a unique paleontological resource is encountered during construction. A training log shall be kept on-site throughout the construction period. The qualified paleontologist will also prepare and distribute informative Fact Sheets regarding paleontological sensitivities that provide samples of possible finds and procedures to be followed in the event of a discovery. The Fact Sheet will also have relevant contact information for the paleontologist, including a telephone number where they can be reached by the construction contractor, as necessary. • The paleontological monitor shall monitor ground-disturbing activities, including trenching, grading, and other earth-moving activities, in each of the Phase 9/10 Project areas, including C2-L1, Duck Pond-L1 (including an access road), T10-1-L1 (including an access road), T17-2-L1, T21-L1, T21-L2, T32-1-L1, T35-2-L1, T37-1-L1, T37-2-L1, T37-2-L2, T37-2-L3, T37-2-L4, Duck Pond-L2, T10-3-L1, T21-L3, T21-L4, and T18S DCAs. Monitors will move among construction locations as directed by LADWP in consultation with the Project cultural resources manager. Backfilling and removal of previously constructed berms composed of previously disturbed soils would not require monitoring. The monitor shall coordinate with the construction manager to divert work around potentially significant paleontological resources, if any are encountered. • Discovery of fossil-producing localities shall require that stratigraphic columns be measured and that geologic samples be taken for analysis. • If fossil localities are discovered, the paleontologist shall collect controlled samples for processing. All fossils recovered shall be prepared, identified, and cataloged before submission to the accredited repository designated by the lead agency. • In conjunction with the subsurface work, the paleontological monitor shall inspect exposed sediments, including microscopic examination of matrix, to determine if fossils are present. In addition, the qualified paleontologist shall be available on call to respond to unanticipated discoveries. • If construction personnel discover a paleontological resource in the absence of a paleontological monitor, construction shall be halted as directed by LADWP and in accordance with SVP guidelines, a qualified paleontologist shall be contacted to evaluate the resource and make recommendations regarding its treatment. If the fossil material is determined to be significant, the qualified paleontologist shall prepare and implement a treatment plan in consultation with LADWP. Construction activity shall not resume until authorization has been provided by LADWP. • The qualified paleontologist or paleontological monitor shall maintain daily monitoring logs during ground-disturbing activities that shall be submitted weekly to LADWP. A complete set of the daily monitoring logs shall be kept on site throughout the ground-disturbing activities and be available for	

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			inspection. The daily monitoring log shall indicate the area monitored, the date, assigned personnel including the tribal representative, and the results of monitoring, including the recovery of paleontological resources, sketches of recovered materials, photographic record, and associated geographic site data. In addition, progress reports that describe new discoveries and issues in the field shall be submitted weekly to LADWP. Within 120 days of the completion of the paleontological monitoring, a final mitigation report shall be submitted to LADWP, and CSLC with an appended, itemized inventory of the specimens observed and collected. The report should include a list of specimens recovered, documentation of each locality, interpretation of fossils recovered and any technical or specialist's reports as appendices. The report and inventory, when submitted to LADWP, shall signify the completion of the program to mitigate impacts to paleontological resources.	
Geology and Soils	• The site is located in a seismically active area but no habitable structures are proposed. • Soil erosion during construction would be controlled with standard best management practices.	Less than Significant	No mitigation required.	Less than Significant
Greenhouse Gas Emissions	• Construction equipment and gravel hauling trucks would emit greenhouse gases including CO_2, CH_4, and N_2O. Amortized construction emissions would not exceed established thresholds. • No substantial increase in greenhouse gas emissions for Project operation.	Less than Significant	No mitigation required, however, mitigation measures to reduce air emissions would also reduce greenhouse gases from project construction.	Less than Significant
Hazards and Hazardous Materials	• Hazardous materials use limited to fuels, oils and lubricants for construction and maintenance equipment and vehicles. • Project site is not a known hazardous materials site.	Less than Significant	No mitigation required.	Less than Significant
Hydrology and Water Quality	• Construction impacts on stormwater quality would be controlled with standard best	Less than Significant	No mitigation required.	Less than Significant

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
	management practices. • Project would redirect storm flows by installation of berms. Flows would continue toward the brine pool as under existing conditions. • Project is water conserving and would not impact groundwater.			
Land Use and Planning	• Reduction in dust emissions would improve public health and safety, a public trust benefit. • Water conservation, recreational amenities, and habitat enhancements are public trust benefits.	Less than Significant	No mitigation required.	Less than Significant
Land Use and Planning – federal policies	• BLM review of cultural resources on federally-owned Project land is pending. Impacts to archaeological resources on federal lands may conflict with federal land use policies related to cultural resources.	Potentially Significant	Less than significant with the Avoidance Alternative	Potentially Significant with proposed Project; Less than Significant with the Avoidance Alternative
Mineral Resources	• Project would use local mineral resources for Gravel Cover but would not result in a substantial loss of availability of the resource.	Less than Significant	No mitigation required.	Less than Significant
Noise	• Construction vehicles and equipment would (temporarily) increase noise on the lake. Residents are a minimum of 1,200 feet away and noise levels would not exceed established thresholds. • Project operation would result in noise generation from periodic maintenance activities, similar to existing conditions.	Less than Significant	No mitigation required.	Less than Significant

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Population and Housing	• No habitable structures or expansion of growth-inducing infrastructure systems are proposed. • Temporary addition of construction jobs during Project implementation.	Less than Significant	No mitigation required.	Less than Significant
Public Services	• Project does not include habitable structures or other elements that would substantially increase the need for public services.	Less than Significant	No mitigation required.	Less than Significant
Recreation	• Project would not affect population; therefore it would not increase the need for recreational facilities. • Temporary restrictions on public access during construction for safety. • Project includes a visitor overlook (in T18S DCA) and berm roads that would increase public access and recreational opportunities.	Less than Significant for temporary public access restrictions Beneficial impact from creation of additional recreational amenities	No mitigation required.	Less than Significant
Transportation and Traffic	• Construction workers commuting to the site, delivery vehicles and gravel haul trucks would increase traffic on area roadways. • Increased traffic hazard related to gravel haul trucks crossing at SR 136.	Less than Significant for increased traffic volumes Significant for increased traffic hazard	**Trans-1. Traffic Work Safety Plan.** LADWP shall develop and implement a Traffic Work Safety Plan to be approved by Caltrans for the construction phase of the Phase 9/10 Project. The Plan shall address the use of warning lights, signs, traffic cones, signals, flag persons and/or comparable measures as needed to maintain safe travel of haul trucks on SR 136 and SR 190 during construction. **Trans-2. State Road Repair.** LADWP shall repair damage to SR 136 and SR 190 where Project related truck traffic would travel on these roadways. Prior to the start of construction activity, existing conditions on SR 136 and SR 190 shall be documented. After construction is complete, physical damage documented on the portions of SR 136 and SR 190 used for construction of the Phase 9/10 Project shall be repaired. In addition, LADWP shall have its contractor install corrugated steel plates to reduce the possibility of trucks tracking dirt onto the highways. Any debris tracked onto the highways shall be removed in a timely manner.	Less than Significant

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Utilities and Service Systems	• Project does not include habitable structures or other elements that would substantially increase the need for utilities and service systems. • Project is water conserving and would reduce water use on Owens Lake.	Less than Significant	No mitigation required.	Less than Significant

1.6 RELATED PROJECTS AND CUMULATIVE IMPACTS

The related projects include other dust control activities on Owens Lake, solar projects on or near the lake, a Master Project for the dust control measures on the lake, expansion of an existing water bottling plant south of the lake, and a modeling study of the groundwater under the lake.

Aesthetics. The proposed projects listed in **Section 6.1** have the potential to alter aesthetics and views of the lake. The proposed Project plus the existing dust control and the Phase 7a Project (currently under construction), would total approximately 48.6 square miles of DCAs on the lake. Under TwB2 and the Owens Lake Master Project, additional areas of Tillage and Gravel Cover would be installed on the lake. The application of Gravel Cover would alter views of the site; however, the use of gravel from local sources will be consistent in coloration with the Lake bed. The existing network of DCMs on the lake is a highly engineered and managed system. Design of the proposed Project and all future projects would include enhanced habitat areas, recreational amenities, and aesthetic improvements (i.e., meandering edges and transitions to soften the historically straight lines of the berm roads and ponding areas, groupings of boulders, variation in vegetation type and height, variation in rock size and color, etc.). These improvements are anticipated to improve the visual character of some existing areas of dust control on the lake. Overall, the combined visual impact of the proposed Project and the related projects would be less than cumulatively considerable.

Air Quality. Related projects with construction schedules that overlap with construction of the Phase 9/10 Project have the potential for cumulative air quality impacts. Construction of the Crystal Geyser project may overlap with Phase 9/10 Project construction. During any overlap in construction, air pollutant emissions from vehicles and equipment would be emitted from both projects. The EIR prepared for the Crystal Geyser project includes six mitigation measures to be implemented during construction to reduce dust emissions (PCR, 2011). Since particulate matter is the only pollutant out of attainment, and since mitigation would be incorporated into the related projects to minimize fugitive dust emissions during construction, the impact of equipment and vehicle air pollutant emissions during construction would be less than cumulatively considerable.

Operation of the related projects and the Phase 9/10 Project would result in air pollutant emissions from maintenance equipment and vehicles. However, since particulate matter is the only pollutant out of attainment, and since mitigation would be incorporated into projects to minimize fugitive dust emissions during operation, the impact of equipment and vehicle air pollutant emissions during operation is not cumulatively considerable. The operational impact of the Phase 9/10 Project, Phase 7a Project, the Keeler Project, solar projects on gravel cover, and other dust mitigation efforts on the lake would be cumulatively beneficial regarding reduction of PM_{10} emissions.

Less than cumulatively considerable greenhouse gas emissions from the Phase 9/10 Project are discussed in **Section 4.2**.

Biological Resources. The proposed Project would disturb existing areas of Owens Lake, primarily barren playa, and potentially impact wildlife resources during construction. Mitigation measures have been defined in **Section 4.3** to reduce impacts to less than significant levels and the Transition Area has been designed to increase habitat values, consistent with Master Project habitat goals. Similarly, pond and shallow flooding areas are incorporated into the TwB2 project to maintain existing habitat values of Shallow Flooding areas transitioned to Tillage. Implementation of TwB2 will include pond elements to maintain habitat value for shorebirds, waterfowl and diving waterbirds. With the proposed Tillage, the acreage of standing water will be reduced, but design of the pond areas (including proposed habitat islands) will enhance habitat suitability for bird foraging, loafing, roosting and nesting. The OLGEP is focused on defining a groundwater pumping regime for dust control that is protective of existing habitat. The Owens Lake Solar Demonstration Project has been constructed on an existing area of Gravel Cover (part of the Phase 8 Project area) which minimized impacts on biological resources. For related projects that are not yet constructed, it is anticipated that mitigation measures would be incorporated into the projects to reduce impacts on biological resources during construction.

The proposed Project and future dust control projects would be consistent with the Owens Lake Habitat Management Plan (OLHMP) (LADWP, 2010a). The OLHMP serves as a guide for compatibility between construction, maintenance, and operational needs of the dust control program, and the needs of resident and migratory wildlife resources utilizing the Owens Lake Dust Control Area. The overall goal of the OLHMP is to avoid direct and cumulative impacts to native wildlife communities that may result from the dust mitigation program. Implementation of Phase 9/10 Project, and future dust control projects, would be consistent with the resource management actions described in the OLHMP. The OLHMP includes yearly monitoring, including a written report documenting the results of the management techniques, observed effectiveness of the techniques, and suggested improvements for habitat management within the lake bed.

Additionally, each phase of the dust control program is subject to the permitting requirements of the CDFW per the terms of a Lakebed Alteration Agreement under Fish and Game Code Section 1602. For the Phase 7a Project, the Agreement states, "If the project results in increased HVA compared to 2010 values after evaluation of all Phase 7a Project impacts, this surplus habitat value may be applied to future projects through a lake wide planning effort which results in a lake wide plan or project (e.g., Owens Lake Plan). This would require that 1) an Owens Lake Plan is approved by CDFW and 2) a new 1600 Master Agreement is issued by CDFW to implement an Owens Lake Plan." The Phase 7a Project, TwB2 and the Phase 9/10 Project are all predicted to maintain or enhance habitat values for the six bird guilds considered. Therefore, continued use of the HSM together with monitoring of the habitat values of the dust control areas is anticipated to maintain or enhance habitat values over existing conditions. Overall, the impact of the proposed Project and the related projects on biological resources would be less than cumulatively considerable.

Cultural Resources. Projects proposed for Owens Lake and the surrounding area that include ground disturbing activities have the potential to disturb significant cultural resources. Without mitigation, the disturbance to unique historic, archeological, and/or paleontological resources could result in the loss of important information about the prehistoric and historic development in the Owens Lake region.

Significant cultural resources are known for the proposed Project areas and other sites on Owens Lake. The Owens Lake Solar Demonstration Project is also located on the Phase 8 parcel. Within the Phase 8 area, archaeological evaluation and data recovery mitigation has been performed at four prehistoric CRHR-eligible archaeological sites. Each of these sites had been exposed by high winds and shifting sands, which suggests this area is culturally sensitive for possibly unidentified prehistoric archaeological resources that may still be buried beneath the ground surface. Therefore, ground disturbing activities for the Phase 7a Project, including work on the parcels adjacent to Phase 8, is currently being monitored for cultural resources. Similarly, a monitoring program for construction of the Phase 9/10 Project is defined as a mitigation measure for the Project. Since construction related to the TwB2 project would be limited to existing Shallow Flooding areas, impacts to significant cultural resources are not anticipated in these areas. Significant resources identified in the Keeler Dunes would be avoided by project design.

As described in **Section 4.4**, the Phase 9/10 Project would result in significant impacts on cultural resources. Additional impacts from construction of the related projects together with the cultural resources impacts of the proposed project would be cumulatively considerable. However, implementation of the Avoidance Alternative and the mitigation measures outlined in **Section 4.4**, and mitigation as applicable by future related projects would reduce significant impacts on cultural resources to below a level of significance. The combined impact of the Avoidance Alternative and related projects would be less than cumulatively considerable.

Land Use. Combined, the Phase 9/10 Project, the existing dust control system, TwB2, and the currently under construction Phase 7a Project, would result in approximately 48.6 square miles of DCMs on the lake bed. Cumulatively, these projects would reduce dust emissions, an improvement to public health and safety, and a public trust benefit. These projects would also maintain or enhance habitat values while conserving water, additional public trust benefits. The Phase 9/10 Project would include construction on BLM parcels containing cultural resources. While BLM's analysis of the project's impacts on cultural resources is pending, in the case where significant cultural resources are present on BLM project parcels, project constructions activities which damaged these resources could be expected to be considered inconsistent with BLM policies. Therefore, the impact of the proposed Project on federal land use and planning is potentially significant. With adoption of the Avoidance Alternative, the proposed Project and the other related projects would not impact cultural resources evaluated as significant, and therefore would not conflict with any applicable land use plan, policy, or regulation. Therefore, the combined land use impact of the Avoidance Alternative and the related projects would be less than cumulatively considerable.

The Phase 9/10 Project includes public access opportunities for recreation such as a visitor overlook area in T18S and DCA perimeter access berms. If additional dust control or solar projects are developed on the lake, these features could be connected to other recreational amenities, as feasible. This would be consistent with the goals of the Owens Lake Master

Project. Overall, the combined impact on recreation of the proposed Project and the related projects would be less than cumulatively considerable.

1.7 ALTERNATIVES TO THE PROPOSED PROJECT

The following alternatives to the proposed Project were evaluated:

- **No Project** – no construction of dust control on 3.61 square miles of Owens Lake and no transition of 1.82 square miles of existing Shallow Flooding to a hybrid of Shallow Flooding and Gravel Cover.

- **Alternative BACM Scenarios**, including varying combinations of Brine Shallow Flooding, TwB2 and Engineered Roughness.

- **Avoidance Alternative** – Construction of the proposed Project in all areas except 278 acres where there are known significant archaeological sites (plus any areas with significant archaeological resources on federal or private parcels, or discovered during construction).

The No Project Alternative would avoid the significant un-mitigable impacts of the proposed Project on cultural resources, but it would not meet the basic project objective of dust control. Since it would also not increase the vegetated area Duck Pond L-1 ad C 2-L1 DCAs, or improve overall habitat values of the Project areas, the No Project Alternative is not environmentally superior to the proposed Project.

The Alternative BACM Scenarios considered would not maintain or enhance habitat values in the project areas. These alternatives would have significant un-mitigable impacts on cultural resources. All of the scenarios except one incorporate dust control methods, Tillage and Engineered Roughness, with unconfirmed dust control efficacy. Therefore, none of the Alternative BACM scenarios are environmentally superior to the proposed Project.

The Avoidance Alternative would prevent un-mitigable significant impacts on cultural resources that would occur with implementation of the Phase 9/10 Project. Habitat values would be enhanced or maintained and impacts to biological resources would be less than significant. With less construction required, this alternative would have fewer temporary air pollutant emissions during construction than the proposed Project. The Avoidance Alternative would achieve the basic project objective of dust control in approximately 3.18 square miles of the Phase 9/10 Project areas identified as emissive. Under this alternative, dust control with 99 percent efficiency would be implemented. With participation in the CRTF to address future dust control in the environmentally sensitive areas, the Avoidance Alternative would be consistent with the applicable air quality plan. Implementation of the Avoidance Alternative would require implementation of the mitigation measures identified for the Phase 9/10 Project.

1.7.1 Environmentally Superior Alternative

The Avoidance Alternative would protect significant cultural resources, increase vegetated area in Duck Pond L-1 and C2-L1 DCAs, maintain or enhance overall habitat values of the Project areas, and achieve dust control on 3.18 square miles of the lake identified as emissive. With participation in a CRTF to further address the environmentally sensitive areas, the Avoidance Alternative best meets the Project objectives with the least impacts and, therefore, is environmentally superior to the proposed Project and to the other alternatives evaluated.

1.8 GROWTH-INDUCING IMPACTS

The proposed Project does not involve construction of new homes or businesses and does not include construction of new, potentially growth-inducing, infrastructure such as potable water or wastewater systems. The Project would expand the existing system of DCMs on Owens Lake for the improvement of air quality. Infrastructure associated with the OLDMP would not foster population growth. Therefore, the Project would not be directly or indirectly growth-inducing related to expansion of infrastructure systems.

The Project would require approximately 100 construction workers on Owens Lake for 18 months. It is anticipated that these workers would frequent businesses in the Project area during this period. However, due to the limited number of workers required and the temporary nature of construction, the impact on economic growth is less than significant. Operation of the Project would require approximately four additional workers over existing operations and maintenance staff. The impact on economic growth would be less than significant.

1.9 SIGNIFICANT ENVIRONMENTAL IMPACTS FOR WHICH NO FEASIBLE MITIGATION IS AVAILABLE

Construction of the Phase 9/10 Project would significantly impact CRHR-eligible archaeological resources located in the Project areas. As described above, implementation of a Phase III data recovery program for the significant archaeological sites located in the Phase 9/10 Project DCAs is not identified as feasible mitigation for the Project to reduce impacts on archaeological resources to below a level of significance. Implementation of mitigation measures CR-1 to CR-5 would ensure adequate evaluation of cultural materials found during construction, and reduce impacts to below a level of significance for historic era structures or buildings, human remains, and paleontological resources. However, the portions of the 12 CRHR-eligible sites, and any significant archaeological sites on BLM or private property or any significant archaeological sites discovered during construction, that overlap with Project construction areas would still be significantly adversely impacted. Therefore, the impact on archaeological resources after incorporation of feasible mitigation is significant.

As a result of the cultural resource analysis, LADWP has identified an environmentally superior alternative (Avoidance Alternative, **Section 5**) that excludes approximately 278 acres (plus the acreage of significant sites on BLM and private lands, and any significant archaeological sites identified during construction) of the original 3.61 square mile Phase 9/10 Project in order to reduce impacts to significant archaeological resources to a less than significant level.

However, if the Phase 9/10 Project is adopted by LADWP as proposed for all 3.61 square miles of new DCAs, then a Phase III data recovery program would be implemented as a mitigation measure for known significant archaeological sites and the impact of the proposed Project on archaeological resources would be significant with incorporation of mitigation.

1.10 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

As described in **Section 4.4**, the Phase 9/10 Project as originally proposed (3.61 square miles of dust control) would have significant irreversible impacts on archaeological resources. Therefore, an alternative to the Project has been defined. With implementation of mitigation measures, the Avoidance Alternative would have less than significant impacts on archaeological resources.

Construction of the Project would require the use of heavy equipment, workers' vehicles, and gravel hauling trucks. The equipment and vehicles would consume nonrenewable fossil fuels for the length of construction, and during the life of the Project for maintenance. The objective of the Phase 9/10 Project is to implement DCMs on Owens Lake to reduce emissions in accordance with applicable laws without increasing water commitments while, to the extent feasible, maintaining existing habitat values, maintaining aesthetic values, providing safe public access, preserving cultural resources, and utilizing existing infrastructure. Overall, since the Project would improve environmental conditions in the area, the benefits of the Project justify the use of irreplaceable resources (fossil fuels) and the irreversible environmental changes associated with the Project would be less than significant.

With implementation of the Avoidance Alternative and identified mitigation measures, there would be no significant irreversible environmental changes associated with the Phase 9/10 Project.

1.11 AREAS OF KNOWN CONTROVERSY AND ISSUES TO BE RESOLVED

1.11.1 Gravel Cover

Gravel Cover is one of three BACM identified by GBUAPCD as approved for dust control on the lake. While approved by GBUPCD based on its expected efficacy, the land owner for the majority of the lake bed, CSLC, has indicated concerns that Gravel Cover does not protect or promote the Public Trust uses and values of the lake, has little or no value in restoring or protecting wildlife habitat, would eliminate wildlife habitat, and does not facilitate public access and use for public trust purposes (CSLC letter to GBUAPCD dated September 20, 1994; Calendar Item 50, 12/10/10 CSLC meeting; CSLC letter to LADWP on the Phase 7a Project dated March 18, 2013). Notwithstanding these findings, CSLC has indicated its willingness to allow some areas of Gravel Cover to be implemented by the issuance of lease amendments (PRC 8079.9, December 2010) for the Phase 8 Project (2.03 square miles of Gravel Cover) and Phase 7a Project (1.47 square miles of Gravel Cover). However, CSLC has indicated that there is no assurance that future use of Gravel Cover will be allowed (Tenth Amendment of Lease PRC 8079.9, section 2(k), 2011). Therefore, a lease amendment for the Phase 9/10 Project will require additional CSLC review, including review of the proposed Gravel Cover areas.

1.11.2 Cultural Resources

Based on previously conducted and recent (2013, 2014) cultural resources investigations of Owens Lake, numerous prehistoric, historic and paleontological resources are identified in the Phase 9/10 Project areas. As discussed in **Section 4.4** of this EIR, LADWP conducted cultural resources evaluations to determine if the resources are unique (and therefore significant under CEQA). As discussed in **Section 4.4**, implementation of dust control in portions of the Phase 9/10 Project areas may be incompatible with avoidance of known cultural resources. Additionally, construction activities which damaged significant cultural resources located on federal parcels included in the proposed Project may be inconsistent with BLM policies.

1.11.3 Land Ownership

In addition to federal parcels, portions of the Project area are located on privately-owned land. Since permission to install dust control from the private land owners has not yet been received, LADWP's authority to construct the Project in these areas is an issue to be resolved.

Section 2
Introduction

The City of Los Angeles Department of Water and Power (LADWP) is currently implementing the Owens Lake Dust Mitigation Program (OLDMP) on Owens Lake in order to reduce emissions of particulate matter less than or equal to 10 microns in diameter (PM_{10}). LADWP constructs and operates dust control measures (DCMs) on the lake in compliance with Orders from the Great Basin Unified Air Pollution Control District (GBUAPCD) under the authority of California Health & Safety Code Section 42316, legal settlement agreements with GBUAPCD, lease agreements for use of state lands (administered by the California State Lands Commission (CSLC)), and other regulatory approvals.

LADWP has entered into a Stipulated Judgment with GBUAPCD (Superior Court of the State of California Case No. 34-2013-800001451-CU-WM-GDS). The 2014 Stipulated Judgment resolves disputes between the parties regarding the 2011 Supplemental Control Requirements Determination (SCRD), 2012 SCRD, 2013 SCRD and 2014 SCRD; and requires LADWP to prepare a Remedial Action Plan (RAP) to address the 2011 and 2012 SCRD dust control areas (DCAs) identified by GBUAPCD (GBUAPCD, 2011, 2012). This combined RAP will be for the Phase 9/10 Project and will incorporate the existing 2011 SCRD RAP (Phase 9 Project) and the dust mitigation concepts in development for the 2012 SCRD (Phase 10 Project) areas. The RAP will be consistent with the Project description provided in **Section 3** of this EIR. The SCRD requirement and procedure are set forth in GBUAPCD Governing Board Order 080128-01 (January 28, 2008) contained in the 2008 Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan (SIP) (2008 SIP; GBUAPCD, 2008a). The Phase 9/10 Project would encompass 3.61 square miles of DCAs and 1.82 square miles of Transition Area for a total Project area of approximately 5.43 square miles.

To comply with the 2011 SCRD, dust mitigation would be constructed on 13 new DCAs totaling 2.86 square miles of Owens Lake. Best Available Control Measures (BACM) proposed to be installed are: 2.072 square miles of Gravel Cover, 0.237 square miles of Managed Vegetation and 0.547 square miles of Shallow Flood. To conserve water use for the OLDMP, the Project also includes the transition of existing Shallow Flood DCA T18S (1.82 square miles) to approximately 0.81 square miles of Gravel Cover and 1.02 square miles of Shallow Flood.

The 2012 SCRD dust control areas were identified by GBUAPCD based on data for the period of July 1, 2010 through June 30, 2011 (GBUAPCD, 2012). To comply with the 2012 SCRD, Gravel Cover would be installed on four DCAs totaling 0.76 square miles of Owens Lake.

This Environmental Impact Report (EIR) is the California Environmental Quality Act (CEQA) compliance document for the Phase 9/10 Project (also known as the 2011 SCRD and 2012 SCRD Project). The EIR has been prepared in accordance with CEQA, Public Resources Code Section 21000 et seq., and the State CEQA Guidelines, Title 14 California Code of Regulations (CCR) Section 15000 et seq. After environmental review, if the Phase 9/10 Project is adopted, Project elements will be constructed either concurrently or sequentially, in a manner consistent with the Project completion schedule of December 31, 2017 as agreed to in the Stipulated Judgment.

2.1 LEAD AGENCY

LADWP is required to act as lead agency for the EIR, in accordance with State CEQA Guidelines Section 15367 (California Code of Regulations, 2011). LADWP is the largest municipal utility in the nation. Established more than 100 years ago, LADWP's mission is to deliver reliable, safe water and electricity supplies to approximately 4 million residents and businesses in Los Angeles. A five-member Board of Water and Power Commissioners establishes policy for LADWP. The Board members are appointed by the Mayor and confirmed by the City Council for 5-year terms. The Board is the decision-making body for the consideration and adoption of the proposed Project, EIR, Mitigation Monitoring and Reporting Program (MMRP), and Findings of Fact.

2.2 RESPONSIBLE AND TRUSTEE AGENCIES

CEQA defines a "responsible agency" as a public agency, other than the lead agency, which has responsibility for carrying out or approving a project. A responsible agency typically has permitting authority or discretionary approval over some aspect of the overall project for which the lead agency is conducting CEQA review. The responsible agency relies on the lead agency's environmental document in acting on whatever aspects of the project require its approval. The responsible agency must issue its own findings regarding the feasibility of relevant mitigation measures or project alternatives that can substantially lessen or avoid significant environmental effects.

2.2.1 Great Basin Unified Air Pollution Control District

As the agency responsible for implementation of the 2008 Owens Valley PM_{10} Planning Area Demonstration of Attainment SIP (2008 SIP), GBUAPCD is a responsible agency for this project. The GBUAPCD is one of 35 local air pollution control agencies established pursuant to Section 40002 of the California Health & Safety Code (HSC). GBUAPCD has primary responsibility for the control of air pollution from all local sources except emissions from motor vehicles, which are the responsibility of the California Air Resources Board (CARB). The United States Environmental Protection Agency (USEPA) sets limits on how much of a particular pollutant can be present in the air for any given location in the United States. Each air district is responsible for preparing, adopting, and implementing the air quality plans (SIPs) that seek to achieve and maintain state and federal air quality standards, or to regain attainment of standards that have been exceeded. USEPA must approve each SIP, and if a SIP is not acceptable, USEPA can take over enforcing the Clean Air Act (CAA) in that state.

GBUAPCD will prepare a SIP revision by December 31, 2015 that consists of the 2008 SIP Order and the provisions of the 2014 Stipulated Judgment.

2.2.2 Regional Water Quality Control Board

As a permitting agency under the Clean Water Act and state Porter-Cologne Water Quality Control Act, the Regional Water Quality Control Board, Lahontan Region (Regional Board), is also a responsible agency for the Phase 9/10 Project.

2.2.3 California State Lands Commission

A "trustee agency" is a public agency having jurisdiction by law over natural resources affected by a project which are held in trust for the people of the State of California. Trustee agencies include the CSLC with regard to state-owned "sovereign" lands. CSLC describes its mission as serving the people of California by providing stewardship of the lands, waterways, and resources entrusted to its care through economic development, protection, preservation, and restoration. Since the proposed Project involves work on sovereign lands and would require a CSLC lease amendment, CSLC is both a trustee and responsible agency. The existing OLDMP activities are carried out per the terms of General Lease – Public Agency Use, No. PRC 8079.9 authorized by CSLC on June 14, 1999 and executed July 21, 1999, and subsequent amendments.

2.2.4 California Department of Fish and Wildlife

The California Department of Fish and Wildlife (CDFW) is also a Trustee agency. CDFW is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the Fish and Game Code (Section 1602) requires an entity to notify CDFW of any proposed activity that may substantially modify a river, stream, or lake. Since implementation of the Project would require a Lakebed Alteration Agreement from CDFW, CDFW would also be a Responsible Agency.

2.2.5 California Department of Transportation

The Phase 9/10 Project will require encroachment permits from the California Department of Transportation (Caltrans). As a permitting agency for the Project, Caltrans is a Responsible Agency for the Project.

2.3 FEDERAL AGENCIES

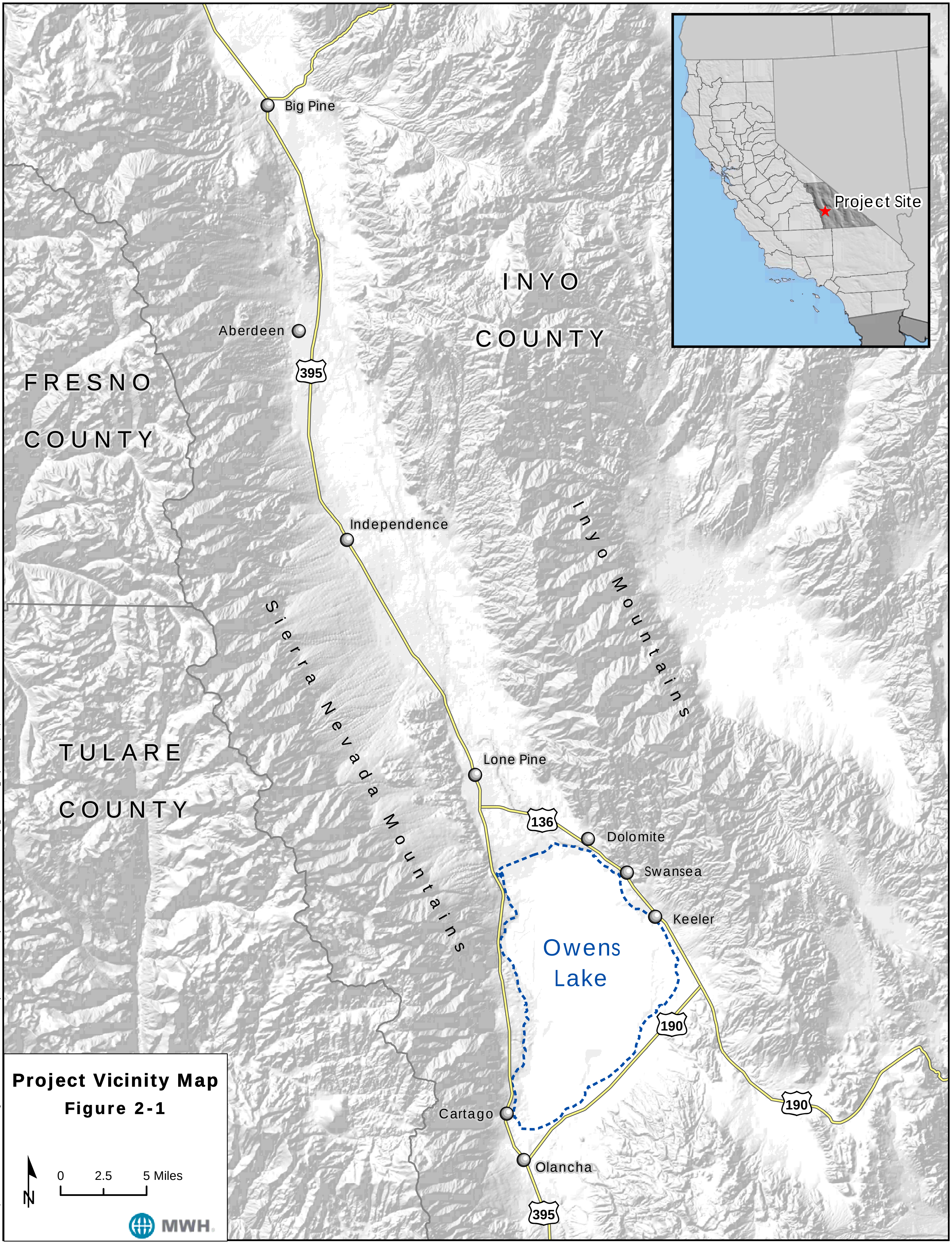
The majority of the Project sites are located on CSLC-administered lands within Inyo County. Portions of the Duck Pond area and T32 DCA are located on land owned and administered by the U.S. Bureau of Land Management (BLM). Construction and operation of the Project on BLM-owned property would require issuance of a right-of-way agreement from BLM. BLM has indicated (Appendix B) that the proposed action is subject to land use conformance and other requirements under the Federal Land Policy and Management Act (FLPMA), environmental review requirements under the National Environmental Policy Act (NEPA), and federal regulations and requirements related to the protection of cultural resources pursuant to Section 106 of the National Historic Preservation Act (NHPA). The Section 106 process would include consultation between BLM and the State Historic Preservation Officer (SHPO) as well as tribal consultation. Additional discussion of coordination with BLM and federal approvals required for the Project is provided in **Sections 2.9** and **4.5**.

2.4 STUDY AREA DESCRIPTION

The study area for the Phase 9/10 Project is 3.61 square miles of Owens Lake (currently predominantly barren playa) proposed for dust control, 1.82 square miles of existing Shallow Flooding proposed for transition to mix of Shallow Flood and Gravel Cover, and adjacent areas that may be disturbed during Project construction, including: buffer areas around DCAs, roadway improvements, turnouts and other infrastructure, and water supply pipelines. The 110-square-mile Owens Lake is located in Inyo County, California, approximately 5 miles south of the community of Lone Pine (**Figure 2-1**) and approximately 61 miles south of the city of Bishop. Owens Lake is bounded by State Route (SR) 136 to the north and east, SR 190 to the south, and U.S. Highway (U.S.) 395 to the west. The Phase 9/10 Project areas are located as noted in **Table 2-1** and **Figure 2-2**. Other nearby communities include Dolomite to the northeast, Keeler to the east, and Cartago and Olancha to the south.

Table 2-1
Locations and Proposed BACM for Phase 9/10 Project Dust Control Areas

DCA	Size (acres)	Proposed BACM	USGS 7.5 Min Quadrangle	Distance to Nearest Community (miles)
Phase 9				
Duck Pond-L1	101	Managed Vegetation	Olancha and Vermillion Canyon	1.3 miles to Olancha
C2-L1	50	Managed Vegetation	Olancha	0.3 miles to Cartago
T10-1-L1	41	Shallow Flood	Vermillion Canyon	6.2 miles to Cartago
T17-2-L1	76	Gravel Cover	Owens Lake	5.8 miles to Keeler
T21-L2	138	Gravel Cover	Keeler	3.8 miles to Keeler
T21-L1	368	Gravel Cover	Owens Lake and Keeler	3.0 miles to Keeler
T37-2-L4	120	Shallow Flood	Bartlett	5.4 miles to Boulder Creek, 8.0 miles to Lone Pine
T37-2-L3	31	Shallow Flood	Bartlett	4.9 miles to Boulder Creek, 7.6 miles to Lone Pine
T37-2-L2	42	Shallow Flood	Bartlett	4.4 miles to Boulder Creek, 7.0 miles to Lone Pine
T37-2-L1	116	Shallow Flood	Bartlett	3.7 miles to Boulder Creek, 6.3 miles to Lone Pine
T35-2-L1	30	Gravel Cover	Dolomite	3.59 miles to Dolomite
T37-1-L1	113	Gravel Cover	Lone Pine	1.5 miles to Boulder Creek, 4.0 miles to Lone Pine
T32-1-L1	600	Gravel Cover	Dolomite	0.68 miles to Dolomite
Transition Area				
T18S	1166	Shallow Flood and Gravel Cover	Owens Lake	3.5 miles to Keeler
Phase 10				
Duck Pond-L2	9	Gravel Cover	Olancha and Vermillion Canyon	1.3 miles to Olancha
T10-3-L1	315	Gravel Cover	Owens Lake and Vermillion Canyon	5.1 miles to Cartago
T21-L3	104	Gravel Cover	Owens Lake and Keeler	2.8 miles to Keeler
T21-L4	56	Gravel Cover	Owens Lake and Keeler	3.7 miles to Keeler


Big Pine
Aberdeen
395
INYO
COUNTY
FRESNO
COUNTY
Independence
Inyo Mountains
Sierra Nevada Mountains
TULARE
COUNTY
Lone Pine
136
Dolomite
Swansea
Keeler
Owens
Lake
190
Cartago
Olancha
190
395
Project Site
Project Vicinity Map
Figure 2-1
N
0
2.5
5 Miles
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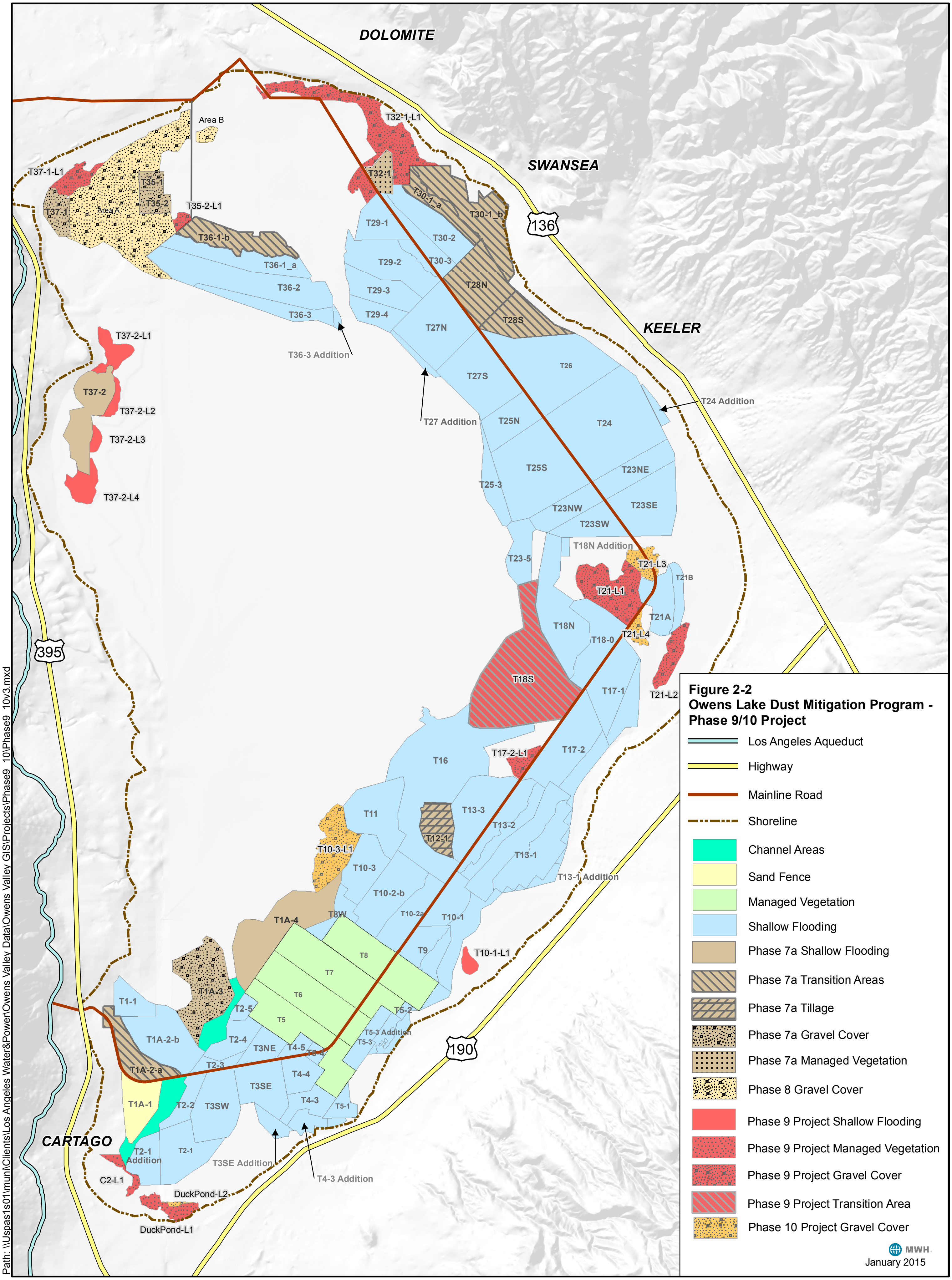

Figure 2-2
Owens Lake Dust Mitigation Program - Phase 9/10 Project

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2.5 PROJECT BACKGROUND

2.5.1 History of the Dust Mitigation Program

In 1987, USEPA revised the National Ambient Air Quality Standards (NAAQS) by replacing total suspended particulates (TSP) as the indicator for particulate matter with PM_{10}. Also in 1987, the USEPA designated the Owens Valley Planning Area (OVPA), an area extending from north of Independence to south of Olancha, and including Owens Lake, as nonattainment for the NAAQS for PM_{10}. The result of this designation was a plan, developed by GBUAPCD, designed to improve air quality through the reduction of PM_{10} emissions in all of the communities in the Owens Valley. The 1997 Owens Valley PM_{10} Planning Area Demonstration of Attainment SIP (1997 SIP) and associated Board Order 070297-04 to the City of Los Angeles (City) mandated specific particulate matter controls to reduce dust emission from Owens Lake. After negotiation, the City and GBUAPCD entered into a Memorandum of Agreement (1998 MOA) in July 1998 to mitigate dust. The 1998 MOA delineated the dust producing areas on the lake bed that needed to be controlled, specified what measures must be used to control the dust, and specified a timetable for implementation of the control measures. The 1998 MOA identified three control measures as BACM for Owens Lake: Shallow Flooding, Managed Vegetation, and Gravel Cover. The 1998 MOA called for phased implementation to permit the effectiveness of the control measures to be evaluated and modifications to be made as the control measures were being installed.

GBUAPCD relies on Section 42316 as authority for requiring the City to undertake reasonable measures, including studies, to mitigate the air quality impacts of its activities in the production, diversion, storage, or conveyance of water. Under Section 42316, the mitigation measures shall not affect the right of the City to produce, divert, store, or convey water and, except for studies and monitoring activities, the mitigation measures may only be required or amended on the basis of substantial evidence establishing that water production, diversion, storage, or conveyance by the City causes or contributes to violations of state or federal ambient air quality standards. The 1998 Owens Valley PM_{10} Planning Area Demonstration of Attainment SIP (1998 SIP), dated November 16, 1998 and the 2003 Revision to the Owens Valley PM_{10} Planning Area Demonstration of Attainment SIP (2003 SIP), dated November 13, 2003, set forth a series of measures and actions to be taken by the City to reduce particulate emissions from the lakebed.

The first phase of dust control implemented by LADWP was Shallow Flooding – which involved flooding the area to be controlled until it is either inundated with a few inches of water or the soil becomes thoroughly saturated. The 2003 SIP called for LADWP to implement DCMs on 29.8 square miles (approximately 19,072 acres) of the Owens Lake by December 31, 2006. The 2008 SIP revised the 2003 SIP to add 15.1 square miles (approximately 9,664 acres; including 1.9 square miles of study areas) of additional DCMs on Owens Lake. As part of Phase 7 Project, LADWP constructed 10.1 square miles (approximately 6,464 acres) of DCAs by the compliance deadline of October 1, 2010. The 2008 SIP's attainment strategy provides that control of 43 square miles (approximately 27,520 acres) of the Owens Lake will result in OVPA achieving attainment of the PM_{10} NAAQS by 2017. Under the Phase 8 Project, 2.03 square miles (approximately 1,299 acres) of Gravel Cover were installed in the northwest portion of Owens Lake in 2012.

As of late 2014, LADWP is constructing Phase 7a Project of the OLDMP, which includes installation of BACM on approximately 2.6 square miles (approximately 1,664 acres) (original 3.1 square miles minus approximately 0.5 square miles of avoided environmentally sensitive areas) and transition of approximately 3.4 square miles (approximately 2,180 acres) of existing Shallow Flood to a combination of BACM in order to provide water supply for new DCAs. The proposed Phase 9/10 Project would further expand the total area of dust control on the lake by an additional 3.61 square miles (approximately 2,312 acres). With the Phase 8 Project, and after construction of the Phase 7a Project and the Phase 9/10 Project, the area of DCMs on the lake would total approximately 48.6 square miles (approximately 31,104 acres).

2.5.2 Summary of OLDMP Key Actions

The sequence of GBUAPCD, LADWP and CSLC key actions relevant to OLDMP is as follows:

- **1998** – The 1998 SIP prepared by GBUAPCD was approved by the USEPA and LADWP began constructing DCMs on Owens Lake with a goal of implementing the controls necessary to meet the federal PM_{10} standards by the end of 2006.

- **November 2003** – GBUAPCD adopted a 2003 SIP and ordered LADWP to implement DCMs on 29.8 square miles (approximately 19,070 acres) of Owens Lake by December 31, 2006.

- **January 2008** – GBUAPCD Governing Board Order No. 080128-01 required the City to implement BACM in 13.2 square miles (approximately 8,448 acres) of Owens Lake; the area is identified as the Phase 7 Project. Under the Phase 7 Project, seven parcels on 3.5 square miles (approximately 2,240 acres) of Owens Lake were proposed for the implementation of Moat and Row DCM.

- **February 2008** – To analyze the environmental effects of the 2008 SIP (GBUAPCD, 2008a), the GBUAPCD prepared and certified a Final Subsequent Environmental Impact Report (2008 SIP FSEIR) (GBUAPCD, 2008b) on February 1, 2008 for inclusion of 15.1 square miles (approximately 9,664 acres) of dust control on Owens Lake.

- **September 2009** – LADWP prepared and certified a Final Supplemental EIR for the Owens Lake Revised Moat and Row DCMs in 2009 (LADWP, 2009) which tiered off the 2008 SIP FSEIR to address changes to the design and operation and maintenance plan for the Moat and Row DCMs.

- **September 2009** – Variance Order GB09-06 provided the City of Los Angeles with additional time (from October 1, 2009 to October 1, 2010) to implement PM_{10} controls in 3.1 square miles (approximately 1,984 acres) of the 13.2 square miles (approximately 8,448 acres) identified in GBUAPCD's Board Order 080128-01. [These 3.1 square miles are identified as the Phase 7a Project.] The Phase 8 Project (dust control on 2.03 square miles (approximately 1,299 acres) in the northwest portion of the lake) was an additional requirement of GB09-06 and was not contemplated in the 2008 SIP.

- **December 2009** - A lease from CSLC for one of the seven Moat and Row parcels (T1A-1) was granted in December 2009 for the installation of sand fences on approximately 0.4 square miles (approximately 256 acres) of T1 A-1; construction of the sand fences was completed in October 2010.

- **April 2010** – CSLC denied the City's application for a lease for the proposed Moat and Row dust control on the 3.1 square miles (approximately 1,984 acres) of the Phase 7a Project.

- **May 2010** – LADWP proposed to amend the project description for the Phase 7 Moat and Row Project to include Tillage on a portion of the project area as an interim DCM. Tillage on 3.1 square miles (approximately 1,984 acres within six parcels) was approved by GBUAPCD, but because of challenges related to soil conditions in five of the six targeted parcels that were outside of LADWP's control, implementation was not completed. An Addendum to the Moat and Row Supplemental EIR prepared by LADWP in May 2010 addressed the change in the project description to add Tillage as an interim DCM. Tillage in T12-1 was completed on November 14, 2012.

- **October 2010** – The Air Pollution Control Officer issued a Notice of Violation (NOV number 471) because the controls were not implemented in the Phase 7a Project areas by the October 1, 2010 deadline identified in GB09-06.

- **December 2010** – GBUAPCD Governing Board Order 101206-01 required the City to implement BACM on 2.03 square miles (approximately 1,299 acres) in an area identified as the Phase 8 Project. [Approximately 0.65 square miles (approximately 416 acres) of the Phase 8 Project areas overlap with the 15.1 square miles (approximately 9,664 acres) of DCMs described in the 2008 SIP.] The Phase 8 Project was an additional requirement of GB09-06 and was not contemplated in the 2008 SIP. The Phase 8 Project, which consists of 2.03 square miles (approximately 1,299 acres) of Gravel Cover, was completed by the November 2012 deadline.

- **March 2011** – GBUAPCD Governing Board Order 110317-01 (the Abatement Order) required implementation of BACM on the 3.1 square miles (approximately 1,984 acres) of the Phase 7a Project and on approximately 3.0 square miles (approximately 1,920 acres) of Transition Areas. Except for the T12-1 BACM test area (tillage test area), the Abatement Order required BACM to be installed and operational by December 31, 2013. Phase 7a Project areas controlled by Managed Vegetation are to be fully-compliant by December 31, 2015. The LADWP Board of Commissioners subsequently adopted four resolutions stating that LADWP's ability to install dust control by the deadlines in the Abatement Order would not be feasible as the result of circumstances beyond its control.

- **August 1, 2011** – GBUAPCD issued the 2011 SCRD. The 2011 SCRD requires dust mitigation on 2.86 square miles (approximately 1,830 acres) of Owens Lake; together with the 2012 SCRD DCMs, this Project is the subject of this EIR. According to GBUAPCD, with the current commitment to control dust from the Channel Area, Phase 7a Project areas and Phase 8 Project areas, LADWP will have reduced PM_{10} emissions by

96 percent. However, since a 99 percent reduction is required to meet the federal PM_{10} standard, additional controls as identified in the 2011 SCRD are required.

- **October 2011** - LADWP Board of Water and Power Commissioners passed a Resolution (012 097) finding that due to adverse weather conditions that kept the soil too saturated to conduct tilling in DCA T12-1, and undefined critical testing standards, the deadline in the Abatement Order to install an approved BACM on the DCA T12-1 may not be feasible.

- **February 2012** – LADWP Board of Water and Power Commissioners passed a Resolution (012 170) finding that due to the unanticipated discovery of extensive historical and unique archaeological resources in the Phase 7a that are eligible for inclusion in the California Register of Historical Resources (CRHR), the deadline in the Abatement Order to install BACM on these areas may not be feasible.

- **April 2012** - LADWP Board of Water and Power Commissioners passed a Resolution (012 210) finding that due to the additional unanticipated discovery of extensive historical and unique archaeological resources in the Phase 7a Project area that are eligible for inclusion in the CRHR, completion of the EIR and finalization of the design of portions of the Phase 7a Project will be delayed, such that the deadline in the Abatement Order to install BACM in these areas may not be feasible.

- **November 16, 2012 –** GBUAPCD issued the Final 2012 SCRD. The 2012 SCRD requires dust control to 0.76 square miles (approximately 484 acres) of Owens Lake; together with the 2011 SCRD DCMs, this Project is the subject of this EIR. In the 2012 SCRD, GBUAPCD identified areas on Owens Lake that caused or contributed to exceedances of the federal 24-hour PM_{10} air quality standard on 16 separate days at seven different monitoring locations during the one year analysis period (July 1, 2010 through June 30, 2011).

  Therefore, GBUAPCD has identified approximately 3.61 square miles (approximately 2,312 acres) of additional PM_{10} controls (Phase 9/10 Project) beyond the approximately 42.5 square miles (approximately 27,200 acres) currently in place and the approximately 2.6 square miles (approximately 1,664 acres) currently under construction (3.1 square miles minus the areas with significant cultural resources).

- **January 2013** - LADWP Board of Water and Power Commissioners passed Resolution 013 157 finding that due to the unexpected discovery of extensive historical and archaeological resources in the Phase 7a Project area and the mandatory requirement under CEQA that LADWP evaluate the potential impacts of the Phase 7a Project on these resources and then act accordingly, the December 31, 2013 deadline in the Order requiring installation of BACM in the Phase 7a Project areas could not be met.

- **August 2013** – LADWP Board of Water and Power Commissioners approved the Settlement Agreement and Release Concerning Modification of the Phase 7a Project Stipulated Order for Abatement and Keeler Dunes Project (2013 Settlement Agreement and Release). This agreement included, among other items, the extension of the schedule for construction of the Phase 7a Project due to unanticipated discovery of extensive cultural resources, creation of a Cultural Resources Task Force (CRTF) and creation of a Phase 7b Project to address Phase 7a Project areas with significant cultural resources.

- **September 2013** – GBUAPCD Governing Board Order 130916-01 adopted the 2013 Amendment to the Owens Valley PM_{10} SIP to revise the dust control requirements of the 2008 SIP.

- **April 2014** – GBUAPCD issued the Final 2013 SCRD. Using data from the period of July 1, 2011 through June 30, 2012, no additional areas of Owens Lake were identified for dust controls.

- **December 2014** – GBUAPCD issued the 2014 SCRD. Using data from the period of July 1, 2012 through June 30, 2013, no additional areas of Owens Lake were identified for dust controls.

- **December 2014** – Superior Court of the State of California approved a Stipulated Judgment (Case No. 34-2013-80001451-CU-WM-GDS) to resolve disputes regarding the 2011 SCRD, 2012 SCRD, 2013 SCRD and 2014 SCRD, and requires LADWP to prepare a RAP to address the Phase 9/10 Project DCAs (2014 Stipulated Judgment). The 2014 Stipulated Judgment sets the timeline for construction of the Phase 9/10 Project (December 31, 2017), identifies future (on or any time after January 1, 2016) additional BACM contingency measures of up to 4.8 square miles (approximately 3,072 acres) of dust control, and clarifies that BACM contingency measures will be waterless or water-neutral with offset of new water use with water savings elsewhere on the lake. Except for the 4.8 square miles of BACM contingency measures and the avoided environmentally sensitive areas, GBUAPCD shall not issue any further orders for dust control on Owens Lake bed beyond the combined 53.4 square miles (approximately 34,176 acres).

  Based on data collected, the 2011, 2012, 2013 and 2014 SCRDs, modeling and experience by GBUAPCD to date, GBUAPCD estimates that the City's control of dust emissions by applying BACM to 48.6 square miles (approximately 31,104 acres) of the dried Owens Lake bed, and GBUAPCD's control of dust emissions from the adjacent Keeler Dunes will reduce emissions in the OVPA such that it can attain the NAAQS.

- **December 2014** – GBUAPCD removed the privately owned land (less than 1 acre) in the Duck Pond-L2 DCA from the Phase 9/10 Project.

2.6 PROJECT OBJECTIVE

The objective of the Phase 9/10 Project is to implement DCMs on Owens Lake to reduce emissions in accordance with applicable laws without increasing water commitments while, to the extent feasible, maintaining existing habitat values, maintaining aesthetic values, providing safe public access, preserving cultural resources, and utilizing existing infrastructure.

2.7 CEQA PROCESS

2.7.1 Notice of Preparation

In July 2014 a CEQA Initial Study was prepared by LADWP based on State CEQA Guidelines Appendix G, to determine whether construction and operation of the proposed Project would result in significant effects on the environment. Impacts to agricultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, mineral resources, noise, population and housing, public services, and recreation were found to less than significant. Impacts to transportation and traffic were found to be less than significant with incorporation of mitigation measures. Aesthetics, air quality and greenhouse gases, biological resources, cultural resources, and land use and planning were carried forward for more detailed analysis as presented in this EIR. A Notice of Preparation (NOP) of the EIR, a long with the Initial Study entitled "Owens Lake 2011 SCRD and 2012 SCRD Dust Control Measures Projects", was prepared and filed with the State Clearinghouse on July 17, 2014. The NOP/Initial Study was distributed to 29 entities, including potential responsible and trustee agencies, and interested organizations and individuals including 10 Native American tribal representatives. An additional 27 interested parties received a NOP and link to the Initial Study on LADWP's website. Reference copies were available at LADWP offices in Los Angeles and Bishop, at five libraries in Inyo County, and via a link on LADWP's website.

A copy of the NOP/Initial Study is included in **Appendix A**. Comments on the scope and content of the EIR were received on the NOP from seven regulatory agencies (**Appendix B**). Information included in this EIR responds to the comments raised at the public meeting and in the comment letters on the NOP.

2.7.2 Public Meeting

A public scoping meeting for the Phase 9/10 Project was held on July 29, 2014 at the LADWP office in Keeler, California. Notice of the meeting was provided in the NOP. Representatives from LADWP, GBUAPCD, BLM, local industry, and Native American tribes attended the meeting. Comments received focused on definition of alternatives, identification of BACM for specific areas, the federal process for environmental review and specifically for cultural resources assessment, and Project schedule.

2.7.3 Native American Consultation

In addition to distribution of the NOP to 10 tribal representatives and invitation to the public scoping meeting, a separate scoping meeting focused on cultural resources issues was held on December 16, 2014 at the LADWP office in Keeler. Native American representatives received notification of the meeting via letters mailed on November 16, 2014. Eight tribal representatives representing five tribes (Bishop Paiute, Lone Pine Paiute-Shoshone, Timbisha Shoshone, Big Pine Paiute, and Fort Independence), the BLM Bishop Field Manager, and GBUAPCD representatives were present at the meeting, which detailed the results of archaeological surveys and excavations in the Phase 9/10 Project areas that have been completed to date. Prior to conducting the archaeological excavations, LADWP notified the Tribal Historic Preservation Officer (THPO) of the Lone Pine Paiute-Shoshone Reservation by phone and email. Tribal monitors have been present during archaeological excavations conducted for the Phase 9/10 Project.

Additionally, as part of a CRTF, LADWP and GBUAPCD have been conducting a series of meetings focused on cultural resources issues for the Phase 7a Project. Formed per a condition of the 2013 Settlement Agreement and Release, the CRTF consists of representatives from LADWP, GBUAPCD, CSLC, the SHPO, the Native American Heritage Commission (NAHC), BLM and Local Tribal Representatives (representing Lone Pine Paiute-Shoshone, Big Pine Paiute, Bishop Paiute, Timbisha Shoshone and Fort Independence Paiute). The meetings have been held approximately monthly since January 2014. The CRTF is advisory in nature only, and GBUAPCD and LADWP each retain final decision-making authority as to the treatment of the areas of the Phase 7a Project with significant cultural resources (known as Phase 7b parcels). GBUAPCD reserves the right to issue a future order or orders requiring LADWP to install DCMS on Phase 7b areas.

As of December 2014, the CRTF has prepared recommendations to the District Governing Board and LADWP, as to the best course of action and timing for the treatment of the Initial Phase 7b Areas. To date, recommendations from the CRTF include rewetting DCAs through the rehabilitation of an existing spring, avoidance and continued monitoring, and review of potential Shallow Flooding methods that could be implemented with no ground disturbance. Task Force members have been updated on the status of the Phase 9/10 Project during CRTF meetings.

2.7.4 Changes to the Project Description since Release of the NOP

The description of the Project included in the Initial Study (**Appendix A**) included a description of conversion of existing Shallow Flood DCA T18S to 1.42 square miles of Gravel Cover and approximately 0.39 square miles of Shallow Flood. Based on habitat assessment, the Project has been refined to include transition of T18S to approximately 0.81 square miles of Gravel Cover and 1.02 square miles of Shallow Flood. Additionally, T10-3-L1 was identified as a Brine Shallow Flood area in the Initial Study. Per the draft RAP, T10-3-L1 is proposed for Gravel Cover. Therefore, updated information is presented in **Section 3**, Project Description.

The Project description in the Initial Study noted DuckPond-L2 as a 10 acre area. However, less than 1 acre of this DCA is located on private land where the owners have modified the property such that no LADWP-constructed dust mitigation would be required. Therefore, GBUAPCD has notified LADWP (letter to Mr. Milad Taghavi, LADWP, from Mr. Theodore Schade, GBUAPCD, dated December 8, 2014) that the portion of DuckPond-L2 on private land will not require further dust controls and can be removed from the Phase 9/10 Project. Therefore, **Section 3** of this EIR notes that DuckPond L-2 is an approximately 9 acre DCA.

The description of Gravel Cover included in the Initial Study indicated that concrete block mat might be used alternatively in areas designated for Gravel Cover. **Section 3** of this EIR clarifies that concrete block mat may be used for berm maintenance and armoring, but is not currently proposed for DCAs identified for Gravel Cover BACM.

2.7.5 Intended Uses of the EIR

The proposed Project was defined to meet the requirements set forth in the 2011 SCRD and the 2012 SCRD. In addition to approval by GBUAPCD of the RAP prepared for the Project, transition of T18S would require compliance with the transition provisions of GBUAPCD Order 080128-01, as modified by the 2014 Stipulated Judgment which allows for 3.0 square miles of Transition Area at one time.

2.8 APPLICABLE PLANS AND POLICIES

The majority of the Project sites are located on CSLC-administered lands within Inyo County. Inyo County designates the land use of the lake bed as SFL (State and Federal Lands). The zoning overlay is OS-40 (Open Space, 40-acre lot minimum). Portions of the Duck Pond area and T32 DCA are located on land owned and administered by the BLM. Portions of DuckPond-L1, C2 and T32 DCAs are under private ownership. As noted above, a less than 1 acre private parcel in DuckPond-L2 has been removed from the Phase 9/10 Project; however, there is also privately-owned land in DuckPond-L1.

2.9 PROJECT APPROVALS

The Phase 9/10 Project would install, operate and maintain approved DCMs in areas identified by GBUAPCD. If the Project is adopted by LADWP, permits and approvals from other agencies are anticipated to include:

- A right-of-way agreement from BLM for construction and operation of dust control on federal land.
- A lease amendment for use of state lands from the CSLC prior to Project construction. GBUAPCD has committed to work with LADWP to secure approval for all proposed BACM controls (letter from Mr. Ted Schade, GBUAPCD Air Pollution Control Officer, to Mr. Martin Adams, LADWP Director of Water Operations, February 15, 2013).

  As part of this process, CSLC would transfer portions of the U.S. Borax mineral lease area to DCA. An amendment to the U.S. borax lease would delete the approved DCA from the mineral lease legal description.
- A land use agreement from the private land owners for portions of Duck Pond, C2 and T32 DCAs, or purchase of the parcels by LADWP.
- Consistent with the previous DCMs installed on Owens Lake, a Lakebed Alteration Agreement per Section 1602 of the Fish and Game Code would be sought from the CDFW.
- LADWP would consult with the U.S. Army Corps of Engineers regarding an amendment to existing Clean Water Act Section 404 permit SPL-2008-00582-BAH for the Phase 7 Project to include construction, operations, and maintenance associated with the Phase 9/10 Project.
- LADWP would submit a request for an amendment to the existing Clean Water Act Section 401 Water Quality Certification from the Lahontan Regional Water Quality

Control Board to include construction, operations, and maintenance associated with the Phase 9/10 Project.

- Construction would be completed in compliance with the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, NPDES NO. CAS000002). Per the General Permit, a Storm Water Pollution Prevention Plan (SWPPP) incorporating best management practices (BMPs) for erosion control would be developed and implemented during Project construction.
- Discharge of water to the Lake for dust control is currently permitted by the Lahontan Regional Board through Waste Discharge Requirements (WDR) for the Southern Zones Dust Control Project (Board Order No. R6V-2006-0036). The Regional Board determined that implementation of the Phase 7a Project does not warrant a revision or amendment to the existing WDR (J. Zimmerman, P.G., Regional Board, pers. comm., 2011). It is anticipated that construction and operation of the Phase 9/10 Project would also be done in conformance with the existing Board Order.
- Use of the SR 136 right-of-way for gravel transport would require approval from BLM and an encroachment permit from Caltrans. Caltrans encroachment permits would also be obtained for access roadways, Dirty Socks Road and other roadways as relevant. The permits would address access, maintenance, legal sized load restrictions and traffic control (i.e., Traffic Work Safety Plan).
- A permit or non-objection letter from Inyo County for the maintenance of the U.S. 395/access road would be sought.
- Relevant archaeological investigation and/or excavation permits would be obtained from the CSLC.
- Additionally, installation of fuel tank(s) at the construction staging areas to serve the haul trucks would require compliance with:
    1) Permit to Operate (1316-00-06) – An air quality permit from GBUAPCD related to vapor recovery.
    2) Certified Unified Program Agency (CUPA) Facility Permit – A hazardous material/waste permit and associated contingency and business plan from the Inyo County Department of Environmental Health Services.
    3) Spill Prevention Control and Countermeasure (SPCC) Plan – For aboveground oil tanks of 1,320 gallons or more, and for fuel trucks when fuel would be left in the truck overnight. The Plan is filed with the Inyo County Department of Environmental Health Services.

2.10 PROJECT SCHEDULE

LADWP will prepare a RAP for the Phase 9/10 Project for submittal to GBUAPCD within 60 days of the court's entry of the 2014 Stipulated Judgment - by February 16, 2015. The RAP will contain the intermediate milestones that provide for Project completion by December 31, 2017.

The EIR for the Project will be considered by the Board of Water and Power Commissioners by July 1, 2015.

2.11 AREAS OF KNOWN CONTROVERSY AND ISSUES TO BE RESOLVED

CEQA Guidelines Section 15123 requires that EIRs contain a discussion of areas of known controversy and issues to be resolved.

2.11.1 Gravel Cover

Gravel Cover is one of three BACM identified by GBUAPCD as approved for dust control on the lake. While approved by GBUPCD based on its expected efficacy, the land owner for the majority of the lake bed, CSLC, has indicated concerns that Gravel Cover does not protect or promote the Public Trust uses and values of the lake, has little or no value in restoring or protecting wildlife habitat, would eliminate wildlife habitat, and does not facilitate public access and use for public trust purposes (CSLC letter to GBUAPCD dated September 20, 1994; Calendar Item 50, 12/10/10 CSLC meeting; CSLC letter to LADWP on the Phase 7a Project dated March 18, 2013). Notwithstanding these findings, CSLC has indicated its willingness to allow some areas of Gravel Cover to be implemented by the issuance of lease amendments (PRC 8079.9, December 2010) for the Phase 8 Project (2.03 square miles of Gravel Cover) and Phase 7a Project (1.47 square miles of Gravel Cover). However, CSLC has indicated that there is no assurance that future use of Gravel Cover will be allowed (Tenth Amendment of Lease PRC 8079.9, section 2(k), 2011). Therefore, a lease amendment for the Phase 9/10 Project will require additional CSLC review, including review of the proposed Gravel Cover areas.

2.11.2 Cultural Resources

Based on previously conducted and recent (2013, 2014) cultural resources investigations of Owens Lake, numerous prehistoric, historic and paleontological resources are identified in the Phase 9/10 Project areas. As discussed in **Section 4.4** of this EIR, LADWP conducted cultural resources evaluations to determine if the resources are unique (and therefore significant under CEQA). As discussed in **Section 4.4**, implementation of dust control in portions of the Phase 9/10 Project areas may be incompatible with avoidance of known cultural resources. Additionally, construction activities which damaged significant cultural resources located on federal parcels included in the proposed Project may be inconsistent with BLM policies.

2.11.3 Land Ownership

In addition to federal parcels, portions of the Project area are located on privately-owned land. Since permission to install dust control from the private land owners has not yet been received, LADWP's authority to construct the Project in these areas is an issue to be resolved.

Section 3
Project Description

3.1 PROJECT DESCRIPTION

The Phase 9/10 Project is a single project comprised of elements to meet the requirements of both the 2011 SCRD and the 2012 SCRD. To comply with the 2011 SCRD, the Project includes 1,828 acres (2.86 square miles) of new dust mitigation on 13 DCAs and 1,166 acres (1.82 square miles) of transitioned dust control in one DCA for a total area of 2,994 acres (4.68 square miles) (**Figure 2-2**). To comply with the 2012 SCRD, the Project includes dust mitigation on another four new DCAs totaling 484 acres (0.76 square miles). **Table 3-1** notes the area of each DCA as well as the estimated total area of construction disturbance, and the type of BACM proposed (Managed Vegetation, Shallow Flood or Gravel Cover). Berm construction would temporarily disturb up to 50 feet from the DCA boundary; a 25-foot buffer is assumed as an average for the total area of construction disturbance. Installation of BACM would require land leveling; berm creation; gravel application; seeding and planting; installation of surface and/or subsurface irrigation pipelines; excavation for pond creation and installation of associated electrical, mechanical and communication systems.

Water demand related to implementation of BACM on the new DCAs would be balanced with water conservation measures at an existing DCA, T18S. The 1,166 acres of T18S was previously disturbed for the installation of Shallow Flooding DCM in an earlier phase of the OLDMP. Construction in this area would generally occur within the existing berm surrounding the DCA.

The Project also includes: construction of drainage management unit pump stations, lateral control valve facilities, and pipe outfalls; new berm and access roads; new rip-rap to improve existing berms; and new submains to convey water from T2-1 DCA to Duck Pond-L1 and C2-L1 DCAs.

Table 3-1
Phase 9/10 Project Best Available Control Measures

DCA	Area (square miles)	Area (acres)	Total Estimated Area of Construction Disturbance (acres)	BACM
Phase 9				
Duck Pond-L1	0.16	101	109	Managed Vegetation
C2-L1	0.08	50	57	Managed Vegetation
T10-1-L1	0.06	41	44	Shallow Flood
T17-2-L1	0.12	76	81	Gravel Cover
T21-L2	0.22	138	146	Gravel Cover
T21-L1	0.58	368	379	Gravel Cover
T37-2-L4	0.19	120	127	Shallow Flood
T37-2-L3	0.05	31	34	Shallow Flood
T37-2-L2	0.06	42	47	Shallow Flood
T37-2-L1	0.18	116	124	Shallow Flood
T35-2-L1	0.05	30	33	Gravel Cover
T37-1-L1	0.18	113	120	Gravel Cover
T32-1-L1	0.94	600	632	Gravel Cover
Phase 9 Totals	**2.86**	**1,828**	**1,934**	
Phase 10				
Duck Pond-L2	0.02	9	11	Gravel Cover
T10-3-L1	0.49	315	326	Gravel Cover
T21-L3	0.16	104	109	Gravel Cover
T21-L4	0.09	56	59	Gravel Cover
Phase 10 Totals	**0.76**	**485**	**506**	

DCA – dust control area
BACM – best available control measure

3.1.1 Shallow Flood

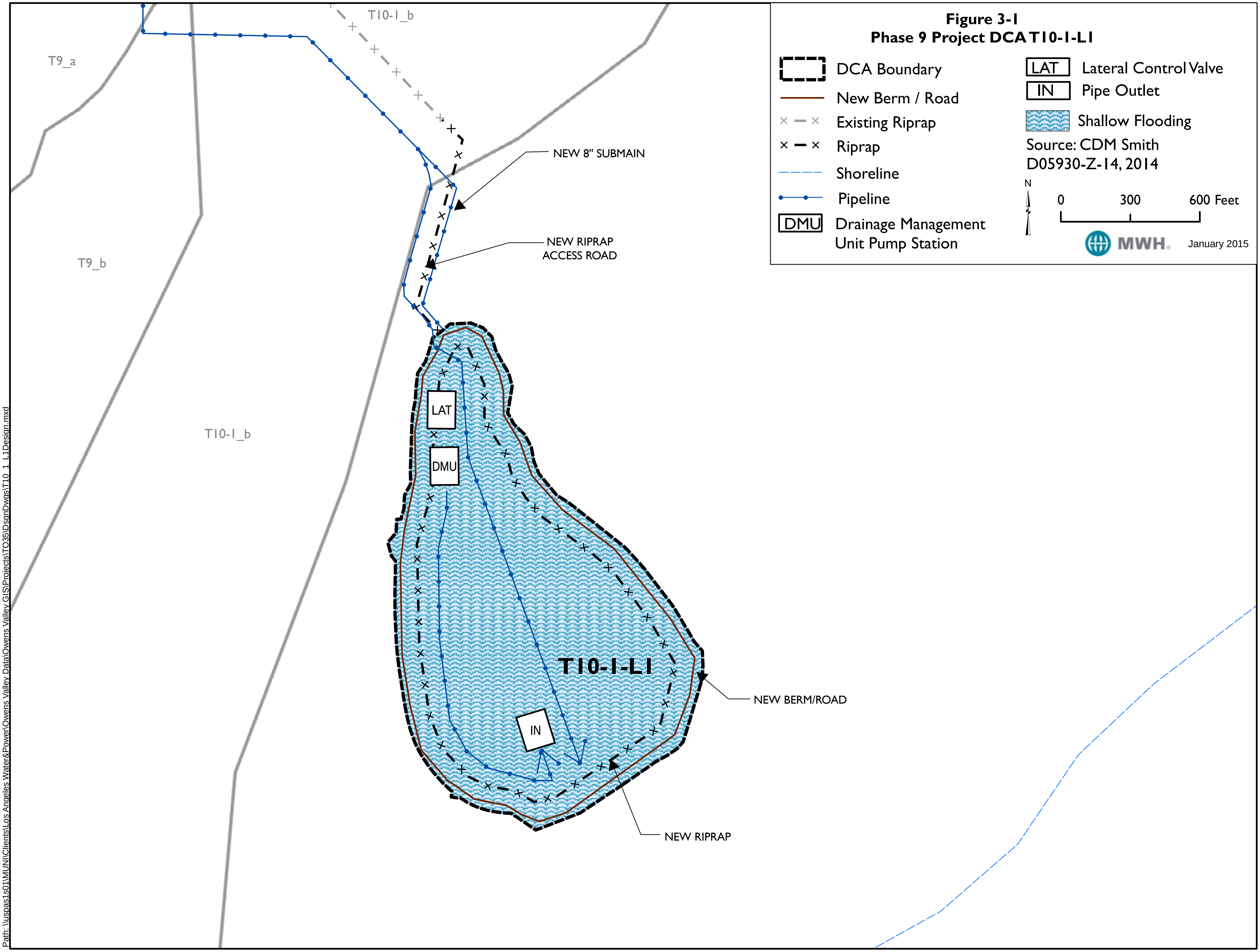
3.1.1.1 Shallow Flood Description

This DCM consists of releasing fresh and/or recycled water into a DCA and allowing it to spread, wet the surface, and thereby suppress windborne dust during the dust season (October 1st to June 30th). In order to meet the 99 percent dust control efficiency standard, generally 72 percent of the surface must be wet or have saturated soil (75 percent wetness coverage is required for areas identified in the 2003 SIP). The coverage requirement for the 99 percent dust control areas can be reduced progressively during the spring shoulder season (May 16th to June 30th); 70 percent areal wetness cover from May 16th to May 31st; 65 percent areal wetness cover from June 1st to June 15th; and 60 percent areal wetness cover from June 15th through June 30th. The fall shoulder season is October 1st to October 15th; full levels of dust control are not required until October 16th. The performance requirements for Shallow Flood BACM are set forth in detail in the 2008 SIP (GBUAPCD, 2008a).

Areas of Shallow Flood would have water applied through sprinklers along lateral pipes served by submains (4- to 24-inch diameter buried pipelines) from the main line. Applied water would flow down–slope and pond. The area would be maintained such that applied water spreads out, ponding or saturating at least 72 percent of the land surface. Shallow Flood would result in shallow-ponds (1 to 6 inches deep), deeper ponds (1 to 2 feet deep), saturated soil surfaces and unsaturated areas. Submain pipes supplying water to the DCAs would be high density polyethylene (HDPE). The network includes a modified whipline array (either buried or above grade HDPE), spaced approximately 80 feet apart. The whipline array includes sprinkler heads spaced approximately 60 to 80 feet apart. Laterals up to 4,000 feet in length would have risers with drains at the end. Lateral valves would be placed at each intersection with the mainline. Flush lines would be incorporated for lateral and whipline drainage. The flush system would enable: water recycling to another DCA, emptying of the piping system to prevent damage from freezing, and sediment removal. Small pump stations (generally two variable speed 50 HP pumps) may be located at the lowest point to drain the system. Based on individual soil conditions in each DCA, portions of the irrigation system may be installed above ground.

Shallow Flood is proposed for T10-1-L1 (**Figure 3-1**), T37-2-L1,2,3,4 (**Figures 3-2, 3-3, 3-4,** and **3-5**), and T18S DCAs. T10-1-L1 DCA is located adjacent to existing Shallow Flood at T9 and T10-1 DCAs on the southeast side of the lake. T37-2-L1,2,3,4 DCAs are located adjacent to Shallow Flood areas currently being installed for Phase 7a; BACM in these DCAs would be similar to the Shallow Flood being installed for the Phase 7a Project and would result in areas of standing water less than 2 feet deep, saturated soil surfaces and unsaturated areas.

The initial RAP for the 2011 SCRD identified 250 acres of pond for T18S DCA. However, based on habitat assessment, the overall area of ponds has been expanded to 650 acres. Shallow Flood in T18S DCA would include two deep water ponds (125 and 126 acres) and two shallow ponds (315 and 85 acres) (**Figure 3-6**). The remainder of T18S DCA (516 acres) would have Gravel Cover installed for dust control. T18S DCA would also include recreational amenities such as berm roads for access and a visitor overlook area.



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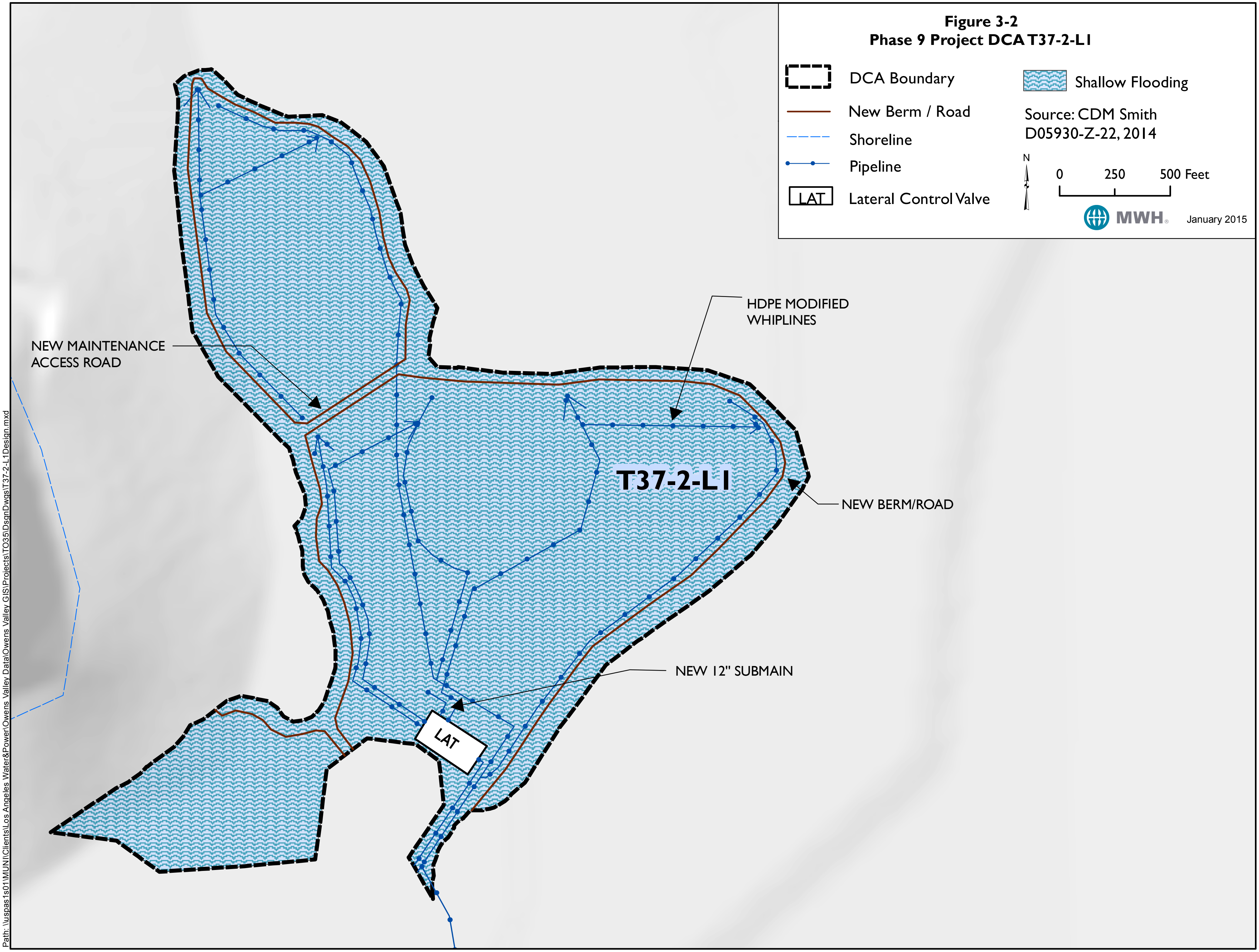
Figure 3-2
Phase 9 Project DCA T37-2-L1
DCA Boundary
New Berm / Road
Shoreline
Pipeline
LAT
Lateral Control Valve
Shallow Flooding
Source: CDM Smith
D05930-Z-22, 2014
N
0
250
500 Feet
MWH
January 2015
HDPE MODIFIED
WHIPLINES
NEW MAINTENANCE
ACCESS ROAD
T37-2-L1
NEW BERM/ROAD
NEW 12" SUBMAIN
LAT
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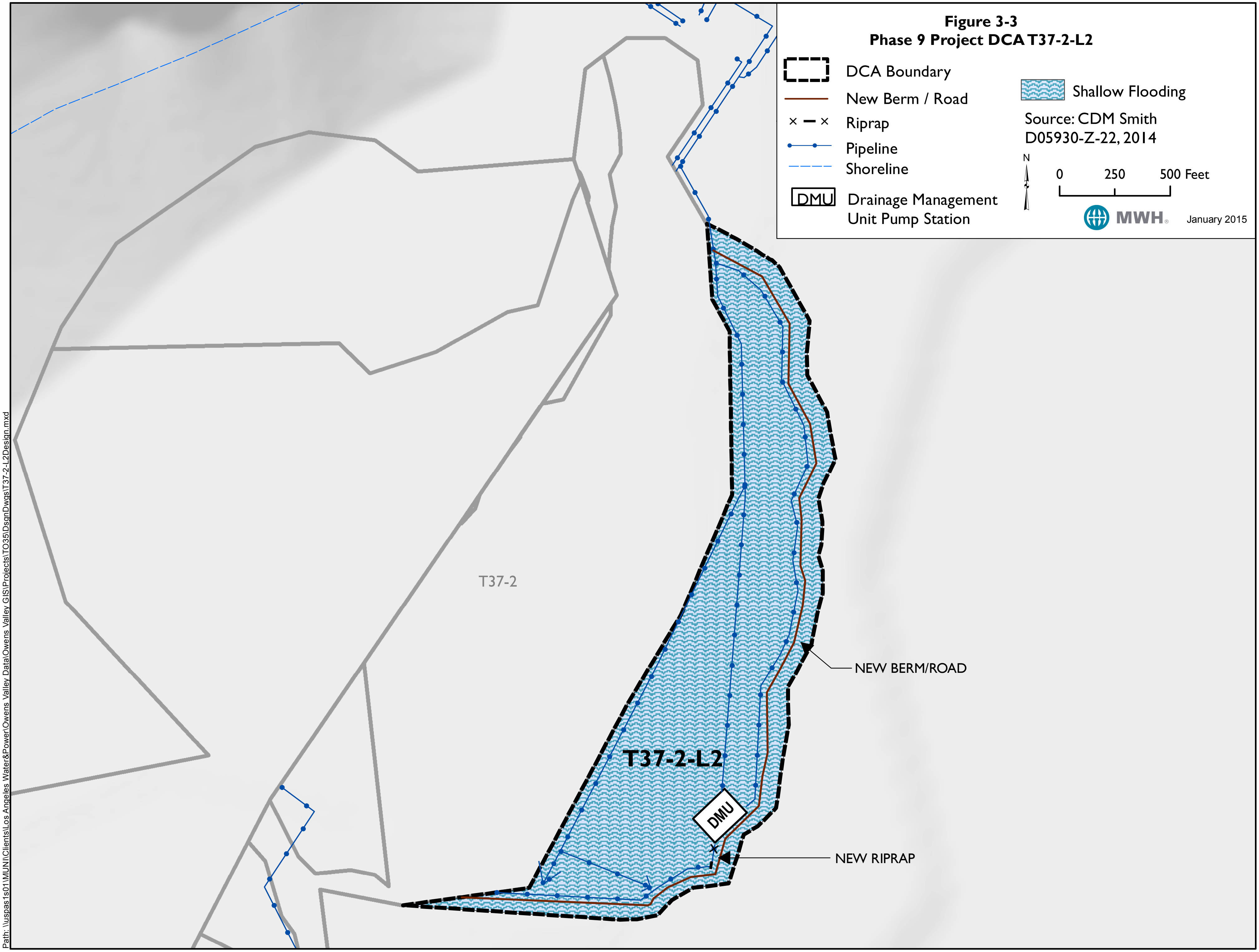
Figure 3-3
Phase 9 Project DCA T37-2-L2
DCA Boundary
New Berm / Road
Riprap
Pipeline
Shoreline
DMU Drainage Management Unit Pump Station
Shallow Flooding
Source: CDM Smith
D05930-Z-22, 2014
N
0
250
500 Feet
MWH
January 2015
T37-2
T37-2-L2
DMU
NEW BERM/ROAD
NEW RIPRAP
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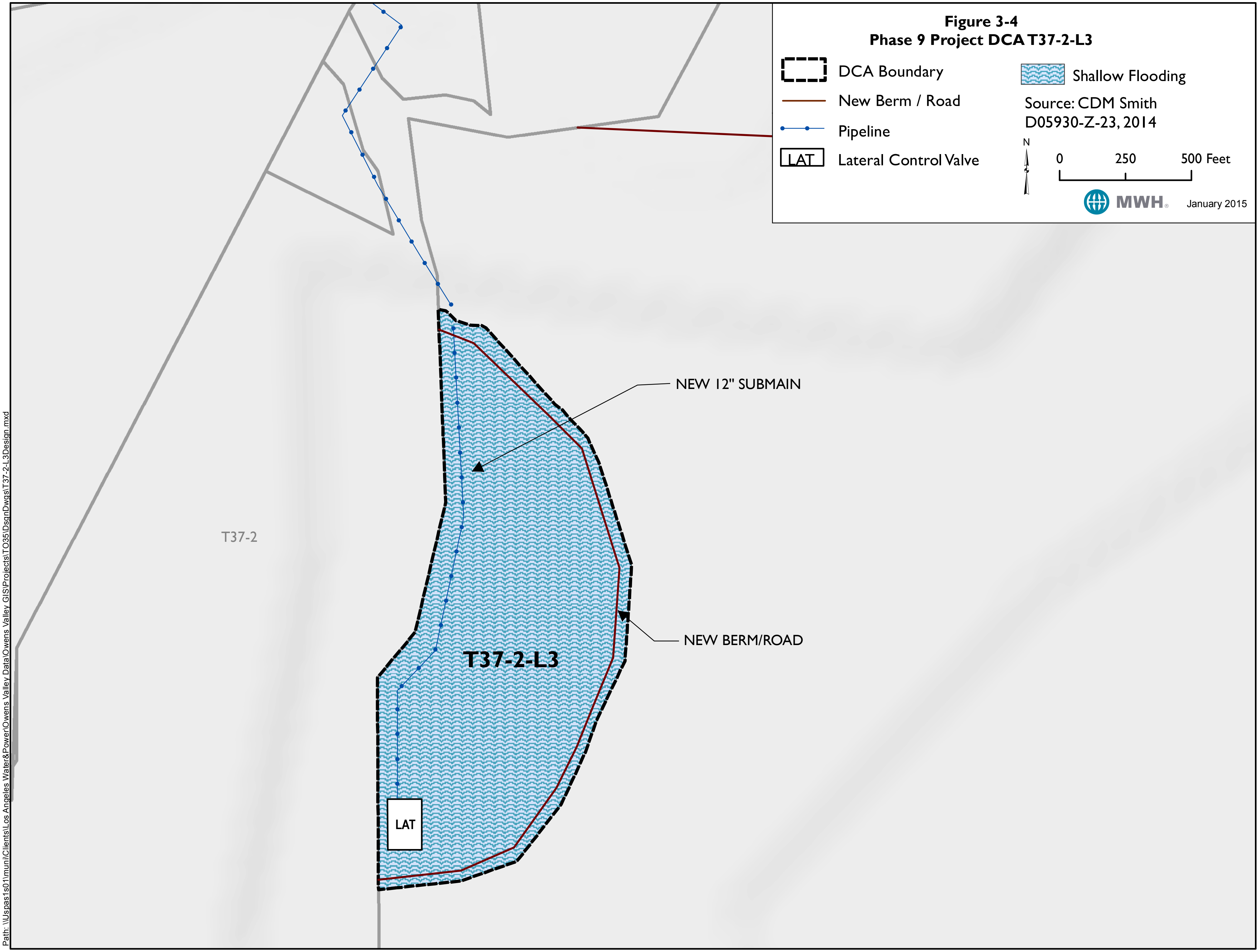
Figure 3-4
Phase 9 Project DCA T37-2-L3
DCA Boundary
New Berm / Road
Pipeline
LAT
Lateral Control Valve
Shallow Flooding
Source: CDM Smith
D05930-Z-23, 2014
N
0
250
500 Feet
MWH
January 2015
NEW 12" SUBMAIN
NEW BERM/ROAD
T37-2
T37-2-L3
LAT
Path: \\Uspas1s01muni\Clients\Los Angeles Water&Power\Owens Valley Data\Owens Valley GIS\Projects\TO35\DsgnDwgs\T37-2-L3Design.mxd

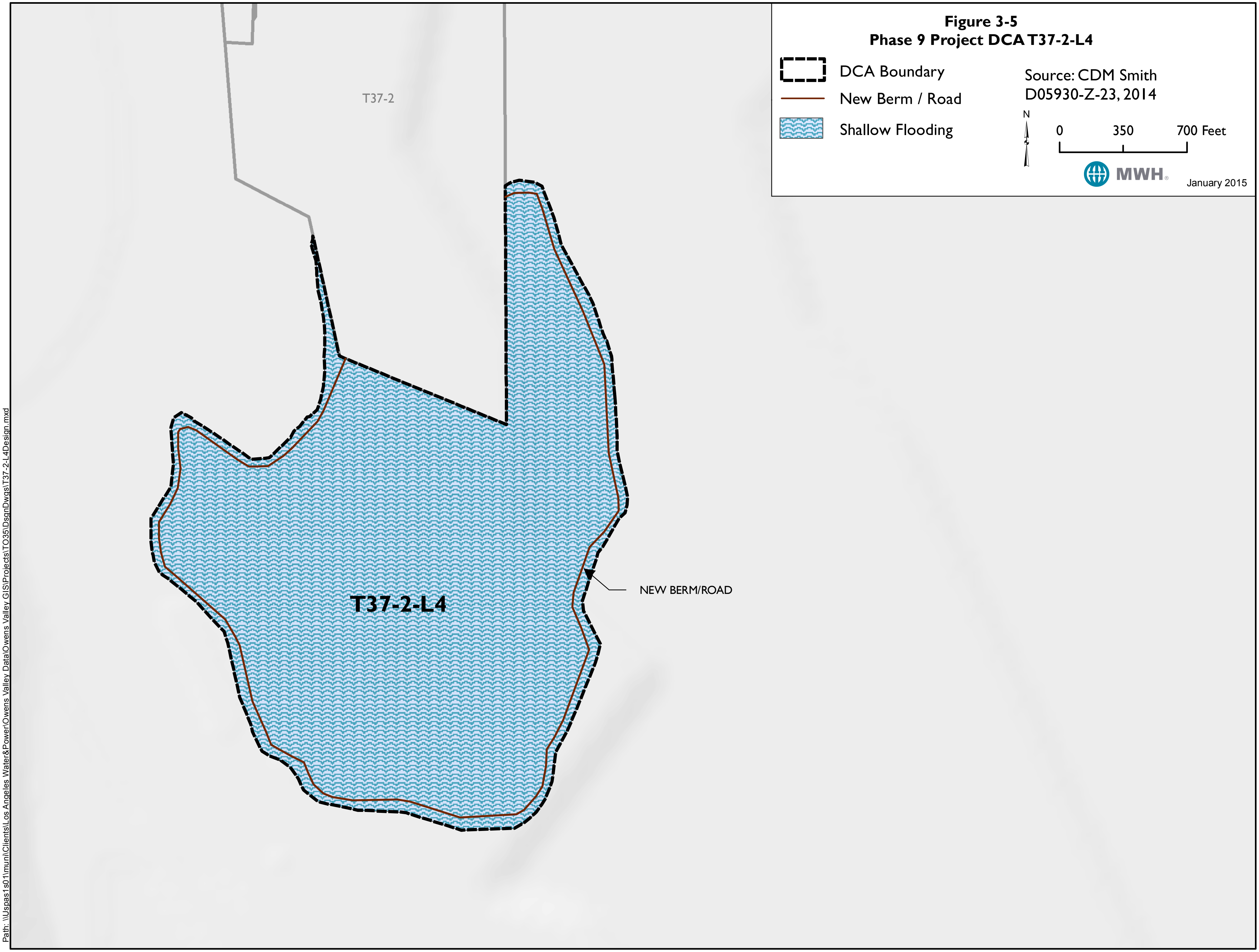
Figure 3-5
Phase 9 Project DCA T37-2-L4
DCA Boundary
New Berm / Road
Shallow Flooding
Source: CDM Smith
D05930-Z-23, 2014
N
0
350
700 Feet
MWH
January 2015
T37-2
T37-2-L4
NEW BERM/ROAD
Path: \\Uspas1s01\muni\Clients\Los Angeles Water&Power\Owens Valley Power\Owens Valley Data\Owens Valley GIS\Projects\TO35\DsgnDwgs\T37-2-L4Design.mxd

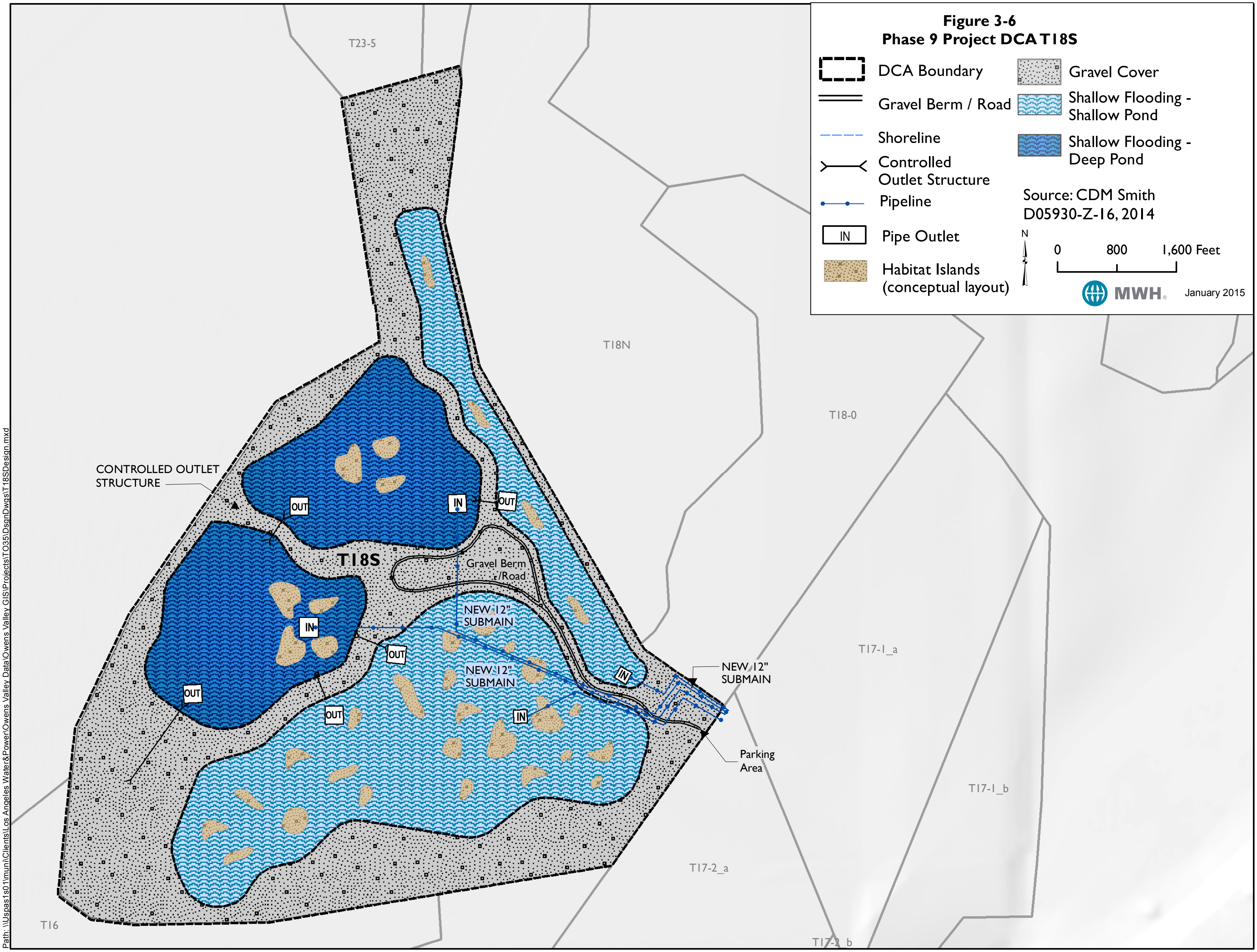

Figure 3-6
Phase 9 Project DCA T18S

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Brine Shallow Flood. The GBUAPCD Governing Board approved Brine Shallow Flood as BACM in Board Order 130916-01 (September 16, 2013). When applied to the lakebed, Brine concentrates into a stable crust that would be expected to prevent dust emissions. While development of a salt crust is anticipated to provide adequate dust control, the Board Order requires Brine Shallow Flood areas to meet the requirements for saturated soils as described above for Shallow Flood. The Order notes that the Air Pollution Control Officer will develop a Brine Shallow Flood BACM compliance methodology with input from LADWP. LADWP will continue to work with GBUAPCD to develop a BACM standard for salt crust deposit using Brine Shallow Flood.

Turnout Facilities. Water to the Shallow Flood DCAs would be distributed via area turnouts. Turnouts consist of above grade piping, pressure reducing valves (PRV), control valves (CV), magnetic flow meters (or flow elements, FE), isolation valves, combination air-vacuum release valves (CARV), pressure indicating transmitters (PIT), filtering system control valve filters, electric equipment, and monitoring and automatic control instrumentation. The turnouts are typically constructed on raised earthen pads adjacent to the DCAs. The turnouts include mechanical equipment and electrical equipment on concrete pads. New turnouts or expansions to existing turnouts may be required for expansion of the DCMs. The turnouts would be connected to the zonal mainline that is a continuous loop connecting to the Los Angeles Aqueduct at the north and south ends of the OLDMP area. A picture of a typical turnout is included as **Figure 3-7**.

Water enters a Shallow Flood area through PRVs, located at the turnouts. The turnouts distribute freshwater to the DCAs via area Shallow Flooding submains. The PRVs at the turnouts function to lower the zonal mainline pressure to the submain operating pressure for the shallow flood submains. The PRVs at the laterals function to control and further lower the Shallow Flooding submain pressure to the lateral operating maximum pressure.

The PRVs at the turnouts are hydraulically controlled valves. These valves operate by using pilot water (supplied by the freshwater from the submains) to control the valves. The freshwater from the submains contains large quantities of sediments. To prevent the PRVs from clogging, the pilot water is diverted through a separate pilot water filtration system. Tailwater and drainwater pump stations collect and recirculate flow within a given Shallow Flood area to optimize water use within the irrigated zone and minimize loss of water offsite.

Figure 3-7
Existing Turnout (T1A-2 DCA) on Owens Lake

3.1.1.2 Shallow Flood Construction

Shallow Flood construction activities would include:

- Installation of new turnouts, as applicable
- Land leveling
- Installation of berms
- Pipe and electrical cable excavation
- Placement of irrigation pipes and sprinklers

To the maximum extent feasible, earthwork in each area would be balanced onsite. As suitable, onsite material would be used to build berms and turnout earthen pads. Excess soil from one DCA may be relocated to other areas of the lake for reuse. In some cases, suitable material may be disked and spread to reduce moisture content before placement. Sand bedding, base course and riprap would be imported to the DCAs. It is anticipated that this material would be obtained from local gravel production operations such as the Federal White Aggregate (F.W. Aggregate) Dolomite mine. The LADWP Shale Borrow Pit will continue to be used for berm replacement material.

Land leveling would be performed based on existing topography to achieve 72 percent surface cover of water and in consideration of excavation of suitable material for berm and turnout pad construction. Grading of Shallow Flood areas would be required for construction of perimeter berms and maintenance roads. Based on soil conditions in individual DCAs, the irrigation system may be installed above ground, which would reduce required earthwork. It is anticipated that berm heights would vary from 3 to 5 feet or less and the turnout earthen pads may range up to 5 to 8 feet in height to protect facilities from localized flooding. Over excavation would be done underneath proposed earthen berm alignments to remove any unsuitable material. Geotextile fabric would then be placed directly on the existing surface to create a firm base. The earthen berm would be constructed over the geotextile fabric (HDPE, minimum of 40 mils thick). Earthen berm side slopes would have a 3:1 slope and be armored with a 4-inch thick layer of up to 2-inch-diameter gravel.

3.1.2 Managed Vegetation

3.1.2.1 Managed Vegetation Description

Vegetation on the playa reduces sand motion and soil erosion. Aboveground cover acts as a wind break, lowering the velocity at the playa surface. Managed Vegetation is proposed for up to 101 acres of Duck Pond-L1 DCA and up to 50 acres of C2-L1 DCA (**Figure 3-8)**. Duck Pond L-1 DCA is mostly barren playa with some wetland. The dry alkali meadow has saltgrass (*Distichlis spicata*) and alkali pink (*Nitrophila occidentalis*). C2-L1 DCA is mostly barren playa with areas of low cover desert saltbush scrub, dry alkali meadow and wet areas. The dry alkali meadow is dominated by saltgrass (*Distichlis spicata*), desert saltbush scrub has saltbush (*Atriplex parryi*) and boraxweed (*Nitrophila occidentalis*) with an understory of saltgrass and wetland areas have wirerush (*Juba* sp.) and salt grass, among other species. Existing saltgrass areas that are disturbed for the installation of irrigation lines would likely respread. Once the Project is constructed, Managed

Vegetation in Duck Pond-L1 and C2-L1 DCAs may include areas that are shrub dominated and other areas that are predominantly meadow. It is assumed that upgradient, less saline, areas would be shrub dominated.

Saltgrass (*Distichlis spicata*) has been cultivated and maintained as a vegetation dust control measure on existing DCAs T5 through T8, located in the southeastern portion of the lake. Additional acreage of Managed Vegetation in a farm-like monoculture is not proposed. A revised plant species list for Owens Lake BACM was developed in 2010 and has been approved by GBUAPCD. The plant species on this list meet the locally-adapted native criterion specified by the 2008 SIP. In addition to saltgrass, 39 species have been proposed to increase the habitat diversity of the Managed Vegetation areas and increase the diversity and amount of seed produced on the playa for use in future projects. The final species mix is anticipated to contain 20 to 25 species and would depend on the availability of planting material, and suitability of species to soil and hydrologic conditions. The initial cover may be achieved by fast-growing species, but after time, the stand would probably change and diversify, partly from planted material, and partly from volunteer plants established from windblown seed.

Seed would be obtained from commercial sources, and additional seed of most species would be collected. Typically, seeds would be collected from locally adapted native seed sources on and adjacent to Owens Lake. Seed of some herbaceous species may be multiplied by planting in managed areas and then harvested . Once collected and cleaned, seed would be tested for germination, dried and stored. Before planting, some seed may require special treatment to break dormancy. If the full complement of desired species is not available initially, the area may be over-seeded or interplanted with additional species in the future. While seeding is preferred, some species may also be transplanted to accelerate establishment of vegetative cover. The finished habitat would consist of a variety of plants native to the Owens Lake area.

The goal would be to establish a compliant vegetative cover as quickly as possible. In Managed Vegetation areas, water supply and seeding and/or planting may result in variable percent cover in different parts of the DCAs. Site-specific soil and drainage conditions may affect the success of vegetation efforts. However, often these areas with little to no vegetative cover have saturated soils that would help maintain overall dust control efficiencies.

Vegetative cover is assessed each fall, and compliance is determined by comparing cover levels with criteria contained in the revised (2011) BACM definition. These new criteria require that any new Managed Vegetation areas shall be established to have the same vegetation cover as the existing, proven-effective Managed Vegetation area. The proposed compliance prescription requires a blend of minimum vegetation covers that mimic the cover distribution on the existing site. Although an overall average vegetation cover of 37 percent is required, the cover at any point can vary significantly from the average. Satellite imagery and ground-truthing are used to develop a map that shows percent vegetation cover on each acre of the area. These covers are then grouped into “bins” that take into account the size of an area and the average cover over that area. For example, although the overall average must be at least 37 percent, 95 percent of any mix of 100-acre blocks must have more than 5 percent cover, 90 percent must have at least 10 percent cover and 77 percent must have at least than 20 percent cover (GBUAPCD, 2011).

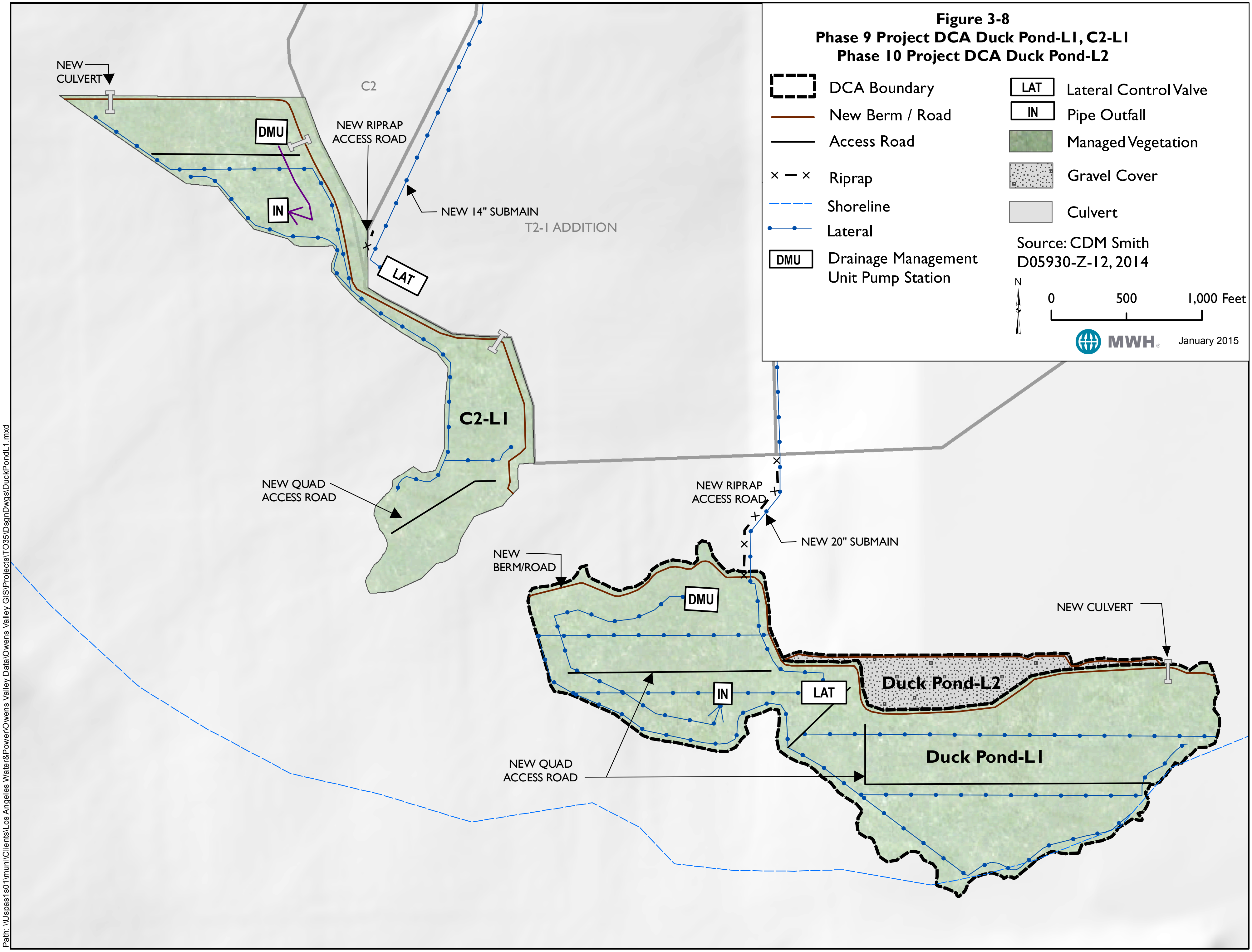


Figure 3-8
Phase 9 Project DCA Duck Pond-L1, C2-L1
Phase 10 Project DCA Duck Pond-L2
DCA Boundary
New Berm / Road
Access Road
Riprap
Shoreline
Lateral
DMU
Drainage Management Unit Pump Station
LAT
Lateral Control Valve
IN
Pipe Outfall
Managed Vegetation
Gravel Cover
Culvert
Source: CDM Smith D05930-Z-12, 2014
N
0
500
1,000 Feet
MWH
January 2015
NEW CULVERT
C2
NEW RIPRAP ACCESS ROAD
NEW 14" SUBMAIN
T2-1 ADDITION
C2-L1
NEW QUAD ACCESS ROAD
NEW RIPRAP ACCESS ROAD
NEW 20" SUBMAIN
NEW BERM/ROAD
Duck Pond-L2
Duck Pond-L1
NEW QUAD ACCESS ROAD
NEW CULVERT
Path: \\Uspas1s01\muni\Clients\Los Angeles Water&Power\Owens Valley Data\Owens Valley GIS\Projects\TO35\DsgnDwgs\DuckPondL1.mxd

3.1.2.2 Managed Vegetation Construction

Irrigation systems would be installed and may include sprinklers, bubblers or drip irrigation. For areas with sprinklers or bubblers, irrigation piping would be buried to avoid damage from traffic, animals, temperature fluctuations, and UV radiation. Laterals (HDPE) would convey flow to an array of either buried or above-grade HDPE whiplines spaced approximately every 45 feet. Sprinkler heads or bubblers would be located approximately every 45 feet along each whipline. For Duck Pond L-1 DCA, a new water supply pipeline and new turnout (T2a) would be required. Similar to Shallow Flood, a flush system would be installed as part of the Managed Vegetation piping.

Some irrigation systems (i.e., drip irrigation) require filtration of water; filters would be located at the turnout or in the field. Liquid fertilizer would periodically be blended into irrigation water at relatively low rates that have been shown to accelerate growth and increase salinity tolerance (and therefore plant growth and survival) of several native species studied on Owens Lake. Fertilization is anticipated to be required twice per year. No new permanent fertilizer stations are proposed. Concrete pads (with containment for the injection point) may be constructed in Duck Pond-L1 and/or C2-L1 DCA for use by portable fertilizer delivery tanks. Periodic fertilizer delivery would be by flatbed or pickup trucks.

Broad, raised ridges would be formed to provide a drained area within which plants can grow. Without this feature, saline shallow groundwater can easily invade the root zone, especially during and after storms, and kill plants. The ridges would be laid out such that they gently traverse topographic contours, allowing surface water to drain slowly downhill (but avoid water erosion that might result from steeper gradients) along the direction of the broad ridges. Closed depressions that would otherwise prevent surface drainage would be opened by grading. If necessary, fertilizer to promote early growth may be applied and incorporated into the soil. The fertilizer amounts applied to native plant stands are typically low relative to what is used for agricultural production, but the ability of plants to tolerate drought and salinity, and to rapidly expand to protect the soil, is greatly enhanced with fertilization.

Initial reclamation (reduction of salt concentration in the surface soil by irrigation) would be completed before planting. This may require several irrigation events over approximately 45 days. Once monitored soil salinity levels have declined to acceptable levels, the land would be allowed to dry sufficiently until it can again bear equipment traffic. Temporary above grade pipelines on existing berms would be used to convey brine from reclamation to existing high salinity ponds.

Seeding would be done with a range drill seeder (wheeled seed bin that tows behind a tractor) or similar implement capable of seeding a diverse mix of seeds of varied sizes and shapes. Seed is dispensed from the bottom of the box and shallowly planted by discs that also break up surface soil, providing good seed-soil contact needed for germination and emergence. Other methods may include a pull type broadcast seeder with cultipacker or hand seeder (belly grinder).

3.1.3 Gravel Cover

3.1.3.1 Gravel Cover Description

Under the Phase 9/10 Project, in order to reduce dust emissions while minimizing additional water commitments, a 2-inch-thick layer of coarse gravel would be installed in T17-2-L1, T21-L2, T21-L1, T35-2-L1, T37-1-L1 T32-1-L1, Duck Pond-L2, T10-3-L1, T21-L3 and T21-L4 DCAs (**Figures 3-8** through **3-17**). Gravel would be placed on top of a geotextile fabric to create a firm base.

Gravel Cover reduces PM_{10} emissions by: (a) preventing the formation of efflorescent evaporite salt crusts at the surface, because the large pore spaces between the gravel particles disrupt the capillary movement of saline water to the surface where it can evaporate and deposit salts; and (b) creating a surface that has a high threshold wind velocity so that direct movement of the large gravel particles is prevented and the finer particles of the underlying lakebed soils are protected.

The term "gravel" includes clasts from both fluvial and alluvial sources and crushed stone. The gravel would be screened to greater than ½-inch in diameter, 2-inch diameter maximum. Gravel application is estimated at approximately:

- T17-2-L1 DCA – 30,700 tons distributed over 76 acres
- T21-L2 DCA – 55,800 tons distributed over 138 acres
- T21-L1 DCA – 148,500 tons distributed over 368 acres
- T35-2-L1 DCA – 12,200 tons distributed over 30 acres
- T37-1-L1 DCA – 45,500 tons distributed over 113 acres
- T32-1-L1 DCA – 242,000 tons distributed over 600 acres
- T18S DCA – 208,000 tons distributed over 516 acres
- Duck Pond-L2 DCA – 3,600 tons distributed over 9 acres
- T10-3-L1 DCA – 127,00 tons distributed over 315 acres
- T21-L3 DCA – 42,000 tons distributed over 104 acres
- T21-L4 DCA – 22,500 tons distributed over 56 acres

Additional gravel would be used for berms and slope stabilization. A total of approximately 1,000,000 tons of gravel would be used for Gravel Cover DCAs and road surfaces.

Gravel Sources. It is anticipated that gravel would be obtained from local gravel production operations such as the F.W. Aggregate Dolomite mine. The LADWP Shale Borrow Pit will continue to be used for berm replacement material. The LADWP Shale Borrow Pit is located just west of the Keeler Fan gravel site – a site previously considered as a gravel source and referenced in the Memorandum of Agreement between LADWP and the GBUAPCD (1998 MOA). Located east of SR 136, approximately 1.5 miles southeast of Keeler, and less than 2 miles from the lakebed, the Borrow Pit is located on public lands managed by BLM and operated per the requirements of the Surface Mining and Reclamation Act (SMARA). Shale is a fine-grained sedimentary rock consisting of compacted and hardened clay, silt or mud. The LADWP Shale Borrow Pit is currently permitted for 40 acres of development.

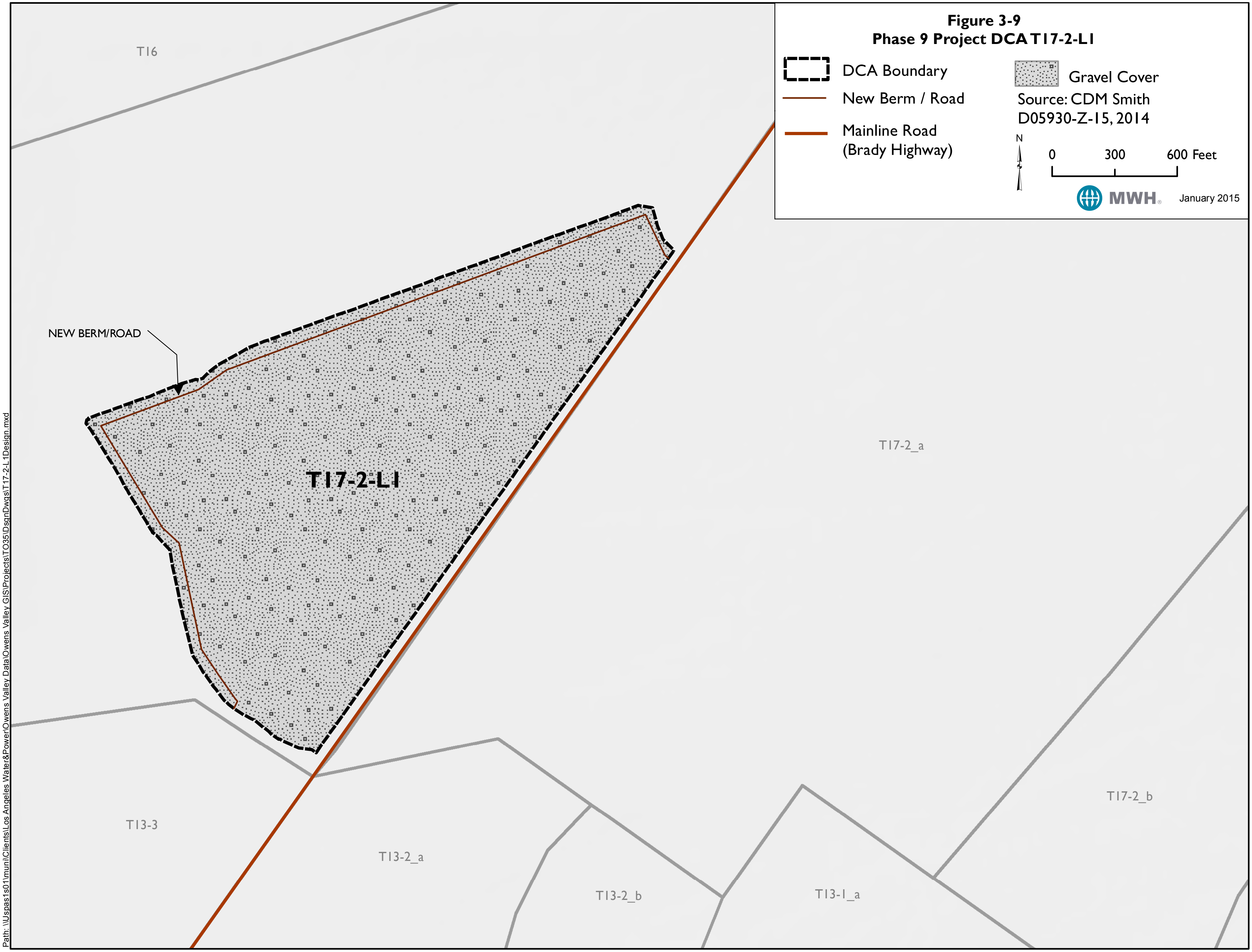
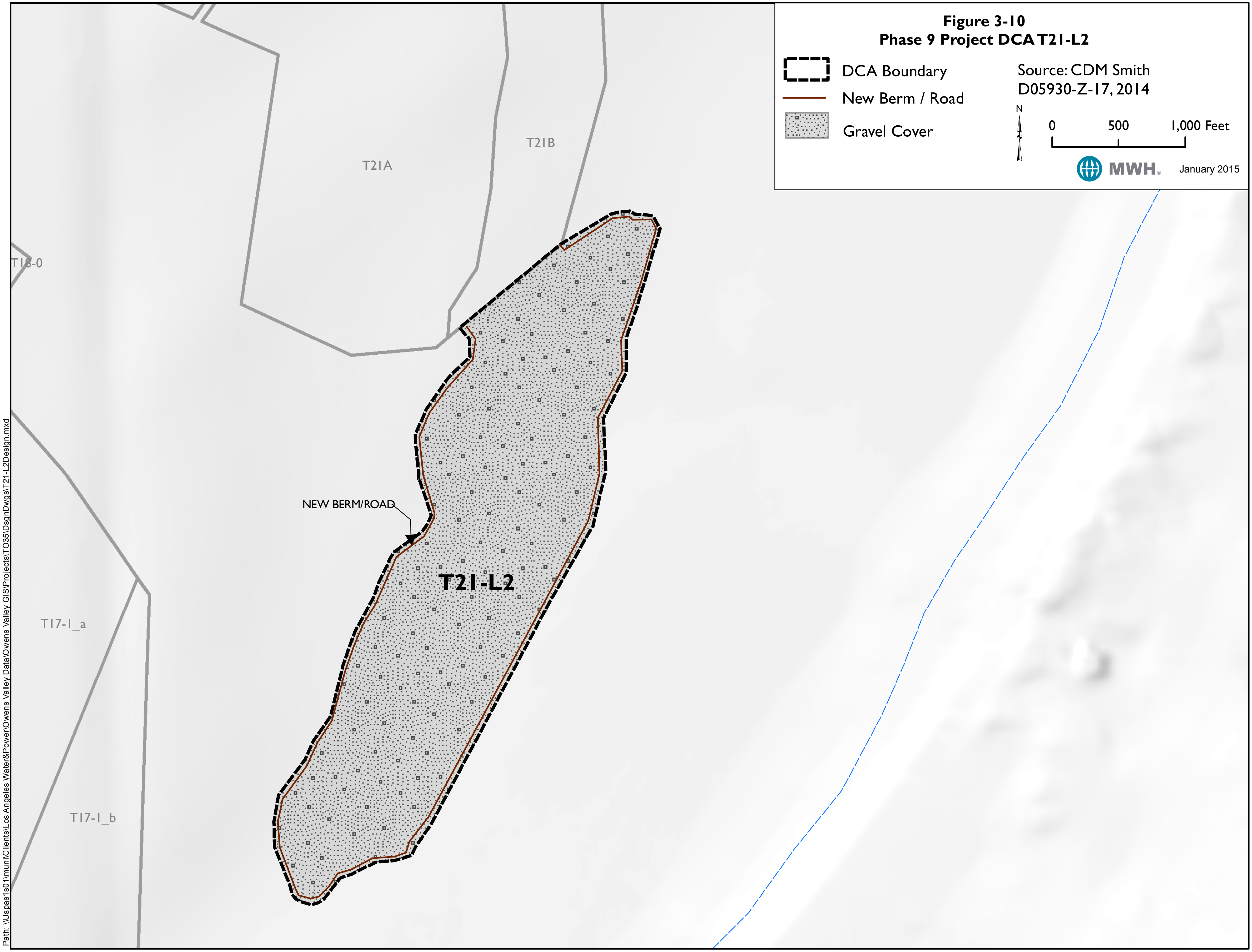


Figure 3-9
Phase 9 Project DCA T17-2-L1
DCA Boundary
New Berm / Road
Mainline Road
(Brady Highway)
Gravel Cover
Source: CDM Smith
D05930-Z-15, 2014
N
0
300
600 Feet
MWH
January 2015
T16
NEW BERM/ROAD
T17-2-L1
T17-2_a
T17-2_b
T13-3
T13-2_a
T13-2_b
T13-1_a
Path: \\Uspas1s01muni\Clients\Los Angeles Water&Power\Owens Valley Data\Owens Valley GIS\Projects\TO35\DsgnDwgs\T17-2-L1Design.mxd

Figure 3-10
Phase 9 Project DCA T21-L2



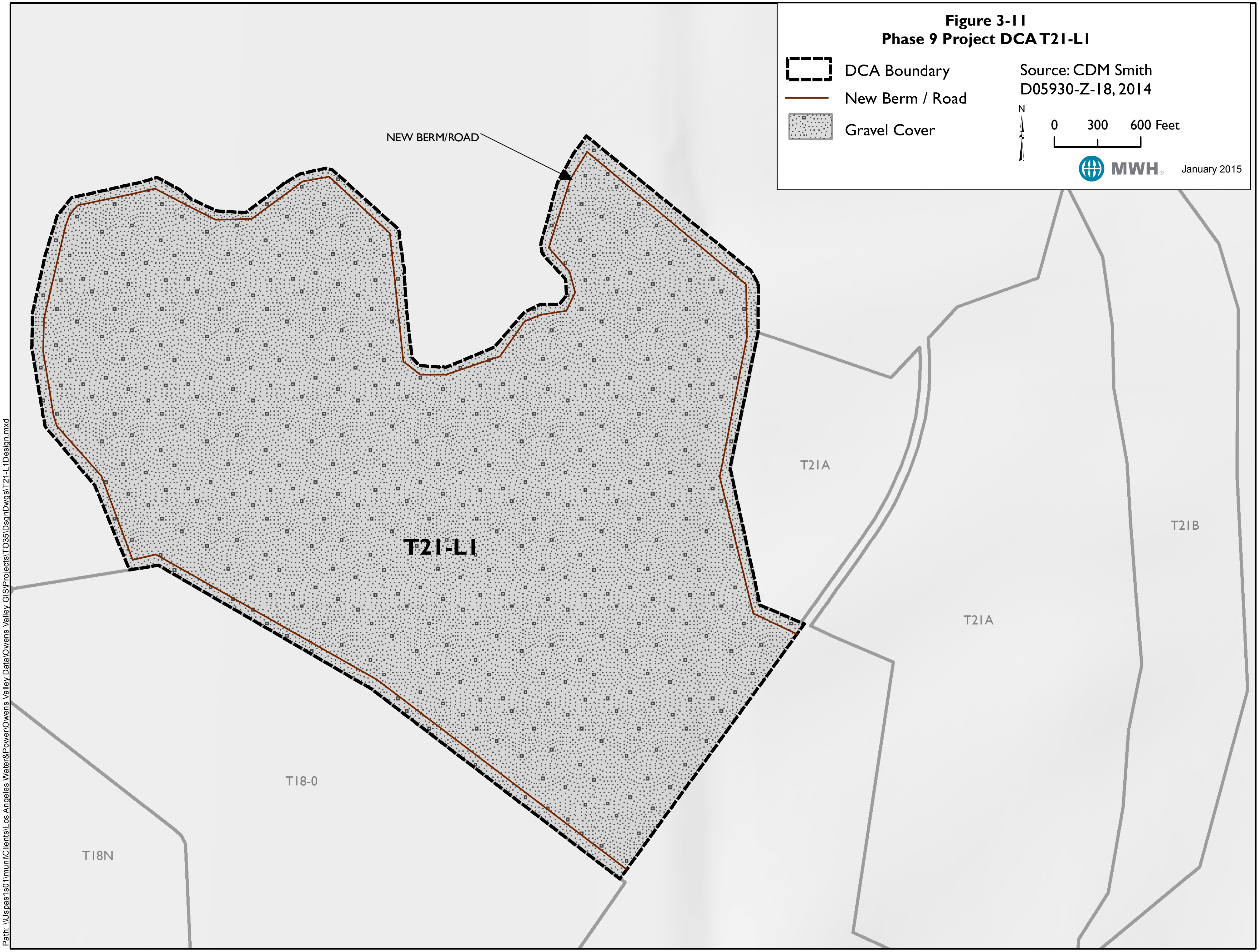


Figure 3-11
Phase 9 Project DCA T21-L1

Path: \\Uspas1s01\muni\Clients\Los Angeles Water&Power\Owens Valley Data\Owens Valley GIS\Projects\TO35\DsgnDwgs\T21-L1Design.mxd

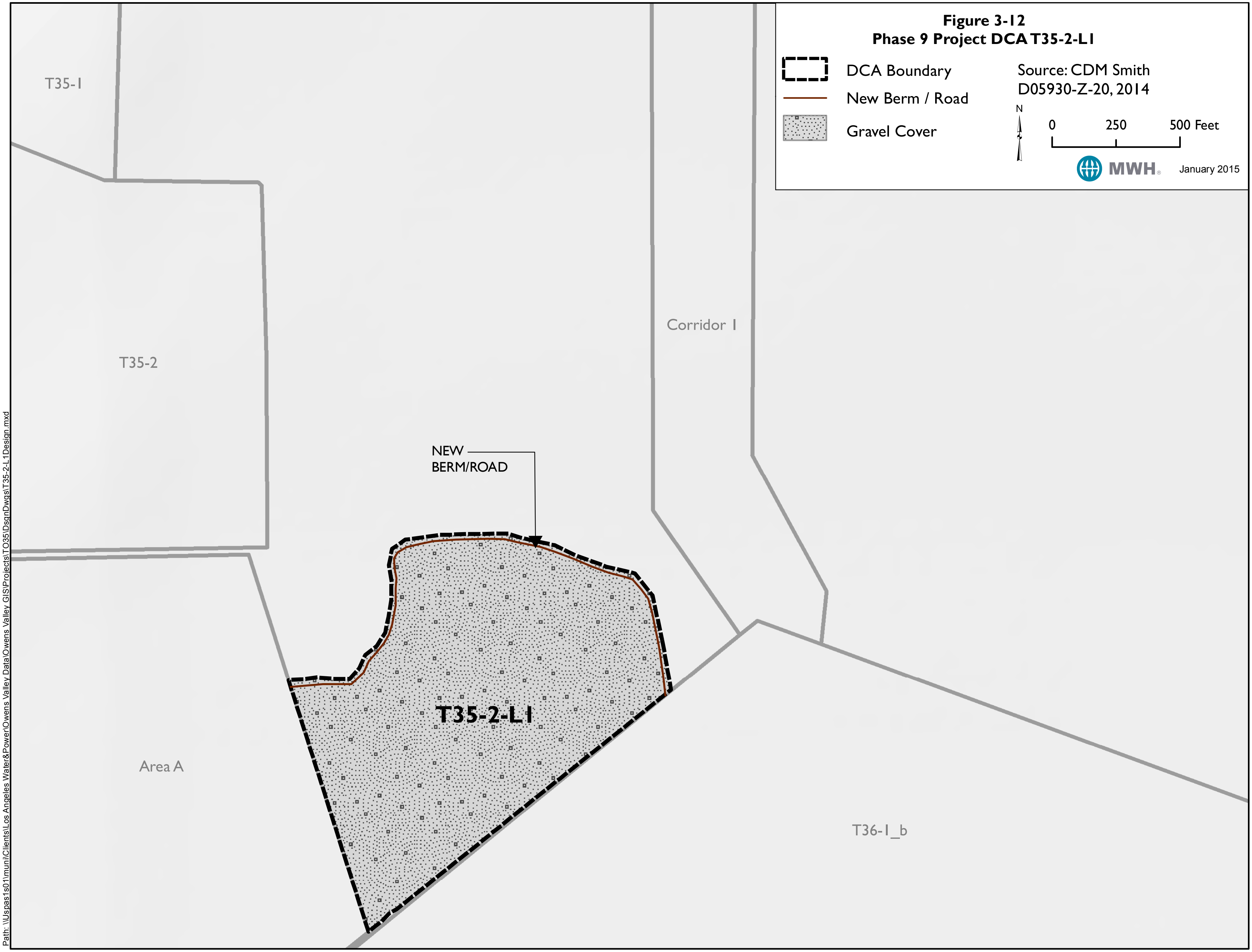


Figure 3-12
Phase 9 Project DCA T35-2-L1
DCA Boundary
New Berm / Road
Gravel Cover
Source: CDM Smith
D05930-Z-20, 2014
N
0
250
500 Feet
MWH
January 2015
T35-1
T35-2
Corridor 1
NEW
BERM/ROAD
T35-2-L1
Area A
T36-1_b
Path: \\Uspas1s01\muni\Clients\Los Angeles Water&Power\Owens Valley Data\Owens Valley GIS\Projects\TO35\DsgnDwgs\T35-2-L1Design.mxd

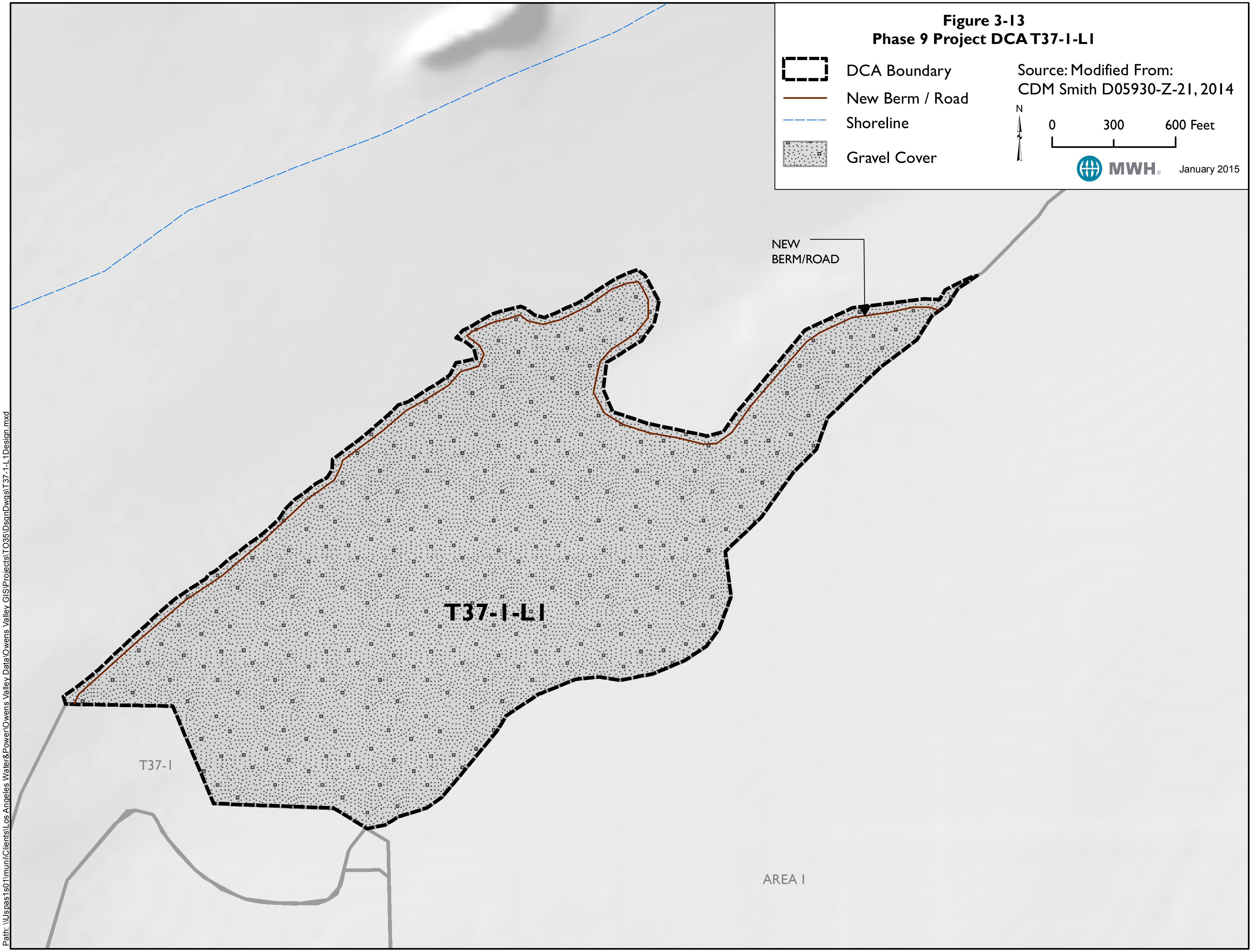


Figure 3-13
Phase 9 Project DCA T37-1-L1

Path: \\Uspas1s01\muni\Clients\Los Angeles Water&Power\Owens Valley Data\Owens Valley GIS\Projects\TO35\DsgnDwgs\T37-1-L1Design.mxd

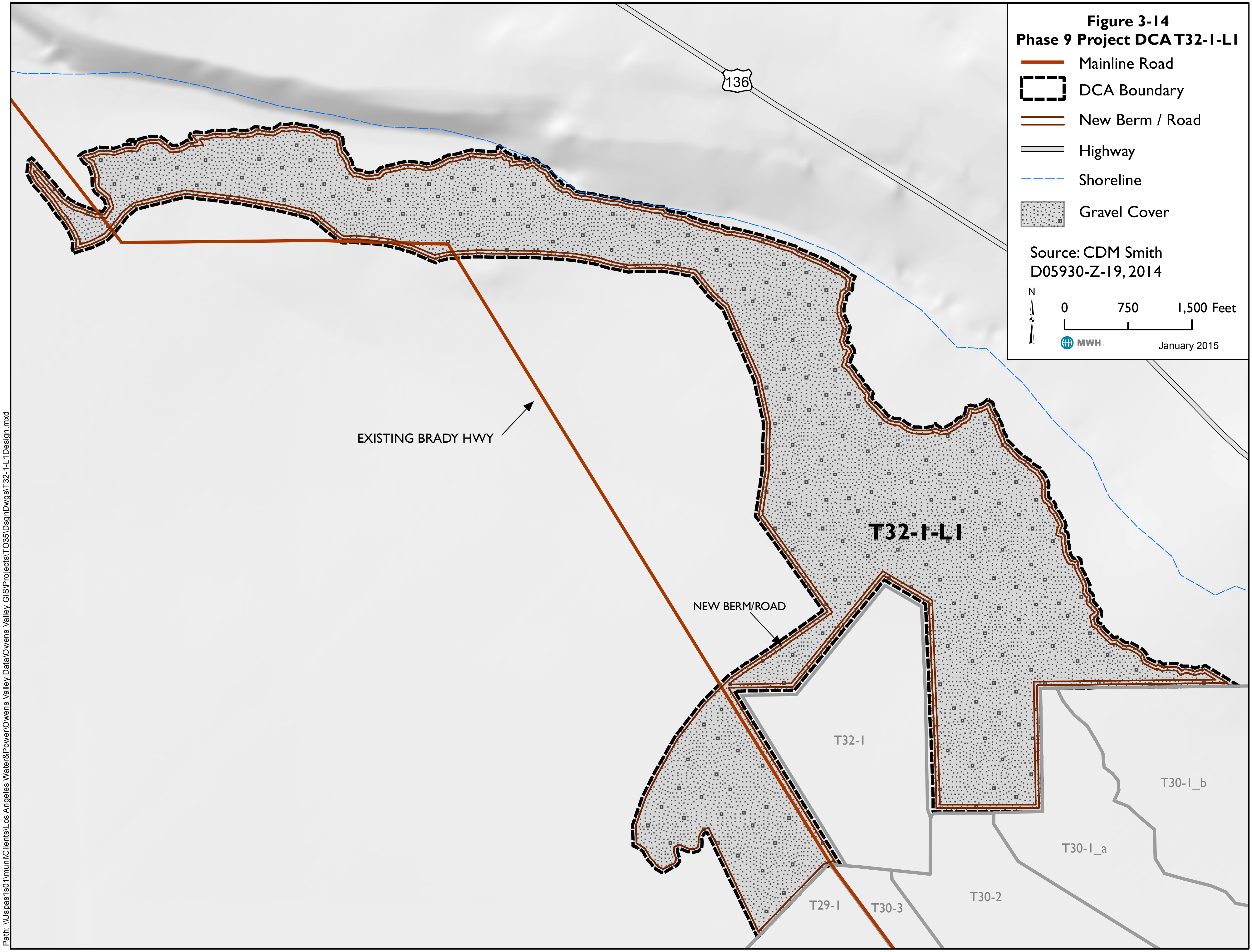


Figure 3-14
Phase 9 Project DCA T32-1-L1
Mainline Road
DCA Boundary
New Berm / Road
Highway
Shoreline
Gravel Cover
Source: CDM Smith D05930-Z-19, 2014
N
0
750
1,500 Feet
MWH
January 2015
136
EXISTING BRADY HWY
NEW BERM/ROAD
T32-1-L1
T32-1
T30-1_b
T30-1_a
T30-2
T30-3
T29-1
Path: \\Uspas1s01\muni\Clients\Los Angeles Water&Power\Owens Valley Data\Owens Valley GIS\Projects\TO35\DsgnDwgs\T32-1-L1Design.mxd

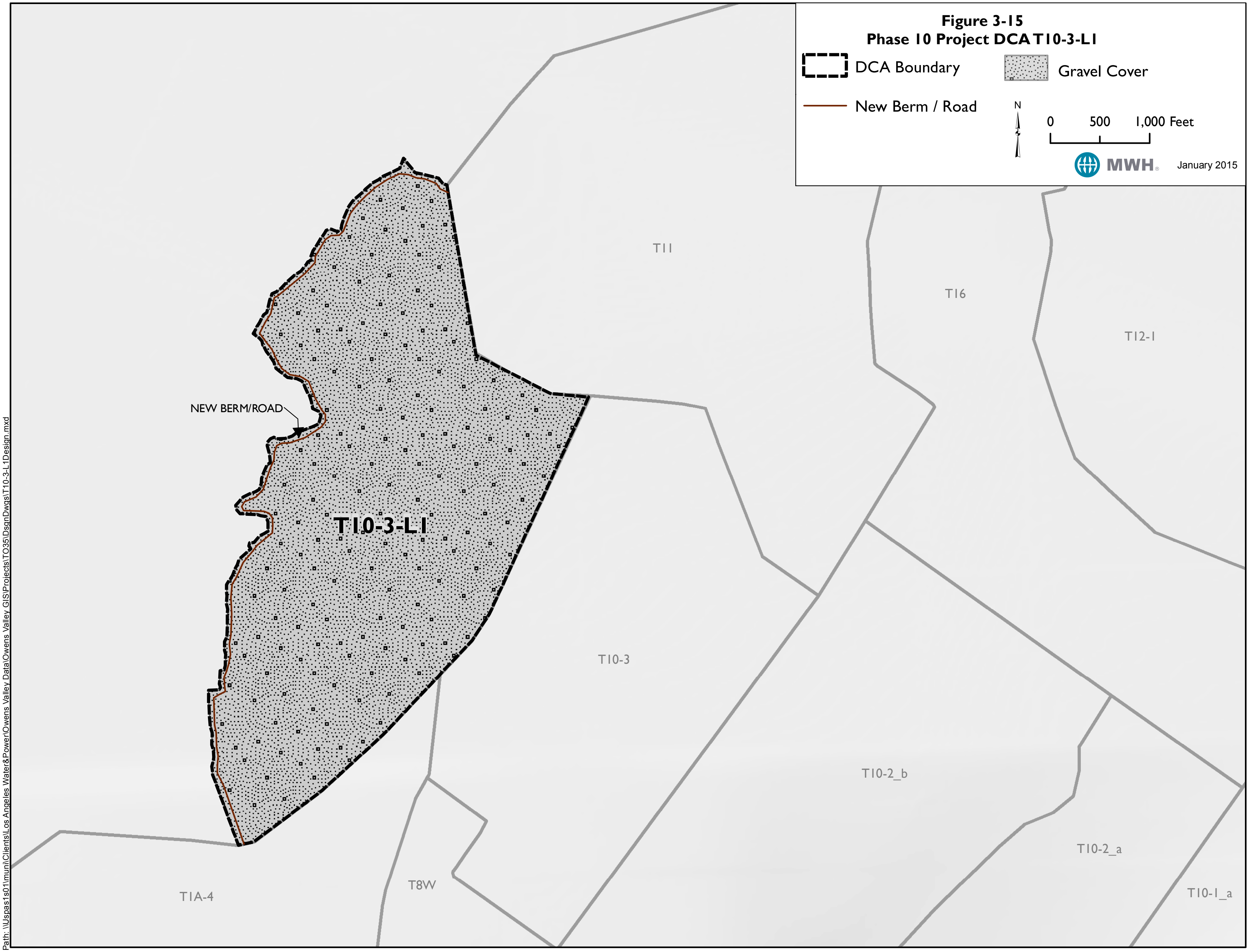
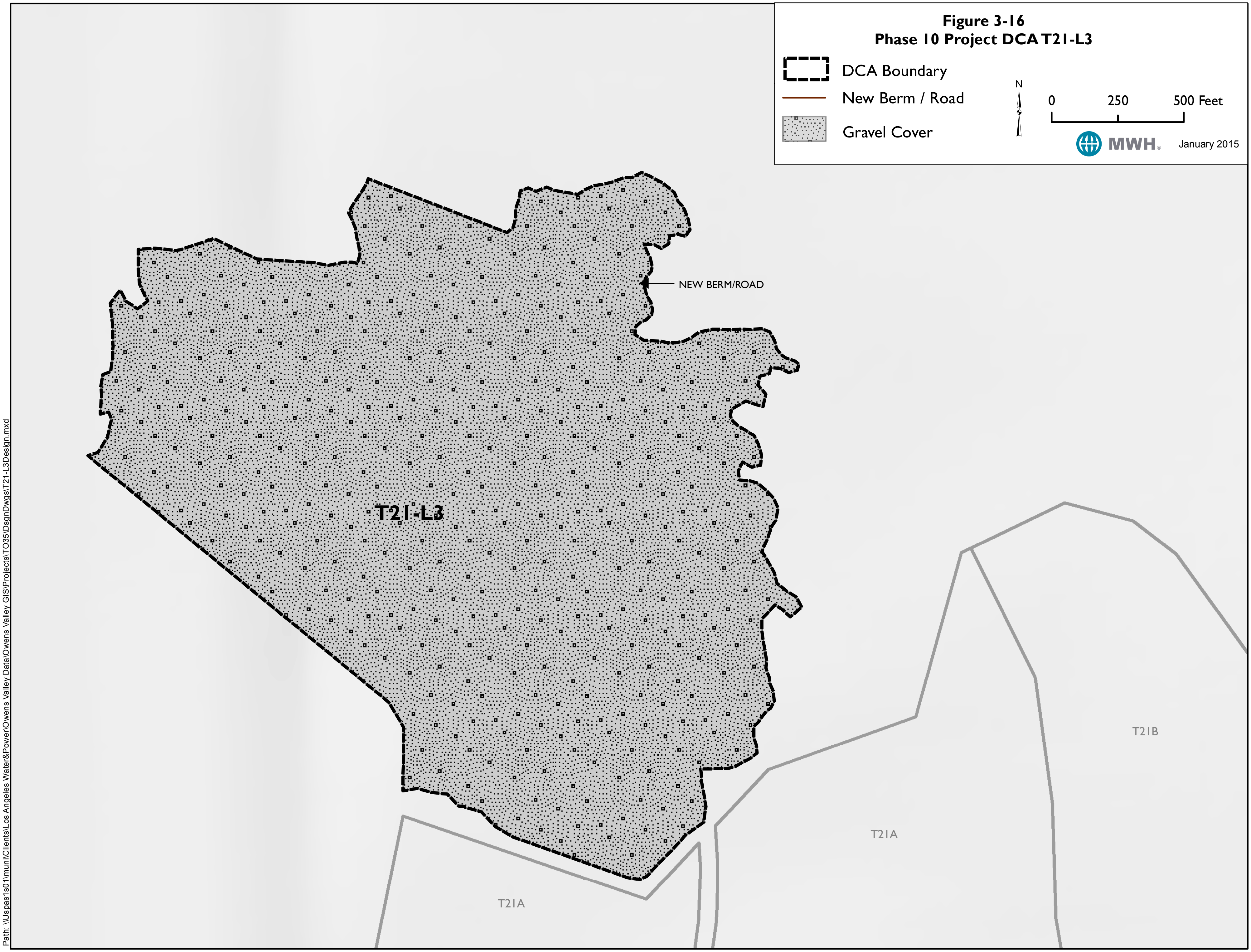


Figure 3-15
Phase 10 Project DCA T10-3-L1
DCA Boundary
Gravel Cover
New Berm / Road
N
0
500
1,000 Feet
MWH
January 2015
T11
T16
T12-1
NEW BERM/ROAD
T10-3-L1
T10-3
T10-2_b
T10-2_a
T10-1_a
T1A-4
T8W
Path: \\Uspas1s01\muni\Clients\Los Angeles Water&Power\Owens Valley\Owens Valley Data\Owens Valley GIS\Projects\TO35\DsgnDwgs\T10-3-L1Design.mxd

Figure 3-16
Phase 10 Project DCA T21-L3



Path: \\Uspas1s01\muni\Clients\Los Angeles Water&Power\Owens Valley Data\Owens Valley GIS\Projects\TO35\DsgnDwgs\T21-L3Design.mxd

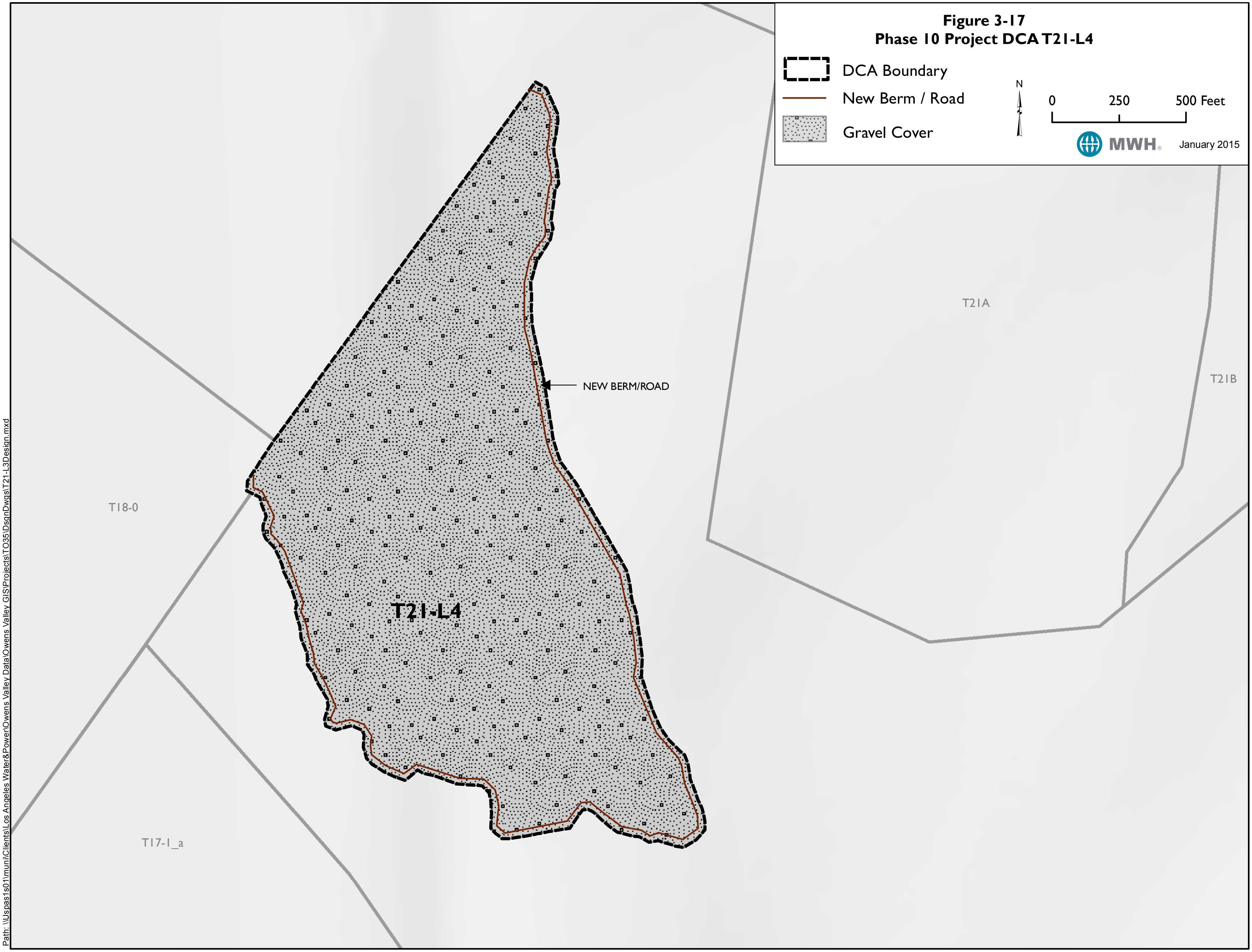


Figure 3-17
Phase 10 Project DCA T21-L4
DCA Boundary
New Berm / Road
Gravel Cover
N
0
250
500 Feet
MWH
January 2015
T21-L4
NEW BERM/ROAD
T21A
T21B
T18-0
T17-1_a
Path: \\Uspas1s01\muni\Clients\Los Angeles Water&Power\Owens Valley Data\Owens Valley GIS\Projects\TO35\DsgnDwgs\T21-L3Design.mxd

The F.W. Aggregate Dolomite mine is a privately owned commercial aggregate facility located in Dolomite, California, approximately 0.75 miles southeast of Swansea. The access point for the mine is directly off SR 136, between Swansea and Keeler. The Dolomite mine is situated on both privately owned lands and public lands managed by the BLM. Three subareas of the mine (Durability, North Pole, and Translucent) total approximately 480 acres and are able to produce up to 50 million tons; the site is permitted up to the year 2057 (T. Lopes, pers. comm., June 25, 2010). Rock at the F.W. Aggregate site is obtained from a dolomitic limestone source (mountain face), which is blasted and crushed to supply primarily white decorative rock. The existing 0.14 square miles of Gravel Cover on Corridor 1 (which separates Phase 8 Areas A and B) and the 2.03 square mile Phase 8 area are covered with limestone from the Dolomite mine.

Gravel Effectiveness. The effectiveness of Gravel Cover is summarized from the 2008 SIP (GBUAPCD, 2008a). According to GBUAPCD, gravel blankets (also known as Gravel Cover) are effective at controlling dust emissions on essentially any type of soil surface. A gravel layer forms a non-erodible surface when the size of the gravel is large enough that the wind cannot move the surface. If the gravel surface does not move, it protects finer particles from being emitted from the surface. Gravel and rock coverings have been used successfully to prevent wind erosion from mine tailings in Arizona (Chow and Ono, 1992). In 2013, GBUAPCD approved a Reduced Thickness Gravel BACM – 2 inches of gravel with geotextile fabric underlay (GBUAPCD, 2013).

Permeable Geotextile Fabric. Gravel Cover would be placed over a nonwoven geotextile fabric (anticipated to be approximately 2.3 millimeter [90 mils] thick to prevent gravel from settling into lakebed sediments and thereby losing effectiveness in controlling dust emissions). Geotextile membranes are artificial fabrics that have a variety of uses including: filtration/drainage, ground stabilization, structural waterproofing, land containment, as well as weed and root control. For this use, the permanent geotextile would be permeable to allow draining. Nonwoven geotextiles are pervious sheets of polyester or polypropylene composed of fibers held together by needle punching, spun bonding, thermal bonding or resin bonding. The geotextile is chemically inert and generally not affected by acids and alkalis that may be present in the soils. Geotextiles to be used for the Project are non-hazardous articles as defined by the Federal Hazard Communication Standard CFR 1910.1299. Per GBUAPCD (2013), geotextile fabric would be Class I woven or nonwoven geotextile fabric meeting the minimum specifications set forth in the National Standard Materials Specification “Material Specification 592—Geotextile” (National Engineering Handbook, Chapter 3, Part 642), or equivalent (USDA, 2005). Because the geotextile will be permeable, chemically inert and non-hazardous, it would not contribute contaminants to stormwater or underlying soils.

Gravel Composition. Gravel sources were previously evaluated as part of GBUAPCD’s 1997 SIP Final EIR (July 1997). The composition and structure of the rock from each gravel source (which included the Keeler Fan and the Dolomite site) were considered to be such that the gravel produced would not deteriorate during the life of the Project. Samples were collected for chemical analysis to determine the concentrations of metals produced during chemical weathering. Samples were crushed to pass a 200-mesh sieve (0.003 inch) and then synthetically leached. Results of the testing were intended to provide a long-term estimate of the soluble metals concentration that could be released from the gravel. For the most part, metals content of the Owens Lake salt crusts was found to be several orders of magnitude greater than that observed in the leachate from the gravel (**Table 3-2** and **3-3** [Tables 5.1 and 5.2 in GBUAPCD, 1997]).

Leachate from the gravel was not predicted by GBUAPCD to significantly increase the concentration of metals in the brine pool. These metals include those listed in Title 22 as being potentially toxic in the brine pool or the brine pool precipitate. For the Phase 9/10 Project, gravel of a minimum hardness would be used to minimize mechanical breakdown of the material during delivery to the site and when it is being mechanically spread onto the DCA. Hardness is tested as resistance to degradation using the Los Angeles testing machine (ASTM C131 or C535). Two samples from the F.W. Aggregate Dolomite mine and two samples from the LADWP Shale Borrow Pit were tested for resistance to physical degradation. The test measures the degradation of mineral aggregates resulting from a combination of actions including abrasion, impact, and grinding. The tests indicated 23 percent wear for the dolomite and 36 percent for the shale. These tests indicate that the proposed gravel is more durable than the acceptable standard of 45 percent for stones proposed for use as riprap (Standard Specifications for Public Works Construction).

Table 3-2
Metals Analysis of Salt Crust Samples Collected from Owens Lake Playa

Element	Brine Pool Crust (mg/kg)	Sandpiper Lake Crust (mg/kg)	Sulfate Pond Crust (mg/kg)	Composite Sample (mg/kg)	Average[a] (mg/kg)	TTLC (mg/kg)
Antimony (Sb)	<0.5	<0.5	<0.5	<0.5		500
Arsenic (As)	8.7	82	26	36	38.2	500
Barium (Ba)	1.0	100	99	15	53.8	10,000[b]
Beryllium (Be)	<0.5	<0.5	<0.5	<0.5		75
Cadmium (Cd)	<0.5	<0.5	<0.5	<0.5		100
Chromium (Cr)	<0.5	2.8	2.4	0.8	2.0	500
Silver (Ag)	<0.5	<0.5	<0.5	<0.5		500
Cobalt (Co)	<0.5	1.9	1.7	0.5	1.4	8,000
Copper (Cu)	0.8	5.3	5.1	1.6	3.2	2,500
Lead (Pb)	<0.5	4.7	3.9	<0.5	4.3	1,000
Mercury (Hg)	<0.1	<0.1	0.18	<0.1		20
Molybdenum (Mo)	<0.5	6.5	4.2	1.1	3.9	3,500
Nickel (Ni)	<0.5	7.4	6.8	1.5	5.2	2,000
Selenium (Se)	0.6	<0.5	<0.5	0.6	0.6	100
Thallium (Th)	<0.5	<0.5	<0.5	<0.5		700
Vanadium (Va)	<0.5	18	19	5.1	14.0	2,400
Zinc (Zn)	<5	16	12	7	11.7	5,000

Source: GBUAPCD, 1997 (Table 5.1; analysis conducted by Sierra Environmental Monitoring, Inc.)
Notes: TTLC = total threshold limit concentration (22 CCR 66261.24)
[a] Average only given for elements with two or more samples above the laboratory limits of detection.
[b] Excluding barite or barium sulfate

Table 3-3
Analysis of Leachate from Potential Gravel Sources

Element	Basalt Flow Site	Keller Fan Site	Dolomite Site	STLC (mg/L)
Antimony (Sb)	0.001	<0.001	<0.001	15
Arsenic (As)	<0.001	0.013	<0.001	5.0
Barium (Ba)	0.25	0.17	0.18	100[a]
Beryllium (Be)	<0.001	<0.001	<0.001	0.75
Cadmium (Cd)	<0.001	<0.001	<0.001	1.0
Chromium (Cr)	<0.001	<0.001	<0.001	5
Silver (Ag)	<0.001	<0.001	<0.001	5
Cobalt (Co)	<0.001	<0.001	<0.001	80
Copper (Cu)	0.003	0.004	0.004	25
Lead (Pb)	0.004	0.001	<0.001	5.0
Mercury (Hg)	<0.0005	<0.0005	<0.0005	0.2
Molybdenum (Mo)	0.002	0.005	<0.001	350
Nickel (Ni)	0.002	0.003	0.002	20
Selenium (Se)	<0.001	<0.001	<0.001	1.0
Thallium (Th)	<0.001	<0.001	<0.001	7.0
Vanadium (Va)	0.002	0.008	<0.001	24
Zinc (Zn)	0.06	0.05	0.05	250

Source: GBUAPCD, 1997 (Table 5.2; analysis conducted by Sierra Environmental Monitoring, Inc.)
Notes: STLC = soluble threshold limit concentration (22 CCR 66261.24)
Leachate of source materials samples conducted by synthetic precipitation leachate procedure (SPLP) (EPA Standard Methods – SW846).
[a] Excluding barite or barium sulfate

Water associated with operation of the proposed Project would be from the Los Angeles Aqueduct or Lower Owens River. The existing DCAs are operated under Board Order No. R6V-2006-0036, Revised WDRs for the Southern Zones dust control project. Monitoring is conducted and reported semi-annually; the existing dust control project is in compliance with the adopted WDRs. Consequently, the quality of these sources would not violate applicable narrative or numeric water quality standards. Implementation and operation of the Phase 9/10 Project would be done in conformance with the existing WDRs. Therefore, as noted in the Initial Study for the Project (**Appendix A**), leachate from the gravel would not significantly increase the toxicity of the brine pool and discharges associated with the Project would continue to be in compliance with applicable WDRs. Therefore, impacts related to water quality were found in the Initial Study to be less than significant.

Impacts on groundwater were also found to be less than significant in the Initial Study for the Project (**Appendix A**). As described above, leachate from gravel is not anticipated to increase toxicity of surface waters, and subsequently would not be anticipated to transport contaminants to the groundwater system. Further, the groundwater aquifer system at Owens Lake consists of multiple aquifers separate by clay layers, as thick as several hundred feet in some areas. Hydraulic head in the Owens Lake aquifers increases from top to bottom, with measured head in the deep aquifer as high as 50 feet above ground surface in some areas. Due to this differential hydraulic head in the Owens Lake aquifers, as measures by multiple depth piezometers, there is an upward hydraulic gradient throughout Owens Lake. The upward hydraulic gradient indicates movement of groundwater from the deep aquifer to shallower aquifers and eventually to the ground surface. Discharge of groundwater to the surface is clearly visible in the wetland areas along the shoreline of the lake. Therefore, there is limited potential for water from the surface of the Gravel Cover areas to infiltrate to groundwater aquifers of Owens Lake.

Access Roadways for Gravel Areas. Gravel Cover DCAs would have raised roadbeds for vehicle access and for wind protection to limit sand inundation of the gravel. The roadbeds would be earthen, approximately 3 feet high, up to 20 feet wide and armored with gravel. Vehicle bypass pads (turnoff or turnaround pads) (approximately 20 feet by 40 feet in area) would facilitate vehicle travel in two directions. Geotextile fabric may be placed directly on the existing surface to create a firm base. The earthen raised roadway would be constructed over the geotextile fabric. Earthen side slopes facing water or adjacent to potential runoff flows would be armored with rip rap. Earthen slopes not directly in contact with water and travel surfaces would be covered with road base. Installation of access roadways would include earthwork inside of the boundary of the DCAs; suitable earth material would be scraped, used to construct the raised roadway, and then the area would be smoothed to an even slope. An approximately 4-inch thick layer of base course (crushed rock less than 1 inch) from a local gravel source would then be placed on the travel surface. Gravel Cover for the access roadways shall be consistent with the type, size, and color of the Gravel Cover placed on the adjoining lakebed areas.

Drainage of Gravel Areas. Culverts would be constructed through the raised roadbeds at low points within the Gravel Cover areas to allow drainage for collected water.

3.1.3.2 Gravel Cover Construction

Gravel Cover installation includes:

- Development of gravel stockpile area
- Installation of access roadways
- Gravel conveyance
- Geotextile and Gravel installation

Gravel Stockpile. Gravel stockpile areas, covered with aggregate, would be developed within the boundaries of each Gravel Cover DCA to prepare the sites for gravel deliveries. Dump trucks would deposit gravel and a dozer would be used to pile the aggregate. Assuming 25 tons per truck, approximately 2,700 tons per day would be transported to the Gravel Cover DCAs. Gravel transport would continue throughout the construction period concurrent with geotextile fabric and gravel installation. From the stockpile locations, low ground pressure (LGP) vehicles would be used for travel directly on the playa.

Gravel Conveyance. If gravel for berm maintenance is obtained from the LADWP Shale Borrow Pit, trucks would cross SR 136 to Sulfate Road to Main Line Road and then to the Gravel Cover DCAs (**Figure 3-18**). If gravel is obtained from F.W. Aggregate Dolomite mine, trucks would cross SR 136 to the T30 road to Main Line Road and then to the Gravel Cover DCAs. Gravel source(s) would be determined by the Construction Contractor. Stockpile areas would be covered with aggregate to prepare the sites for gravel deliveries during the initial months of construction. Dump trucks would deposit gravel and a dozer would be used to pile the aggregate. Gravel transport would continue throughout the construction period concurrent with geotextile fabric and gravel installation. From the stockpile location, low ground pressure (LGP) vehicles would be used for travel directly on the playa. Depending on site conditions, conveyors may be used internally within individual DCAs or to move gravel from the stockpiles.

Geotextile Installation. Before installation of the geotextile membrane, land leveling may be required in areas where obstructions would damage the fabric. A pipe or I-beam dragged behind a tractor, box drag, scraper, or similar process would be used to remove localized high and low spots and prepare the surface; there would be no import or export of soils related to this site preparation. Fabric would be delivered to the site on spools carried by flatbed trucks. Small areas of fabric would be rolled out and staked to secure them before gravel installation.

The two vehicle and equipment staging areas previously used (for the Phase 7, 7a and 8 Projects) would be used for the Phase 9/10 Project (**Figure 3-18**). These previously disturbed sites are located near the intersection of Main Line Road and Corridor 1 at the north end of the lake (20 acre site) and at the southern end of the lake adjacent to Dirty Socks Access Road (2.7 acre site). In addition to office trailers and equipment and vehicle storage, these areas would have fueling stations for gas and diesel. Fuel trucks would be used to refuel construction equipment (including the LGP gravel trucks) and the long haul gravel trucks; no vehicle fuels or oils would be stored in the gravel stockpile areas. Additionally, refueling may occur at the existing LADWP Sulfate facility. Once the geotextile is staked, dozers and ground crews would spread gravel to the required 2-inch thickness.

The onsite construction workforce would consist of equipment operators, truck drivers, laborers, supervisory personnel, support personnel, and construction management personnel.

Concrete Block Mat. Concrete block mats may be used to armor the berms surrounding new DCAs, and for maintenance of existing berms. **Figures 3-19** is a picture of the concrete block mat test area on Owens Lake. However, placement of concrete block mat in lieu of a 2-inch layer of gravel for DCAs identified for Gravel Cover BACM is not currently proposed.

To form the mat, individual concrete blocks are tied together with a high strength polypropylene geogrid or cable systems. The concrete block mat currently under review consists of 5000 PSI concrete blocks (6.5 inches x 6.5 inches x 2.25 inches) with 1.5-inch spacing between the blocks to give the mat flexibility and to allow contouring to the land. The bottom layer is permeable non-woven fabric. With a minimum of 80 percent of the area covered directly by the concrete block, along with 100 percent coverage by the underlying fabric, a high efficiency for dust control is expected. The concrete block mat can be fabricated on or near the site of use, rolled, and installed in widths up to 16 feet. Once installed, it is possible to walk and drive on the mat.

LADWP's engineering specification for Tied-Concrete Block Erosion Control Mat requires the following:

- The Tied-Concrete Block Mat shall be constructed of a high strength, rough service, low elongating, continuous filament polypropylene geogrid with an acrylic coating certified by the manufacturer to achieve 25-year minimum service life in direct sunlight.

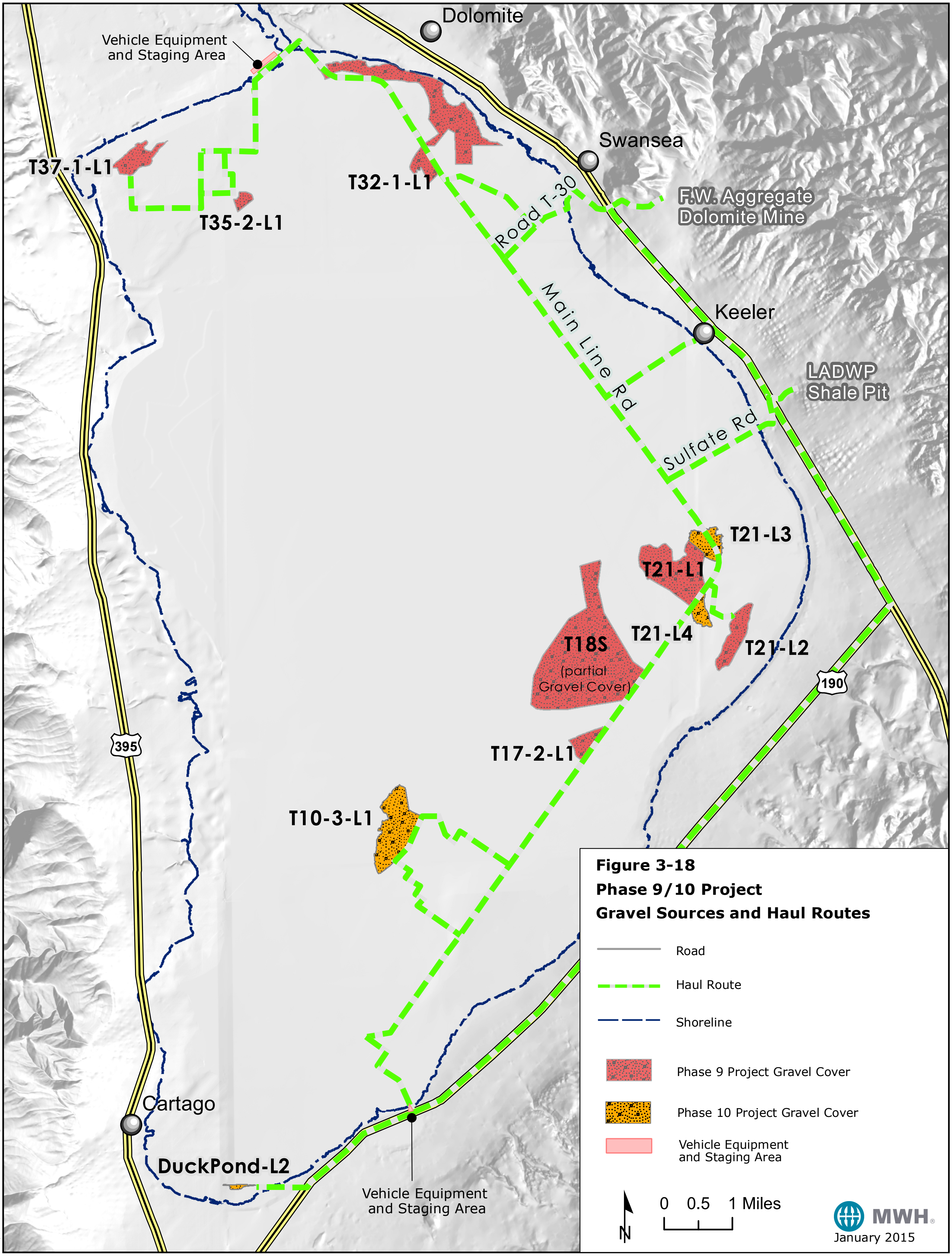


Figure 3-18
Phase 9/10 Project
Gravel Sources and Haul Routes

\\uspas1s01\muni\Clients\Los Angeles Water&Power LADWP\Owens Valley Data\Owens Valley GIS\Projects\Phase9\Phase9_CEQA_ES\Phase9_HaulRoutesSouth.mxd

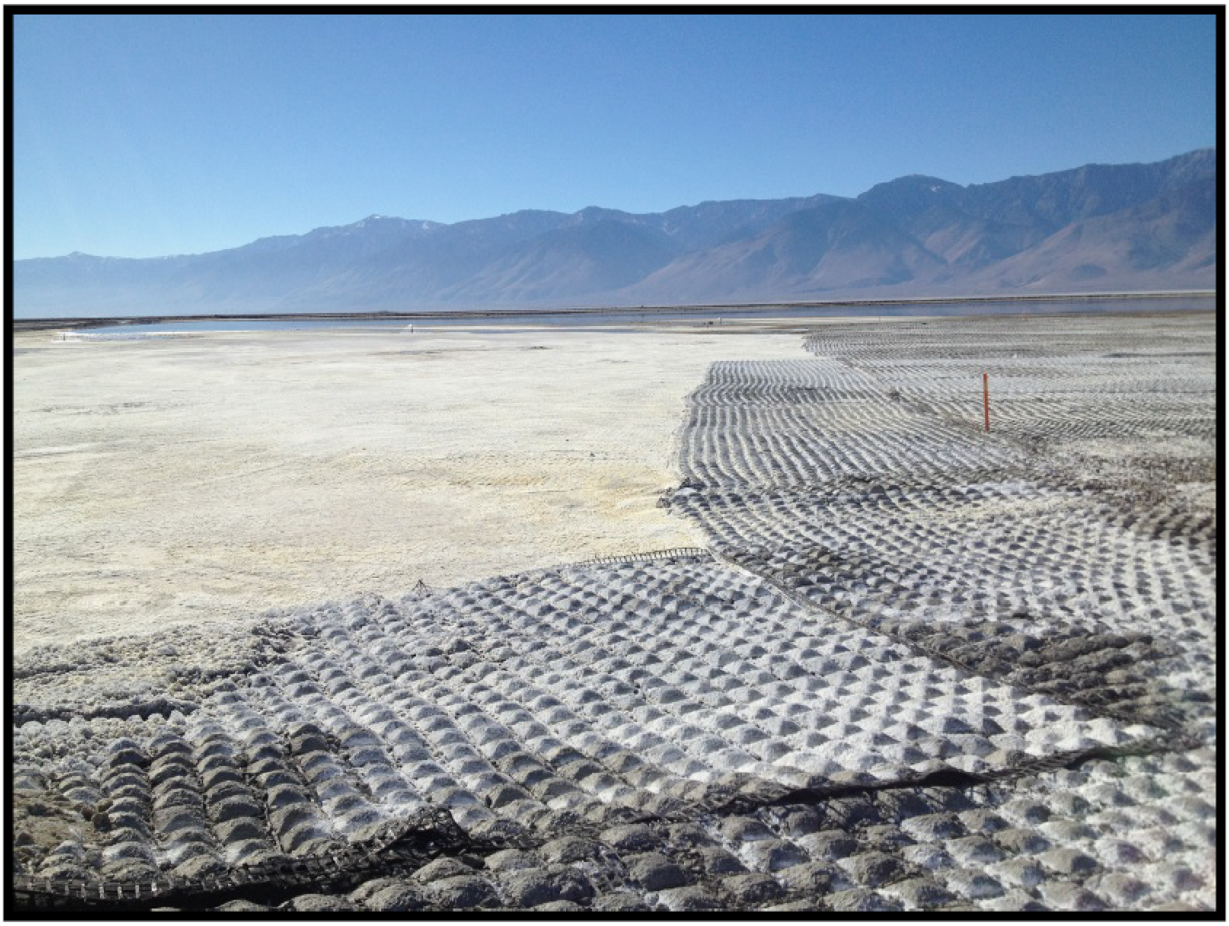
- Galvanized or other metal cables are not allowed.

- Revetment cable shall be constructed of high tenacity, low elongating, and continuous filament polyester fibers. Cable shall consist of a core construction comprised of parallel fibers contained within an outer jacket or cover. The weight of the parallel core shall be between 65 to 70 percent of the total weight of the cable.

- Tied Concrete Blocks shall be wet-cast or dry-cast and conform to the following applicable ASTM specifications:
  Portland Cements - Specification C 150, for Portland Cement.
  Blended Cements - Specification C 595, for Blended Hydraulic Cements.
  Hydrated Lime Types - Specification C 207, for Hydrated Lime Types.
  Pozzolans - Specification C 618, for Fly Ash and Raw or Calcined Natural Pozzolans for use in Portland Cement Concrete.

- The Tied-Concrete Block Mat shall have the following nominal characteristics:
  1. Minimum open area of 20 percent
  2. Exhibit resistance to mild concentrations of acids, alkalis and solvents

Figure 3-19
Flexible Concrete Block Mat – Owens Lake Demonstration Area



Source: MWH, 2014

3.1.4 Project Water Demand

As of January 2015, LADWP has installed and is operating approximately 42.5 square miles of DCMs on Owens Lake playa which use water from , or that would have been input to, the Los Angeles Aqueduct. Based on an assessment in 2008, it was determined that environmental restoration activities in the Owens Valley combined with water required for the dust mitigation program had effectively reduced Los Angeles Aqueduct deliveries by 50 percent (LADWP, 2008). All reductions in Los Angeles Aqueduct flow to the City translate directly to increased water purchases from the Metropolitan Water District of Southern California (Metropolitan, the City's wholesale water provider). Replacement water for the dust mitigation program originates from the State Water Project (SWP), which is from the Sacramento-San Joaquin River Delta, and the Colorado River Aqueduct. SWP deliveries from Metropolitan are constrained by litigation (i.e., Delta smelt), climate variability, increased demand and pumping restrictions.

For the 2013 calendar year, a total of 80,500 acre-feet of water was released for dust mitigation on Owens Lake. LADWP Resolution 013 252 states that the Master Project stakeholders have generally concurred that it is feasible to maintain or improve existing lake-wide habitat value over broad areas of Owens Lakebed while reducing water demand by 50 percent.

In 2010, LADWP prepared a water supply assessment for the Phase 8 Project that determined that there is insufficient surplus water supply available for LADWP to continue to implement Shallow Flood as a DCM on Owens Lake (LADWP, 2010a). Additionally, on January 17, 2014, Governor Brown declared a state of emergency as a result of the record dry conditions in California, which will impact millions of municipal and industrial water users across California. In response, LADWP has determined that water use for new areas of Shallow Flood and Managed Vegetation in the proposed Project and future dust control projects would be offset by transition of existing areas of Shallow Flooding to be less water intensive.

As shown in **Table 3-4**, with Transition of T18S DCA to a mix of Pond Shallow Flood and Gravel Cover, the Phase 9/10 Project would conserve an estimated 283 acre-feet of water per year. Since the proposed Project would not increase water demand on Owens Lake, it would have a less than significant impact on water supplies.

Table 3-4
Summary of Water Demand for the Phase 9/10 Project

DCA	Acres	BACM	Water demand (feet per year)	Total (acre-feet per year)
Duck Pond-L1	101	Managed Vegetation	2.5	253
C2-L1	50	Managed Vegetation	2.5	125
T10-1-L1	41	Shallow Flood	4	164
T17-2-L1	76	Gravel Cover	0	0
T21-L2	138	Gravel Cover	0	0
T21-L1	368	Gravel Cover	0	0
T37-2-L4	120	Shallow Flood	4	480
T37-2-L3	31	Shallow Flood	4	124
T37-2-L2	42	Shallow Flood	4	168
T37-2-L1	116	Shallow Flood	4	464
T35-2-L1	30	Gravel Cover	0	0
T37-1-L1	113	Gravel Cover	0	0
T32-1-L1	600	Gravel Cover	0	0
Duck Pond-L2	9	Gravel Cover	0	0
T10-3-L1	315	Gravel Cover	0	0
T21-L3	104	Gravel Cover	0	0
T21-L4	56	Gravel Cover	0	0
Total Demand New DCAs[1]				1,778
T18S Transition Area – Delete Shallow Flooding	1166	Shallow Flood Pond	4	-4,664
T18S Transition Area – New Ponds	651	Shallow Flood Pond	4	+2,604
Total Project Demand with T18 Transition Area				**-283**

[1]With adoption of the Avoidance Alternative, water demand for the Phase 9/10 Project would be slightly less than as shown for the originally proposed Project.

3.1.5 Construction Dust Control Plan

A Dust Control Plan would be developed and implemented during construction of facilities. The plan would specifically address measures to be taken when removing T18S DCA from service since this DCA may not be in full compliance during construction. The following best management practices (BMPs) would be implemented to minimize dust generation during construction:

- Use of water trucks to spray roadway travel surfaces on existing and temporary roads used for construction
- Installation of temporary sand fences strategically placed within the DCA being constructed
- Placement of a gravel surface on interim staging areas within the DCA used by the contractor
- Termination of work activities during high wind events

Sand fences may be temporarily installed during construction in order to limit the movement of sand from construction zones to adjacent areas of the lakebed. Sand fences were previously used during construction for Phase 7 and 7a Projects of the OLDMP. The sand fence would be black fabric with 50 percent porosity that is UV stabilized (Model SF-50 from U.S. Fence, or equivalent) and supported by steel T- posts (approximately 7 feet in height and driven into the ground to a depth of approximately 4 feet, resulting in approximately 3 feet of height for exposed post). Since the fence would not exceed 60 inches in height, wire or monofilament line across the top would not be necessary to reduce perching by predators (corvids).

Temporary sand fencing would be maintained and then removed at the completion of construction activities. Sand fences that deteriorate and could potentially create litter on the lakebed would be repaired or removed.

3.1.6 Other Features for DCAS

3.1.6.1 Drainage System

Drainage systems would be installed beneath Managed Vegetation fields and/or on the margins of Shallow Flood areas. New drainage laterals to be installed would be perforated plastic pipes (heavy duty corrugated polyethylene) in covered trenches placed 5 to 9 feet below the ground surface. The drainage system would control soil saturation to:

- maintain drained root zone under irrigated vegetation
- maintain drained pipe zone (prevent pipe floatation)
- capture water along the DCA perimeters to reduce seepage off-site

Drainage return flows can be recirculated into Managed Vegetation and Shallow Flood areas. The existing drainwater system functions in this manner. A drainwater mainline (brineline) runs parallel to the water supply mainline throughout the dust mitigation area from the T2 to T25 turnouts. The drainwater mainline collects and delivers recirculated water to the existing Managed Vegetation and Shallow Flood areas. Drainage from T10-1-L1 and the Managed Vegetation areas in C2 and DuckPond may use the brineline; the Shallow Flood areas proposed for T37-2 are too distant and would not connect to the brineline. Management of drainwater ultimately depends on salt management needs for dust control, since drainwater is saltier than water from the Los Angeles Aqueduct. Improvements (pipelines, submain pump stations) to the brine management system may be required.

3.1.6.2 Power Supply and Controls

Power for pumps for water conveyance to and from DCAs is supplied by an existing underground 3-phase, 4.8 KV grid. The 4.8 KV grid would be connected to new turnouts, if any, with buried cables. The turnouts have their own distribution system for power and controls. Transformers at the turnouts convert the power to lower voltages to supply various equipment, lighting, and control instrumentation. The 3-phase, 480 volt alternating current (VAC) is typically used for pump stations. Directed buried cables would be used to supply power from the turnouts to the pump stations. New high voltage cable may be installed to power pumps.

3.1.7 Overall Construction Sequence

The schedule for installation of the Phase 9/10 Project elements would be as prescribed in the 2014 Stipulated Judgment. Construction would be completed by December 31, 2017 (subject to the possible occurrence of a force majeure event). Construction activities would include:

- Earthwork, berm construction and water distribution systems for Managed Vegetation Areas
- Planting and seeding in Managed Vegetation Areas
- Earthwork, berm construction and water distribution systems for Shallow Flood Areas
- Turnout and pump station construction
- Gravel Cover

3.1.8 Operations and Maintenance

3.1.8.1 Gravel Cover

Once the Gravel Cover has been applied to the playa, limited maintenance would be required to preserve the gravel blanket. The gravel would be visually monitored for sand and dust accumulation, evidence of washouts, or inundation. If any of these conditions are observed over a substantial area, additional gravel would be transported to the playa. It is assumed that no maintenance would be needed in the initial years of operation. Subsequently, small areas may require replenishment and later, larger areas may require replacement. It is anticipated that the total volume of gravel may be replaced, at most, once every 50 years. Concrete mat is anticipated to have a service life in excess of 25 years.

3.1.8.2 Shallow Flood

Surface saturation in Shallow Flood areas would continue to be monitored via satellite images (as is currently the practice). Maintenance activities would occur as needed throughout the year. However, when feasible, extended facility maintenance (repair of pumps, berms, laterals, and submains) would be completed during the non-dust control season when dust storms generally do not occur (July to September). Inflows, outflows and water quality in Shallow Flood areas would be monitored. Drains and valves would be inspected periodically and maintained as necessary.

3.1.8.3 Berms and Roadways

Berms and roadways would be maintained to prevent erosion and washout, and to maintain safe driving conditions. Maintenance activity would include minor earthwork and gravel replenishment.

3.1.8.4 Managed Vegetation

Vegetation would be monitored in the field to determine reclamation progress (declines in soil salinity), soil moisture, irrigation system function (including leak identification and repair), germination success, transplant mortality, and plant vigor. Once established, soil fertility and plants would be monitored at least annually, and vegetative cover would be assessed with satellite imagery. At present, imagery is ground-truthed with specialized, near-surface digital images of vegetative cover. Operations activities would include maintenance of irrigation systems and replanting/reseeding as necessary.

After initial seeding, areas with limited plant growth would be assessed for drainage limitations. Drainage would be improved by constructing surface, French, or subsurface drains; or the area may be replanted. The site would continue to be managed to achieve dust compliance standards as swiftly as possible.

Table 3-5 summarizes the amounts and type of fertilizers (granular and liquid) anticipated to be applied on the Phase 9/10 Project Managed Vegetation areas. Granular fertilizers (rock phosphate and potassium chloride) would be applied during seeding (once). Liquid fertilizers (potassium nitrate and UAN-32 or AN20) would be applied twice a year after early plant establishment (typically after one growing season). Potassium nitrate may or may not be used depending on soil conditions. Either UAN-32 or AN20 (both are nitrogen fertilizer solutions) may be used depending on availability and costs.

Table 3-5
Estimated Fertilizer Use Phase 9/10 Project

Project	Single Application		Split Application		
Phase 9/10	Rock Phosphate	Potassium Chloride	Potassium Nitrate	UAN-32	AN20
	(350 lb/acre)	(55 lb/acre)	(26/gal/acre)	(6.5 gal/acre)	(6.4 gal/acre)
	required	required	optional[1]	required[2]	required[2]
	26.4 tons	4.2 tons	3,926 gal	982 gal	966 gal

UAN = urea and ammonium nitrate fertilizer
AN20 = ammonium nitrogen fertilizer solution
1 Potassium Nitrate (optional) may be applied depending on soil conditions.
2 Choose between UAN-32 or AN20.

Section 4.1
Aesthetics

4.1 AESTHETICS

As documented in the Initial Study for the Phase 9/10 Project (**Appendix A**), LADWP determined that since a RAP had not been prepared for the entire Project area, impacts from the Project on scenic vistas and visual quality of the site would be discussed further in the EIR. Additionally, since release of the NOP, the LADWP engineering team has developed more specific design plans for the T18S Transition Area. As described in the Initial Study, the Project would not substantially damage scenic resources or create a new source of substantial light and glare which would adversely affect day or nighttime views of the area. Therefore, these topics are not discussed further in this EIR.

4.1.1 Regulatory Framework

4.1.1.1 California State Lands Commission

The Phase 9/10 Project areas are primarily located on historic Owens Lake bed owned and operated in trust for the people of the State of California by the CSLC. A lease amendment from CSLC would be required in order to install the DCMs. CSLC will consider the visual impacts of the proposed Project during review of the lease application.

4.1.1.2 Inyo County General Plan

The Conservation/Open Space Element of the Inyo County General Plan (2001) includes Goal VIS-1: Preserve and protect resources throughout the County that contribute to a unique visual experience for visitors and quality of life for County residents.

4.1.1.3 Bureau of Land Management

Approximately 100 acres of the Project area in three DCAs (T32-1-L1, Duck Pond L-1 and Duck Pond L-2) are lands owned and managed by the BLM. These Project areas overlap with the 15,790-acre Bishop Resource Management Plan (BRMP), which describes general policies for land management consistent with the Federal Land Policy and Management Act (FLPMA). In 1976 Congress passed the FLPMA which specifies, in part, that public lands be managed in a manner that will protect the quality of scenic values. Implementation of the Project on the federal portions of T32-1-L1 and Duck Pond-L1 and –L2 DCAs would require a Right-of-Way (ROW) from BLM for construction, operation and maintenance of dust control measures. Prior to issuing a ROW, BLM will review the proposed Project for land use conformance and other requirements under FLPMA and to environmental review requirements under the National Environmental Policy Act (NEPA), including review of Project-related impacts on scenic values.

4.1.2 Existing Conditions

The Owens Valley is bounded by the eastern Sierra Nevada to the west and the Inyo Mountains to the east, with the Coso Range rising to the south. The southern end of the Owens Valley is characterized by small, rural communities (e.g., Cartago, Olancha, Keeler, Swansea, and Dolomite) surrounded by dry, desert environment with minimal vegetation. Under existing conditions, views of Owens Lake are characterized by pockets of desert vegetation, limited vegetated areas related to seeps and springs and the Delta, vast areas of desert playa, mining operations, the brine pool (which fluctuates in size) and the existing system of dust control – bermed areas periodically filled with water, areas of managed vegetation and gravel, and the internal roadway network (**Figures 4.1-1**). As of 2014, transition areas for dust control are currently under construction and will feature a hybrid mix of vegetation, gravel, saturated soils and standing water, and ponds; the anticipated appearance of these BACM Hybrid areas is conceptually depicted in **Figure 4.1-2**.

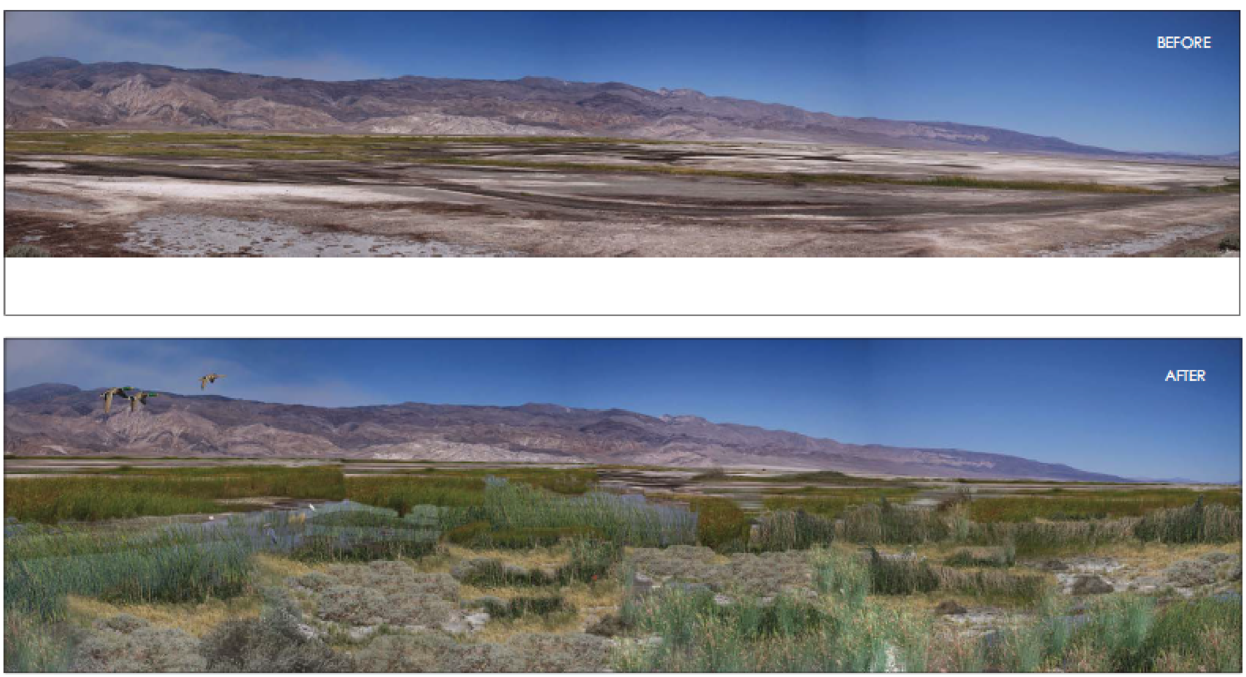
Under existing conditions, the barren playa can be described as gray to tan to white with surrounding areas of brighter white. Partially vegetated areas adjacent to and outside the historic lake bed appear darker in coloration. There are no major landform features or rock outcroppings in the lakebed. Views from adjacent roadways are described below:

- U.S. Highway 395 is the primary north-south motor vehicle route through the Owens Valley and eastern Sierra Nevada. DCAs T37-1-L1; T37-2-L1, -L2, -L3 and –L4; C2-L1 and Duck Pond are adjacent and visible from U.S. 395. Motorists traveling northbound and southbound can view desert landscape and dry vegetation in the foreground, the Inyo Mountains in the distant background, and the Owens dry lake bed in middle-ground views.

- SR 136 is a northwest-southeast route, used to access Death Valley National Park and U.S. 395. DCAs T32-1-L1, T21-L1, -L2, -L3 and –L4 are adjacent and visible from SR 136. Motorists traveling northwest or southeast on SR 136 have mostly unimpeded views of the lakebed. Desert landscape and dry vegetation dominate the foreground, the lakebed can be seen in the middle-ground, and the Sierra Nevada creates a panoramic view in the distant background.

- SR 190 is the primary northeast-southwest route used to access Death Valley National Park from U.S. 395. SR 190 converges with SR 136 and forms the eastern boundary of Owens Dry Lake, near DCAs T21- L1, -L2, -L3 and –L4. DCA T10-L1 and Duck Pond are also adjacent and visible from SR 190. Motorists traveling to the north east or southwest have unimpeded views of the open lakebed. Desert landscape and dry vegetation can be seen in the foreground, the lakebed dominates the middle-ground, and the Sierra Nevada creates a panoramic view in the distant background.

Figure 4.1-1
Owens Lake Aerial View



Source: AHBE, et. al, 2011.

Figure 4.1- 2
T36-1-b Rendering – Example of BACM Hybrid under Phase 7a Project

4.1.3 Significance Criteria

The proposed Project would have a significant impact on aesthetics if it (State CEQA Guidelines, Appendix G):

- Had a substantial adverse effect on a scenic vista.
- Substantially degraded the existing visual character or quality of the site and its surroundings.

4.1.4 Impacts

The following analysis considers impacts from installation of dust control on 3.61 square miles of the Phase 9/10 Project areas and transition of 1.82 square miles of existing Shallow Flooding to a mix of Shallow Flooding Pond and Gravel Cover to conserve water (original Phase 9/10 Project). However, as noted previously, LADWP has identified an environmentally superior alternative (Avoidance Alternative, see **Section 5**) which would reduce impacts on significant cultural resources to less than significant levels, and reduce dust to the maximum extent feasible. Under the Avoidance Alternative, BACM would not be installed on approximately 278 acres (plus any archaeologically sensitive areas present on BLM or private lands, or discovered during construction) of the 3.61 square miles of DCAs identified for dust mitigation. Since the Avoidance Alternative would construct and operate DCMs on a smaller area than the Project and thereby cause less impacts than the Phase 9/10 Project, the following analysis of the aesthetic impacts of the Project presents a worst-case impact assessment.

4.1.4.1 Visual Impacts During Construction

Construction activities for the Project include site preparation (excavation, soil conditioning, and land leveling), preparation of gravel stockpile areas, raised roadway and irrigation pipeline installation, installation of electrical and mechanical equipment related to the irrigation systems, installation of the geotextile and gravel, and planting activities. Throughout the construction period, additional vehicles including gravel haul trucks from the mines would be present on the lakebed. Views of the Project site during construction would include over 100 vehicles – including dozers, scrapers, flatbed trucks, backhoes, water trucks, fuel trucks, gravel haul trucks, and light duty trucks. The level of construction activity required for the Phase 9/10 Project would alter views of the Project site. However, within the context of the construction and maintenance activity ongoing on the lakebed, the impact of ground disturbance associated with installation of Project facilities would be temporary and less than significant on the visual character of the Project site.

4.1.4.2 Visual Impacts During Operation

Under the Phase 9/10 Project, views of approximately 3.61 square miles of the lake bed that are currently primarily barren playa would be altered by construction of Shallow Flooding, Managed Vegetation and Gravel Cover DCMs. These Project areas are located on dry lake bed which is desert grayish to white to light brown sand. Vegetated areas within the Phase 9 DCAs include areas of sparse desert saltbush scrub with saltbush (*Atriplex parryi*), saltgrass (*Distichlis spicata*)

Mojave seabite (*Suaeda moquinii*), boraxweed (*Nitrophila occidentalis*), greasewood (*Sarcobatus vermiculatus*) and wirerush (*Juba* sp.), among other species. Almost all of the Phase 10 DCAs are unvegetated barren playa.

Once installed, views of the Project site would be of approximately 1.56 square miles of Shallow Flooding (saturated soils, standing water, and ponds), approximately 0.24 square miles of Managed Vegetation (with a greater species diversity and density than existing vegetated areas in the Project DCAs), and approximately 3.63 square miles of Gravel Cover (**Table 4.1-1**). All areas would include access roadways and perimeter berms. No tall structures or other obstructions to scenic vistas are proposed as part of the Project; the Project would not alter or block scenic views of the Sierra Nevada, Coso and Inyo Mountains.

Installation of the approximately 0.5 square mile of Shallow Flooding in T37-2-L1, -L2, -L3 and -L4 DCAs would create views of saturated soils and standing water that would visually blend with the Shallow Flooding currently being installed in T37-2 DCA. Views of Shallow Flooding in T10-1-L1 DCA would visually blend with the existing Shallow Flooding in T9 and T10-1 DCAs. Managed Vegetation in Duck Pond-L1 and C2-L1 DCAs would increase the diversity and density of the vegetation in these areas, an aesthetic improvement.

Table 4.1-1
Summary of DCM Types – Phase 9/10 Project
(square miles)

	Playa (predominantly unvegetated barren playa)	**Shallow Flooding**	**Vegetation**	**Gravel Cover**
Existing Conditions within Phase 9/10 Project areas	3.19	1.82	0.42*	0
Future Conditions with Phase 9/10 Project	0	1.56	0.24	3.63
Change	-3.19	-0.26	-0.18	+3.63

* No Managed Vegetation currently exists in the Project DCAs. Vegetated areas (predominantly sparsely vegetated areas) include alkali meadow (17.2 acres), wet alkali meadow (5.0 acres), and Aeolian scrub (248.1 acres).

Gravel Cover. Overall, the Phase 9/10 DCAs would approximately double the Gravel Cover area on the lake (3.5 square miles under the Phase 7a and Phase 8 Projects, and 3.63 square miles proposed under the Phase 9/10 Project).

Range of Gravel Color. Both of the potential gravel sources produce rock with a wide range of colors. Samples from the F.W. Aggregate Dolomite mine (Durability Quarry) and the LADWP Shale Borrow Pit were washed, dried, and sorted (by group) into color groupings according to the Geological Society of America Rock-Color Chart (GSA, 1991). The color distribution of the samples (**Figure 4.1-3)** illustrates the range of colors observed; both of the mines produce rock grouped as "very light" as well as material that was medium gray. Gravel from the dolomite mine also includes white rock, and overall is lighter in appearance than the shale which ranges to medium dark gray. **Figure 4.1-4** provides a photographic comparison of playa color to gravel which highlights the similarity of the gray and tan tones of existing playa conditions with Dolomite gravel.

Per the terms of the 1998 MOA between LADWP and GBUAPCD, gravel used for dust mitigation on Owens Lake shall be comparable in coloration to the lake bed soils. Consistent with this requirement, shale and/or dolomite would be used that is complementary in color with the underlying lake bed and surrounding landscape to the maximum extent feasible. It is anticipated that dolomite would be used for the Gravel Cover DCAs and shale or dolomite would continue to be used for berm maintenance.

While brighter in color from an aerial view (**Figure 4.1-5**), at the distance and elevation of the nearest roadways, post-Project views of the Gravel Cover areas are predicted to be extremely similar to existing conditions and within the range of the lake bed's variable color palette (**Figure 4.1-6**). Gravel Cover in T37-1-L1 and T35-2-L1 DCAs would appear as an expansion of the Gravel Cover recently installed under the Phase 8 Project and currently being installed for the Phase 7a Project. Gravel Cover areas would use gravel reflecting the range of naturally occurring colors of the lake playa, which would assist in preserving the visual continuity of the lake bed expanse.

Concrete Block Mat. Concrete block mats may be used to armor the berms surrounding new DCAs, or for maintenance of existing berms. **Figure 3-19** is a photograph of the existing concrete block mat test area on Owens Lake. To form the mat, individual concrete blocks are tied together with a high strength polypropylene geogrid or cable systems. The mat currently under review consists of 6.5 X 6.5 X 2.25 inch blocks with 1.5-inch spacing between the blocks. From a distance, the individual blocks of the mat would not be discernable, only the general effect of the grey color – consistent with the expanses of barren playa and Gravel Cover currently on the lake.

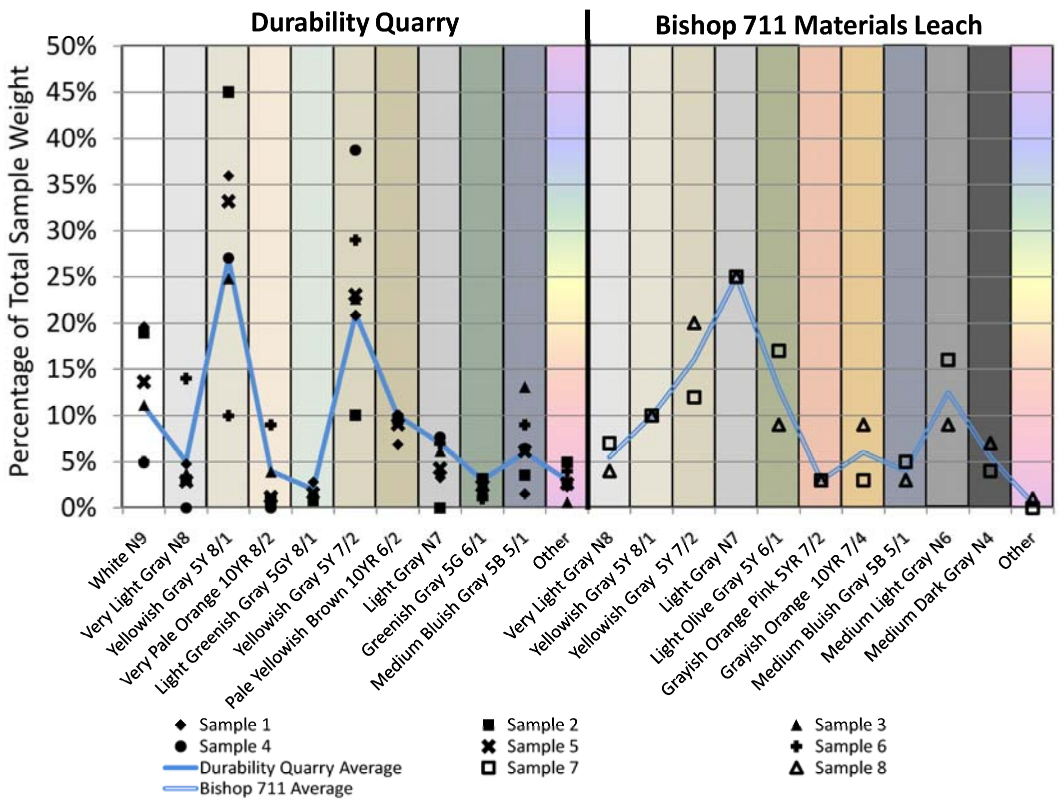


Figure 4.1-3
Color Distribution for Local Gravel

Playa **Playa Close-Up** **Corridor 1 Dolomite Close-up**

Figure 4.1-4
Dolomite Gravel and Playa Color Comparison

Figure 4.1-5
Aerial View of Phase 8 Project Gravel Cover

Figure 4.1-6
Owens Lake View (to the East) of T37-1-L1 from Highway 395

The proposed new Gravel Cover areas would not substantially alter the elevation of the affected DCAs. Gravel would be from local sources and the color will be within the range of existing lake bed color. Since the same gravel sources would be used as the raw materials for the concrete blocks, the concrete block mat used to armor new or existing berms is not anticipated to substantially differ in color from existing Gravel Cover areas. Therefore, installation of Gravel Cover on an additional 3.63 square miles of the lake, and use of concrete block mats on berms, would alter, but would not substantially degrade the visual character of the site. The aesthetic impact of Gravel Cover proposed under the Phase 9/10 Project is therefore less than significant.

Transition Area. During the dust season, existing views of Transition Area T18S are of 1.82 square miles of saturated soils and standing water; from July through September water is not generally added to the basins and areas of T18S may appear dry. Under the proposed Project, T18S DCA would transition to 1.02 square miles of ponds and 0.81 square miles of Gravel Cover. The four ponds in T18S DCA would have curved edges as practicable to soften the historically straight lines of the berm roads and ponded areas (**Figure 3-6**). Variations in rock size and color for Gravel Cover areas are also anticipated.

Implementation of DCMs on the lake has altered the views of the lake bed from dry playa with fluctuating sized brine pool to a managed system of bermed areas of water and vegetation and roadways. Due to the distance from off-lake viewers and the size of the Phase 9/10 Project areas in relation to the overall 110-square-mile lake bed, views of the Project areas with additional gravel, vegetation, and shallow flooding installed would not change the dramatic backdrop or natural feel of the overall landscape of Owens Lake. The proposed Project would expand the area of DCAs on the lake – which would alter the visual character of the site. The impact is less than significant, however, since it would be visually consistent with the over 45 square miles of existing dust control currently present, or being constructed, on the lake. Additionally, the Phase 9/10 Project would improve the appearance of 0.24 square miles (approximately 152 acres) of the lake with the installation of Managed Vegetation with a diversity of plant species.

4.1.5 Mitigation Measures

Since no significant impacts have been identified, no mitigation measures are required.

Section 4.2
Air Quality

4.2 AIR QUALITY

Based on the information presented in the Initial Study for the Phase 9/10 Project (**Appendix A**), LADWP determined that air quality as related to the applicable air quality and greenhouse gas reduction plans, violation of air quality standards, cumulative net increases in criteria pollutants, and greenhouse gas emissions would be carried forward for detailed analysis in this EIR. As described in the Initial Study, the Project will not expose sensitive receptors to substantial pollutant concentrations or create objectionable odors affecting a substantial number of people. Therefore, these topics are not discussed further in this EIR.

4.2.1 Resource Overview

4.2.1.1 Criteria Pollutants

Air quality is defined by ambient air concentrations of specific pollutants determined by the USEPA to be of concern with respect to the health and welfare of the general public. Six major pollutants of concern, called "criteria pollutants," are carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), particulate matter in two categories (PM_{10} and fine particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$)), and lead (Pb). The USEPA has established NAAQS for these pollutants. Areas that violate a federal air quality standard are designated as non-attainment areas.

Ambient air quality refers to the atmospheric concentration of a specific compound (amount of pollutants in a specified volume of air) that occurs at a particular geographic location. The ambient air quality levels measured at a particular location are determined by the interactions of emissions, meteorology, and chemistry. Emission considerations include the types, amounts, and locations of pollutants emitted into the atmosphere. Meteorological considerations include wind and precipitation patterns affecting the distribution, dilution, and removal of pollutant emissions. Chemical reactions can transform pollutant emissions into other chemical substances. Ambient air quality data are generally reported as a mass per unit volume (e.g., micrograms per cubic meter of air) or as a volume fraction (e.g., parts per million [ppm] by volume).

Pollutant emissions typically refer to the amount of pollutants or pollutant precursors introduced into the atmosphere by a source or group of sources. Pollutant emissions contribute to the ambient air concentrations of criteria pollutants, either by directly affecting the pollutant concentrations measured in the ambient air or by interacting in the atmosphere to form criteria pollutants. Primary pollutants, such as CO, SO_2, Pb, and some particulates, are emitted directly into the atmosphere from emission sources.

Secondary pollutants, such as O_3, NO_2, and some particulates, are formed through atmospheric chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes. PM_{10} and $PM_{2.5}$ are generated as primary pollutants by various mechanical processes (for example, abrasion, erosion, mixing, or atomization) or combustion processes. However, PM_{10} and $PM_{2.5}$ can also be formed as secondary pollutants through chemical reactions or by gaseous pollutants condensing into fine aerosols. In general, emissions that are considered "precursors" to secondary pollutants in the atmosphere (such as reactive organic gases [ROG] and oxides of nitrogen [NOx], which are considered precursors for O_3), are the pollutants for which emissions are evaluated to control the level of O_3 in the ambient air.

Existing air quality at a given location can be described by the concentrations of various pollutants in the atmosphere. Pollutants are defined as two general types: (1) "criteria" pollutants and (2) toxic compounds. Criteria pollutants have national and/or state ambient air quality standards. The USEPA establishes the NAAQS, while the CARB establishes the state standards, termed the California Ambient Air Quality Standards (CAAQS). The NAAQS represent maximum acceptable concentrations that generally may not be exceeded more than once per year, except the annual standards, which may never be exceeded. The CAAQS represent maximum acceptable pollutant concentrations that are not to be equaled or exceeded.

4.2.1.2 Toxic Air Contaminants

Toxic air contaminants (TACs) are substances that have the potential to be emitted into the ambient air and that have been determined to present some level of acute or chronic health risk (cancer or non-cancer) to the general public. These pollutants may be emitted in trace amounts from various types of sources, including combustion sources.

4.2.1.3 Greenhouse Gas Emissions

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere. The most common GHGs emitted from natural processes and human activities include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Examples of GHGs created and emitted primarily through human activities include fluorinated gases (hydrofluorocarbons and perfluorocarbons) and sulfur hexafluoride. Each GHG is assigned a global warming potential. The global warming potential is the ability of a gas or aerosol to trap heat in the atmosphere. The global warming potential rating system is standardized to CO_2, which has a value of one. For example, CH_4 has a global warming potential of 21, which means that it has a global warming effect 21 times greater than CO_2 on an equal-mass basis. Total GHG emissions from a source are often reported as a CO_2 equivalent (CO_2e). The CO_2e is calculated by multiplying the emission of each GHG by its global warming potential and adding the results together to produce a single, combined emission rate representing all GHGs. On a national scale, federal agencies are addressing emissions of GHGs by reductions mandated in federal laws and Executive Orders. Several states have promulgated laws as a means to reduce statewide levels of GHG emissions. In particular, the California Global Warming Solutions Act of 2006 directs the State of California to reduce statewide GHG emissions to 1990 levels by the year 2020.

Assembly Bill (AB) 32, California Global Warming Solutions Act of 2006, was signed into law on September 27, 2006. AB 32 requires CARB, in coordination with State agencies as well as members of the private and academic communities, to adopt regulations to require the reporting and verification of statewide greenhouse gas emissions and to monitor and enforce compliance with this program. Under the provisions of the bill, by 2020, statewide greenhouse gas emissions will be limited to the equivalent emission levels in 1990. On December 12, 2008, CARB adopted its Climate Change Scoping Plan pursuant to AB 32 (CARB, 2008a). The Scoping Plan was re-approved by CARB on August 24, 2011. The scoping plan indicates how these emission reductions will be achieved from significant greenhouse gas sources via regulations, market mechanisms and other actions.

The potential effects of proposed GHG emissions are by nature global, and have cumulative impacts. As individual sources, Project GHG emissions are not large enough to have an appreciable effect on climate change. Therefore, the impact of proposed GHG emissions to climate change is discussed in the context of cumulative impacts.

As a power utility, the majority of LADWP's GHG emissions results from power generation. As with the Phase 9/10 Project, other GHG emissions are a result of vehicle and equipment use for construction and operation of LADWP facilities. To reduce Department-wide GHG emissions, LADWP has instituted various programs including: increasing the use of renewable energy by 33 percent by 2020, early divestiture of coal generation, repowering existing natural gas power plants, adopting an aggressive energy efficiency program, and use of electric fleet vehicles.

4.2.2 Regulatory Framework

The Federal CAA and its subsequent amendments establish air quality regulations and the NAAQS and delegate the enforcement of these standards to the states. In California, the CARB is responsible for enforcing air pollution regulations. The CARB has in turn delegated the responsibility of regulating stationary emission sources to regional air agencies. In the Great Basin Valleys Air Basin, the Great Basin Unified Air Pollution Control District (GBUAPCD) has this responsibility. The CAA establishes air quality planning processes and requires areas in nonattainment of a NAAQS to develop a State Implementation Plan (SIP) that details how the state will attain the standard within mandated time frames. The requirements and compliance dates for attainment are based on the severity of the nonattainment classification of the area. The national and state ambient air quality standards are shown in **Table 4.2-1**. In California, the CARB is responsible for enforcing both the federal and state air pollution standards.

Table 4.2-1
National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards [a]	
			Primary [b,c]	Secondary [b,d]
Ozone (O_3)	8-hour	0.070 ppm (137 µg/m^3)	0.075 ppm (147 µg/m^3)	Same as primary
	1-hour	0.09 ppm (180 µg/m^3)	—	—
Carbon monoxide (CO)	8-hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	—
	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	—
Nitrogen dioxide (NO_2)	Annual	0.030 ppm (56 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as primary
	1-hour	0.18 ppm (339 µg/m^3)	100 ppb	—
Sulfur dioxide (SO_2)	24-hour	0.04 ppm (105 µg/m^3)	0.14 ppm (for certain areas)	—
	3-hour	—	—	0.5 ppm (1,300 µg/m^3)
	1-hour	0.25 ppm (655 µg/m^3)	0.075 ppm (196 µg/m^3)	—
	Annual	—	0.030 ppm (for certain areas)	
PM_{10}	Annual	20 µg/m^3	—	—
	24-hour	50 µg/m^3	150 µg/m^3	Same as primary
$PM_{2.5}$	Annual	12 µg/m^3	12 µg/m^3	15 µg/m^3
	24-hour	—	35 µg/m^3	Same as primary
Lead (Pb)	Rolling 3-month avg	—	0.15 µg/m^3	Same as primary
	30-day average	1.5 µg/m^3	—	—
	Calendar Quarter	—	1.5 µg/m^3 (for certain areas)	Same as primary
Hydrogen Sulfide (H_2S)	1-hour	0.03 ppm (42 µg/m^3)	—	—

Source: CARB, 2013

Notes:

[a] Standards other than the 1-hour ozone, 24-hour PM_{10}, 24-hour $PM_{2.5}$, and those based on annual averages are not to be exceeded more than once a year.

[b] Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis.

[c] Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than 3 years after that state's implementation plan is approved by the USEPA.

[d] Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

The following summarizes the air quality rules and regulations that apply to the Owens Lake area.

4.2.2.1 Federal Regulations

Section 176(c) of the CAA, which contains the General Conformity Rule, states that a federal agency cannot issue a permit for or support an activity unless the agency determines that it will conform to the most recent USEPA-approved SIP. This means that projects using federal funds or requiring federal approval must not (1) cause or contribute to any new violation of a NAAQS, (2) increase the frequency or severity of any existing violation, or (3) delay the timely attainment of any standard, interim emission reduction, or other milestone. GBUAPCD Regulation 13 implements the USEPA's General Conformity Rule. Within the Coso Junction area of the Great Basin Valleys Air Basin, if net annual emissions of PM_{10} increase by less than 100 tons, a CAA conformity determination is not required. Within the Owens Valley area, the de minimis threshold is 75 tons per year of PM_{10} because that area is classified as a serious nonattainment area for PM_{10}. If emissions of PM_{10} in these areas exceed the de minimis threshold, the BLM must demonstrate conformity under one of the methods prescribed by GBUAPCD Regulation 13.

LADWP anticipates requesting an amendment to existing Clean Water Act Section 404 permit SPL-2008-00582-BAH from the U.S. Army Corps of Engineers (issued for OLDMP Phase 7 Project) to include construction, operations, and maintenance associated with Phase 9/10 Project. Based on past practices, LADWP does not expect the U.S. Army Corps of Engineers to assume jurisdiction over the Project. However, BLM will, prior to issuing right-of-way agreement for use of federal lands, conduct a federal conformity analysis since the Project is in a federal nonattainment area for PM_{10}. Since the proposed Project is expected to decrease the frequency and severity of existing federal particulate matter violations, it is anticipated that the Project will be found in conformance.

4.2.2.2 State Regulations

The CARB has oversight over air quality in the state of California. Regulation of individual stationary sources has been delegated to local air pollution control agencies. The CARB is responsible for developing programs designed to reduce emissions from non-stationary sources, including motor vehicles and off-road equipment.

The CARB and the California Office of Environmental Health Hazard Assessment (OEHHA) are also responsible for developing regulations governing TACs. The CARB and OEHHA identify specific air pollutants as TACs, develop health thresholds for exposure to TACs, and develop guidelines for conducting health risk assessments for sources of TAC emissions.

4.2.2.3 Local Regulations

Owens Lake is located in the jurisdiction of the GBUAPCD. GBUAPCD is responsible for regulating stationary sources of air emissions in the area. Stationary sources, such as geothermal plants, that have the potential to emit air pollutants into the ambient air are subject to the Rules and Regulations adopted by GBUAPCD.

As part of the PM_{10} attainment planning process in the Owens Lake area, the GBUAPCD has adopted the 2003 SIP (GBUAPCD, 2003), the 2008 SIP (GBUAPCD, 2008a), and the 2013 Amendment to the 2008 SIP (GBUAPCD, 2013). The focus of this air quality plan is implementation of DCMs at Owens Dry Lake, which is one of the major particulate matter sources in the Valley. The SIP demonstrates how the NAAQS will be attained and maintained.

In July 1998, LADWP and GBUAPCD entered into a MOA to mitigate the dust problem (LADWP and GBUAPCD, 1998). Since 2001, LADWP has implemented BACM on areas of Owens Lake playa that have been designated as emissive by GBUAPCD.

The Public Safety Element of the Inyo County General Plan contains policies related to air quality (Inyo County, 2001), including the following policies relevant to the Phase 9/10 Project:

- **Policy AQ-1.1: Regulations to Reduce PM_{10}**. Support the implementation of the State Implementation Plan and the agreement between GBUAPCD and LADWP to reduce PM_{10}.
- **Policy AQ-1.2: Attainment Programs**. Participate in GBUAPCD's attainment programs.
- **Policy AQ-1.3: Dust Suppression During Construction**. Require dust-suppression measures for grading activities. Under Implementation Measure 4.0, the County shall require contractors to implement dust suppression measures during excavation, grading, and site preparation activities. Techniques may include, but are not limited to the following: site watering or application of dust suppressants, phasing or extension of grading operations, covering of stockpiles, suspension of grading activities during high wind periods (typically winds greater than 25 miles per hour), and revegetation of graded site.

4.2.3 Existing Conditions

4.2.3.1 Regional Climate

Climatological data for Independence, California for the period from January 1, 1893 to December 31, 2010 are representative of conditions at Owens Lake. The Independence monitoring station measures temperature, precipitation (including snowfall), heating degree days, and cooling degree days. Monthly average temperatures and precipitation for Owens Lake are summarized in **Table 4.2-2**.

The Project area is located within the OVPA. Air quality in Inyo County is administered by GBUAPCD.

The climate of the Owens Lake area is classified as high desert climate characterized by dry, hot summers and cool winters. The major influences on the regional climate are the Eastern Pacific high pressure system, the Sierra Nevada mountain range to the west, and the mountain ranges to the east of the Project location.

Table 4.2-2
Monthly Average Temperatures and Precipitation
Independence Meteorological Station

Month	Temperature, °F		Precipitation, Inches
	Minimum	Maximum	Measurement
January	27.5	54.1	1.00
February	31.3	58.1	1.03
March	36.4	65.6	0.45
April	42.4	72.8	0.24
May	50.7	81.9	0.16
June	58.7	91.3	0.11
July	64.1	97.8	0.13
August	61.9	95.9	0.13
September	54.9	88.5	0.19
October	45.0	76.9	0.25
November	34.2	64.1	0.56
December	28.1	54.3	1.01
Annual	44.6	75.1	5.26

Source: Desert Research Institute, 2011

The GBUAPCD operates a series of ambient air quality monitoring stations throughout the OVPA. Ozone concentrations at the Death Valley monitoring station are likely to be representative of site conditions, as O_3 levels are most likely the result of transport rather than localized emissions, and O_3 is considered a basin-wide pollutant. The Keeler station, near Owens Lake measures $PM_{2.5}$. Hydrogen sulfide is monitored in the Coso Junction area due to concerns regarding emissions from geothermal plants. CO, NO_2, and SO_2 are not considered to be of concern with regard to attainment of the ambient air quality standards.

Table 4.2-3 provides a summary of background air quality data for Owens Lake.

Table 4.2-3
Air Quality Data for the Owens Lake Area (2007-2013)

Air Quality Indicator	2007	2008	2009	2010	2011	2012	2013
Ozone (O_3)[1]							
Peak 1-hour value (ppm)	0.107	0.098	0.098	0.081	0.084	0.082	0.080
Days above state standard (0.09 ppm)	3	1	1	0	0	0	0
Peak 8-hour value (ppm)	0.094	0.094	0.086	0.076	0.079	0.078	0.074
Days above state standard (0.070 ppm)	35	21	4	2	20	8	5
Days above federal standard (0.075 ppm)[2]	18	5	2	1	3	1	0
Particulate matter less than or equal to 10 microns in diameter (PM_{10})							
Olancha Monitoring Station[3]							
Peak 24-hour value (μg/m³)	114	357	650	577	779	485	276
Days above state standard (50 μg/m³)	*	*	*	*	*	*	*
Days above federal standard (150 μg/m³)	*	5	2	7.3	4	3	6
Dirty Socks Monitoring Station[4]							
Peak 24-hour value (μg/m³)	497	499	556	1437	914	858	*
Days above state standard (50 μg/m³)	*	*	*	*	*	*	*
Days above federal standard (150 μg/m³)	*	9	7	*	8.1	5.9	*
Lone Pine Monitoring Station[5]							
Peak 24-hour value (μg/m³)	66	399	264	142	134	168	137
Days above state standard (50 μg/m³)	*	*	*	*	*	*	*
Days above federal standard (150 μg/m³)	*	1	2	0	0	*	0
Ash Point[7]							
Peak 24-hour value (μg/m³)	104	198	1506	285	277	232	120
Days above state standard (50 μg/m³)	*	*	*	*	*	*	*
Days above federal standard (150 μg/m³)	0	1	5	1	*	3	0
Shell Cut[9]							
Peak 24-hour value (μg/m³)	136	693	397	842	393	2149	447
Days above state standard (50 μg/m³)	*	*	* *		*	*	*
Days above federal standard (150 μg/m³)	*	5.1	3	4	4	10	3
Flat Rock[10]							
Peak 24-hour value (μg/m³)	727	532	389	871	424	-	-
Days above state standard (50 μg/m³)	*	*	*	*	*	-	-
Days above federal standard (150 μg/m³)	*	3	5.1	3	*	-	-
Lizard Tail[11]							
Peak 24-hour value (μg/m³)	*	633	395	4570	3444	3916	283
Days above state standard (50 μg/m³)	*	*	*	*	*	*	*
Days above federal standard (150 μg/m³)	*	2.2	6.1	16	7.6	12	2
North Beach[12]							
Peak 24-hour value (μg/m³)	*	40	1406	2067	937	1535	*
Days above state standard (50 μg/m³)	*	*	*	*	*	*	*
Days above federal standard (150 μg/m³)	*	*	9.1	8.0	10.1	8.3	*

Air Quality Indicator	2007	2008	2009	2010	2011	2012	2013
Lone Pine (Great Basin)[13]							
Peak 24-hour value (μg/m^3)	66	399	264	142	134	168	137
Days above state standard (50 μg/m^3)	1	*	*	*	*	*	*
Days above federal standard (150 μg/m^3)	0	1	2	0	0	1	0
Particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$)[3]							
Peak 24-hour value (μg/m^3)	57	58	69	106.2	208	99	93.6
Days above federal standard (35 μg/m^3)	2	4	4	5	9	4	8.2
Annual Average value (ppm)	5.8	7.1	6.8	7.1	8.1	6.6	7.8
Hydrogen Sulfide (H_2S)[4]							
Peak 1-hour value (ppm)	0.003	0.003	0.006	0.005	0.007	0.008	0.005
Days above state standard (0.03 ppm)	0	0	0	0	0	0	0

Notes: (1) Data from the Death Valley monitoring station.
(2) The federal O_3 standard was revised downward in 2008 to 0.075 ppm.
(3) Data from the Keeler – Cerro Gordo Road monitoring station.
(4) Data from the Coso Junction – Hwy 395 Rest Area monitoring station.
ppm = parts per million; μg/m^3 = micrograms per cubic meter
* insufficient data available to determine the value

Source: CARB, 2014

4.2.3.2 Compliance with Air Quality Standards

The OVPA is considered an unclassified/attainment area for the NAAQS for O_3, CO, NO_2, $PM_{2.5}$, and SO_2. In the Owens Lake area, the Owens Valley is classified as a serious nonattainment area for the NAAQS for PM_{10}. The dust control measures proposed in this Project are part of the 2008 SIP (GBUAPCD, 2008b), as amended in 2013 (GBUAPCD, 2013).

In a proposed rule published December 17, 2014, the USEPA is proposing to lower the 8-hour O_3 standard to within a range of 0.065 to 0.070 ppm. The ambient air monitoring station at Death Valley measures 8-hour O_3 concentrations above this level. GBUAPCD had previously (January 2009) recommended to CARB that southeast Inyo County be redesignated as an O_3 nonattainment area, as exceedances of the current 8-hour NAAQS of 0.075 ppm were recorded. Based on 2008-2010 data, CARB recommended to the USEPA that Southern Inyo County be designated as an O_3 nonattainment area. Other areas of Inyo County (including Owens Lake) were recommended as unclassifiable.

The OVPA is considered an unclassified/attainment area for the CAAQS for CO, NO_2, $PM_{2.5}$, and SO_2. Inyo County is considered an unclassified area for the 1-hour CAAQS for O_3, but Mono and Inyo Counties are classified as nonattainment areas for the 8-hour CAAQS for O_3. Nonattainment of ozone is associated with the effect of transported pollution from outside of Inyo County, rather than local generation of ozone or ozone precursors. The air basin is a nonattainment area for the CAAQS for PM_{10}.

4.2.4 Significance Criteria

According to State CEQA Guidelines, Appendix G VI(c), a project would be considered to have a significant impact on air quality if it:

a) Conflicts with or obstruct implementation of the applicable air quality plan.
b) Violates any air quality standard or contributes substantially to an existing or projected air quality violation.
c) Results in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
d) Exposes sensitive receptors to substantial pollutant concentrations.
e) Creates objectionable odors affecting a substantial number of people.

Project-related greenhouse gas emissions are considered to be significant if they:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

LADWP used the South Coast Air Quality Management District (SCAQMD) and CARB thresholds of significance to assess greenhouse emissions related to the Project.

4.2.5 Impacts

4.2.5.1 Consistency with the 2008 SIP

In 1987, the USEPA designated the OVPA as nonattainment for the NAAQS for PM_{10}. The result of this designation was a plan designed to improve air quality through the reduction of PM_{10} emissions in all of the communities in the Owens Valley (the 1998 SIP). Under this plan, LADWP began implementing DCMs on the lake bed with the goal of meeting the federal PM_{10} standards by the end of 2006. A revised SIP in 2003 called for LADWP to implement DCMs on 29.8 square miles of the Owens lake bed by December 31, 2006. The 2008 SIP included 15.1 square miles (9,664 acres) of supplemental dust control areas (12.7 square miles), channel area that may require DCMs (0.5 square mile), and study area (1.9 square miles). Of the 15.1 square miles identified in the 2008 SIP, 10.1 square miles were constructed as part of the Phase 7 Project.

As a result of delays outside LADWP's control, LADWP and GBUAPCD entered into an Abatement Order that led to the Phase 7a Project, which called for installation of dust control on approximately 3.1 square miles. As of early 2015, the Phase 7a Project is under construction. As part of the Phase 7a Project, LADWP is conducting a test of new BACM on up to one-third (0.33) square mile of the Phase 7a Project study area; specifically, Tillage is being implemented in T12-1 DCA. The Phase 7a Project also includes transition of 3.4 square miles of existing Shallow Flood controls to a combination of BACM in order to provide a water supply for new dust controls. A chronology of GBUAPCD, LADWP and CSLC actions related to the OLDMP is presented in **Section 2.5.2**.

Implementation of the Phase 9/10 Project would result in the installation of dust control on approximately 3.61 additional square miles of the lake, and transition of 1.82 square miles of an existing Shallow Flooding DCA to a mix of Gravel Cover and Pond Shallow Flood. Under the Avoidance Alternative (Section 5) approximately 278 acres would be excluded to protect cultural resources (plus any significant archaeological sites on federal or private parcels, or discovered during construction). The Project also includes: construction of new turnout facilities and modification to existing turnout facilities; irrigation and drainage systems and other infrastructure to support Shallow Flooding and Managed Vegetation; construction of public amenities such as a viewing area; installation of DCA berms; and construction of new water supply pipelines to connect T10-1-L1 and Duck Pond-L1 DCAs to the existing water distribution system.

The Phase 9/10 Project would be implemented in compliance with the relevant air quality plan for the Project area, the 2008 SIP (GBUAPCD, 2008a), as modified by the 2013 Amendment to the 2008 SIP (GBUAPCD, 2013), applicable GBUAPCD Orders, and the 2014 Stipulated Judgment. Per the terms of the 2014 Stipulated Judgment, the City may submit an application to the Air Pollution Control Officer (APCO) to approve modifications to the City's proposed project or measures on certain areas that are determined to contain significant cultural resources. The District shall consider and decide the City's application under the procedures contained in the 2013 Stipulated Abatement Order No. 130819-01. The Phase 9/10 Project DCMs are expected to achieve a 99 percent control efficiency, which exceeds the control efficiencies called for in the SIP for some areas.

Since the proposed Project would be implemented in compliance with the 2008 SIP as modified by the relevant Amendments, GBUAPCD Orders and Judgments, the Project would be consistent with the applicable air quality plan for the Project area and impacts on the air quality plan would be less than significant.

4.2.5.2 Construction and Operations Emissions

The following analysis considers impacts from installation of dust control on 3.61 square miles of the Phase 9/10 Project areas and transition of 1.82 square miles of existing Shallow Flooding to a mix of Gravel Cover and Pond Shallow Flooding to conserve water. However, LADWP has identified an environmentally superior alternative (Avoidance Alternative, see **Section 5**) which would reduce impacts on significant cultural resources to less than significant levels, and reduce dust to the maximum extent feasible. Under the Avoidance Alternative, BACM would not be installed on approximately 0.43 square miles (210 acres of environmentally sensitive sites plus 68 acres of buffer), plus any acreage of environmentally sensitive sites on private or BLM land) of the 3.61 square miles of DCAs identified for dust mitigation. Since the Avoidance Alternative would construct and operate DCMs on a smaller area than the Project and thereby cause less impacts than the Phase 9/10 Project, the following analysis of the construction and operation air pollutant emissions of the Project presents a worst-case impact assessment.

Emissions during Project construction activities would result from the operation of heavy equipment (dozers, dump trucks, flatbed trucks, backhoes, tractors, etc.), vehicles (including truck traffic and worker vehicles), and from fugitive dust generated by construction activities. Emissions from heavy equipment used in construction for the Project were estimated based on emission factors for the South Coast Air Basin (SCAB) from CARB, as published on the SCAQMD website. Emission factors for 2016 represent the average fleet emissions throughout the SCAB and were considered representative of construction equipment that would be in use during construction of the Project. Emissions from worker travel and truck traffic were calculated using CARB emission rates for on-road vehicles. Emissions of fugitive dust were estimated based on SCAQMD and USEPA emission factors.

Heavy equipment requirements were based on estimated equipment used for the following DCMs:

(a) Shallow Flooding areas – turnout facilities
(b) Shallow Flooding areas
(c) Managed Vegetation areas
(d) Gravel Cover installation

Tables 4.2-4 summarizes the construction equipment and workforce needed for the various construction activities. Equipment, truck, and workforce assumptions used in the emission calculations are detailed in **Appendix C**.

Table 4.2-4
Estimated Construction Activities and Equipment for the Phase 9/10 Project

Activities	Equipment Types	Personnel
Turnout Facilities Associated with Shallow Flood Areas		
Earthen Pad Construction Mainline Connection Submain and Header Installation Underground Electrical Conduit Installation Subgrade Preparation Construct Concrete Pads Install Above Grade Piping, Electrical Equipment, Mechanical Equipment, and miscellaneous items Install wiring and terminate Install heat trace and pipe insulation Calibrate Instruments and startup testing	Dozers Excavators Backhoes Dump trucks Vibratory Roller Compactors Vactor Trucks Wacker Compactor Grader Ready Mix Trucks Telehandler Forklift Boom Truck	Operators Truck drivers Laborers HDPE Fuse Machine Operators Electricians Coaters Mechanics Welders Technicians
Shallow Flood Areas		
HDPE Submain and Flush Pipe Installation Drain Line HDPE Laterals and Risers Installation High Voltage Cable Miscellaneous Concrete Structures	Trenchers Excavators Dozers Scrapers Portable diesel generators Tractors HDPE Fusing Machine Quads Backhoes Dump Trucks Ready Mix Trucks Motor Grader Loaders Wacker Compactor	Operators Fuse Machine Operators Drivers Laborers Electricians
Managed Vegetation Areas		
Excavation, Soil Conditioning, and Land Leveling Road Road Base Course and Armoring HDPE Laterals and Risers Installation Flushing and Testing Seeding and Planting	Dozers Farm Tractors Quad Tractors with Scraper Motor Graders Skid Steers Dump Trucks Loaders Trenchers Scrapers HDPE Fusing Machine Quads Diesel generator – 50 hp Seeding Machine (small tractor)	Operators Drivers Laborers Fuse Machine Operators
Gravel Installation		
Staging Area Preparation Access Roadways Gravel delivery to stockpile Gravel delivery from stockpile to DCM area	Dozers, Scrapers Dump trucks (5-10 cu yd LGP) Loaders Backhoes, farm tractors, or dozers for geotextile D6 Dozers for gravel	Operators Drivers Grounds workers Water truck operators Fuel truck drivers
All		
Dust suppression Fueling Inspections	Water truck, Fuel trucks, Light duty trucks	Drivers Inspectors

Table 4.2-5 presents the worst-case, peak day emission estimates for the construction activity, based on the following assumptions:

- The construction period is assumed to be 18 months, with work occurring 5 days per week (for a total of 390 workdays).
- Work to occur up to 12 hours per day; equipment operational from 2 to 8 hours per day.
- 40 acres per work area would be disturbed on a daily basis, and up to five work areas would be disturbed at any one time. A total of approximately 200 acres would be disturbed at any one time.
- Gravel haul trucks would transport gravel from the F.W. Aggregate Dolomite Mine. An average distance of 12 miles one way was assumed for the travel distance.
- Delivery trucks, support vehicles, and worker vehicles would travel 90 miles per day round trip to the site.
- Average mileage per worker assumes 50 percent of workers are from Lone Pine (5 miles from Project site), 20 percent from Ridgecrest (48 miles from Project site), 20 percent from Bishop (61 miles from Project site), and 10 percent from Los Angeles (200 miles from Project site).
- Gravel installation period of approximately 18 months. It is assumed that Gravel Cover and Flexible Concrete Mat would have similar air pollutant emissions during construction.

Table 4.2-5
Estimated Maximum Daily Construction Emissions

Source	ROG lbs/day	CO lbs/day	NOX lbs/day	SOX lbs/day	PM_{10} lbs/day	$PM_{2.5}$ lbs/day
Offroad Equipment	233.33	5,542.50	689.94	1.40	110.12	98.01
Worker Trips	5.69	51.82	5.01	0.10	1.73	0.74
Construction Trucks	4.47	20.76	49.67	0.11	940.87	100.76
Fugitive Dust					1,560	327.6
Total	**243.5**	**5,615.1**	**744.6**	**1.6**	**2,612.7**	**527.1**

As shown in **Table 4.2-5**, construction activities would result in emissions of criteria pollutants. During construction, emission sources would be distributed among several dust control areas that are located in various parts of the Owens Lake area.

With the exception of PM_{10}, however, these emissions would not result in a net increase of any pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard. Therefore, with the exception of PM_{10}, air pollutant emissions during construction would be less than significant. However, to reduce tail pipe emissions from construction and maintenance vehicles and equipment to the maximum extent feasible, mitigation measures Air-2 through Air-5 shall be implemented.

PM_{10} emissions would result from construction activities required to implement DCMs at Owens Lake. Construction activities would generate some PM_{10} emissions due to surface disturbance, creation of berms, travel of vehicles and construction equipment on unpaved surfaces, and material handling of gravel for those areas that would use gravel installation for dust control. As is currently being done for Phase 7a Project construction, LADWP would control emissions to the extent practicable during construction of the T18S Transition Area pursuant to a Dust Control Plan approved by GBUAPCD. [A variance from GBUAPCD is not required. The Stipulated Judgment amends the Transition Area from the current 1.5 square miles to 3.0 square miles at one time.] Mitigation measure Air-1 has been proposed to reduce fugitive dust generation for during construction to the extent feasible.

Because the Project is intended to comply with the requirements of the SIP to implement DCMs at Owens Lake, the Project would result in an overall benefit to the air quality of the area.

Operational emissions would be associated with inspection and maintenance activities, and with periodic berm building and upkeep, upkeep on roads and turnouts, re-seeding of managed vegetation areas, and replacement of gravel in those areas where Gravel Cover is installed. Maximum daily emissions associated with these operational activities would be much lower than presented in **Table 4.2-5**, as they would require a small subset of the equipment, vehicles, and workers required to complete initial construction.

Construction and operation impacts are less than significant. The Project is consistent with the SIP as discussed in **Section 4.2.5.1** and, therefore, does not conflict with or obstruct implementation of the applicable air quality plan. The increase in construction emissions will not violate any air quality standard or contribute substantially to an existing or projected air quality violation with the implementation of mitigation measure Air-1. The Project is located in an uninhabited area and, therefore, does not expose any sensitive receptors to substantial pollutant concentrations. The Project also will not result in any objectionable odors that would affect a substantial number of people.

4.2.5.3 Nonattainment Pollutants

As discussed above, the Owens Lake area is classified as a serious nonattainment area for PM_{10}. Also as discussed above, PM_{10} emissions would result from construction activities required to implement DCMs at Owens Lake. Mitigation measure Air-1 has therefore been proposed to reduce fugitive dust generation for these activities to the extent feasible.

Operation of the Project would reduce PM_{10} emissions from Owens Lake, which would result in a net decrease in nonattainment pollutants and a beneficial effect. Because the Project is intended to comply with the requirements of the SIP to implement DCMs at Owens Lake, the Project is anticipated to result in an overall reduction, rather than increase, of emissions and would therefore not result in a cumulatively considerable impact for nonattainment pollutants. Therefore, the impact is less than significant.

4.2.6 Global Climate Change

According to the California Energy Commission (CEC, 2006), carbon dioxide (CO_2) accounts for approximately 84 percent of statewide greenhouse gas emissions, with methane accounting for approximately 5.7 percent of greenhouse gas emissions and nitrous oxide accounting for another 6.8 percent of greenhouse gas emissions. Other pollutants account for approximately 2.9 percent of greenhouse gas emissions in California. The transportation sector is the single largest category of California's greenhouse gas emissions, accounting for 41 percent of emissions statewide. In 2004, California produced 431 million metric tons of total carbon dioxide-equivalent emissions (not including energy imports).

Emissions of GHG generated during Project construction were calculated using the same approach as emissions discussed above. Estimated emissions of greenhouse gases related to construction of the proposed Project are summarized in **Table 4.2-6**. Emission calculations are provided in **Appendix C**.

The SCAQMD recommends that construction emissions be amortized over a 30-year period to account for the Project's contribution to overall GHG emissions. If amortized over a 30-year period, construction would contribute 382 metric tons per year of CO_2-equivalent emissions.

Since the GBUAPCD does not have established greenhouse gas thresholds of significance, LADWP reviewed threshold defined by the SCAQMD (the air district with jurisdiction over the air basin where LADWP has its main offices) and the state-wide air resources agency, CARB. SCAQMD's interim threshold of significance for greenhouse gases for industrial projects is 10,000 metric tons CO_2-equivalent emissions per year (adopted December 5, 2008; includes construction emissions amortized over 30 years and added to operational GHG emissions). The ARB proposed a threshold of 7,000 metric tons of CO_2-equivalent emissions per year for operational emissions (excluding transportation). Predicted Project greenhouse gas emissions are less than either of these thresholds and, therefore do not conflict with SCAQMD or CARB thresholds and are less than significant. The Project also does not generate greenhouse gas emissions that will have a significant impact on the environment, either directly or indirectly.

Table 4.2-6
Estimated Annual GHG Emissions from Construction

Source	CO_2 metric tons (total)	CH_4 metric tons (total)	N_2O metric tons (total)
Offroad Equipment	5,476	0.79	4.60
Worker Trips	1,762	0.09	0.08
Construction Trucks	2,030	0.04	0.83
Total	**9,268**	**0.92**	**5.52**
Global Warming Potential	**1**	**21**	**310**
CO_2-Equivalent Emissions	**9,268**	**19**	**1,711**
Total CO_2-Equivalent Construction-related Emissions	**10,998** metric tons		
Amortized Construction-related Emissions	**367** metric tons		

As discussed above under criteria pollutant emissions, operational GHG emissions will be associated with inspection and maintenance activities, and with periodic berm building and upkeep, upkeep on roads and turnouts, re-seeding of managed vegetation areas, and replacement of gravel in those areas where Gravel Cover is installed as BACM. It is assumed that an additional four workers (in addition to the existing maintenance personnel headquartered in LADWP's Keeler office) would be required for continual inspection and maintenance activities. For the purpose of estimating annual GHG emissions from operational activities, it is assumed that annual maintenance would be approximately equal to two percent of the estimated level of construction activity for the proposed Gravel Cover. Operational emissions are presented in **Table 4.2-7.**

Table 4.2-7
Estimated Annual GHG Emissions from Operation

Source	CO_2 metric tons (total)	CH_4 metric tons (total)	N_2O metric tons (total)
Offroad Equipment	56	0.005	0.039
Worker Trips	70	0.004	0.003
Construction Trucks	39	0.001	0.017
Total	**165**	**0.009**	**0.059**
Global Warming Potential	**1**	**21**	**310**
CO_2-Equivalent Emissions	**165**	**0.2**	**18**
Total Operational CO_2-Equivalent Emissions	183 metric tons		
Amortized Construction Emissions	**367** metric tons		
Total CO_2-Equivalent Emissions	**550** metric tons		

The total emissions associated with operations and amortized construction emissions would remain below the thresholds proposed by the SCAQMD and CARB. Impacts to climate change would therefore be less than significant.

4.2.7 Mitigation Measures

Mitigation Measure Air-1 would reduce dust emissions during construction and maintenance activity to less than significant levels. Mitigation measures Air-2 through Air-5 shall be implemented to reduce less than significant construction vehicle and equipment tailpipe emissions to the maximum extent practical, feasible, and available.

Air-1. Fugitive Dust Emissions Control and Minimization. In compliance with GBUAPCD requirements, a Dust Control Plan shall be implemented during construction. The plan shall specify specific measures to be taken when removing T18S DCA from service. Best available control measures shall be implemented during construction and maintenance activities to minimize emission of fugitive dust from earthwork and travel on unpaved roads and other areas. Best available control measures may include, but would not be limited to:

- Temporary sand fences shall be installed where feasible as soon as practicable without delaying Project completion and shall be maintained as necessary until areas of Managed Vegetation have been established. Sand fences may be used temporarily during construction in order to limit the movement of sand from construction zones to adjacent areas of the lake bed. Sand fence would be black fabric with 50 percent porosity that is UV stabilized (Model SF-50 from U.S. Fence, or equivalent) and supported by steel T-posts (approximately 7 feet in height and driven into the ground to a depth of approximately 4 feet, resulting in approximately 3 feet of height for exposed post). Since the fence will not exceed 60 inches in height, wire or monofilament line across the top would not be necessary to reduce perching by predators (corvids). Temporary sand fence shall be maintained and then removed at the completion of construction activities. Sand fences that deteriorate and could potentially create litter on the lake bed shall be repaired or removed.
- Water trucks shall be used as necessary and feasible during construction - engineering specifications shall mandate water sprays not less than three times per day on each main access road and temporary or secondary road that is being used in construction.
- Tillage shall be implemented where soil conditions allow.
- Placement of a gravel surface on interim staging areas within the DCA used by the contractor.
- Construction activities shall cease during high wind events.

At a minimum, one or more of the applicable best available control measures shall be used during active operations to minimize fugitive dust emissions from each fugitive dust source type. The final selection of the BACM controls depends upon the final engineering design and construction plans, and GBUAPCD's approval.

Air-2. Low Emissions Tune-ups Schedule. A schedule of low emissions tune-ups shall be prepared for all equipment operating on site for more than 10 working days.

Air-3. Low-emission Equipment Utilization. Low-emission equipment/mobile construction equipment shall be used for Project construction to the maximum extent practical, feasible, and available.

Air-4. Low-emission Mobile Vehicle Utilization during Construction. Low-emission or alternative-fueled mobile vehicles shall be used during Project construction to the maximum extent practical, feasible, and available. In addition, carpooling of construction workers shall be encouraged.

Air-5. Low-emission Mobile Vehicle Utilization during Operation. Hybrid, low-emission (CA LEV II; PZEV, SULEV; or ULEV) or alternative-fueled mobile vehicles, such as electric or fuel cells, shall be used for the proposed Project site to the maximum extent practical, feasible, and available. In addition, carpooling of operations and maintenance workers shall be encouraged.

With implementation of the above mitigation measures, Project-related impacts on air quality will be less than significant.

Section 4.3
Biological Resources

4.3 BIOLOGICAL RESOURCES

Based on the information presented in the Initial Study for the Phase 9/10 Project (**Appendix A**), LADWP determined that the Project would not have significant impacts related to local policies or ordinances protecting biological resources. Impacts to approved local, regional or state habitat conservation plans were also found to be less than significant. Other potential impacts to biological resources from implementation of the proposed Project are described below.

4.3.1 Regulatory Framework

Sensitive species are classified in a variety of ways, both formally (e.g. State or Federal Threatened and Endangered Species) and informally (e.g. CDFW "Species of Special Concern). Species may be formally listed and protected as Threatened or Endangered by either the CDFW or USFWS (Federal status abbreviations: FT, FE; State: ST, SE). The State also has State-Listed Rare (SR) species. A few species are listed as California Fully Protected (CFP). Numerous lists of species thought to be in jeopardy within the State have been compiled by other agencies and special interest groups, and while such lists generally are considered informal (in the sense that they are not created by, or linked to, any formal regulatory action), species included therein usually are given due consideration as part of CEQA review.

Additionally, the USFWS, CDFW, and other governmental agencies may recognize lists developed by special interest groups, if properly reviewed and published (i.e., Audubon Society "Blue List," for birds, with subunits for special concern (SC) and local concern (LC); California Native Plant Society (CNPS) "Rare and Endangered Plants of California;" Partners in Flight, bird Watch List (WL). All of these species as well as federal and state-listed species also are considered "CEQA species."

Terrestrial vegetation in California has been accorded sensitivity rankings within a synthesis of the floristic association concepts of Sawyer and Keeler-Wolf (1995) and Sawyer, Keeler-Wolf and Evens (2009), combined with older community classification from Holland (1986) (CDFG, 2010).

Impacts to wetland and riparian habitat types may be regulated by Section 400 statutes of the Clean Water Act (CWA) and Section 1600 statutes of the California Fish and Game Code, as administered by the USACE and CDFW. Projects in such areas also may be subject to review by the Regional Board.

4.3.1.1 Federal Status

The Federal Endangered Species Act (FESA) defines an Endangered species (FE) as "any species which is in danger of extinction throughout all or a significant portion of its range . . . "

Threatened species (FT) are defined as "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range."

Actions which have the potential to directly and adversely affect individuals or essential habitat of FT or FE species may be considered as "taking" that species, and are prohibited by provisions of the FESA, although plants do not receive the same level of protection as wildlife. For entirely private actions, permission to take a species or its habitat is governed by the FESA Section 10 (a)(1)(B), involving formal consultation with the USFWS and (usually) preparation of a Habitat Conservation Plan (HCP). Projects having any nexus with agencies, policies or funding sources of the Federal government may require formal consultation and mitigation under Section 7 of the FESA.

Where the USFWS has designated areas of Critical Habitat (CH) for a particular listed species, that habitat may be protected through the provisions of FESA Section 7. Section 3 of FESA defines critical habitat as specific areas within the geographic ranges of a species, at the time it is listed, on which are found those specific resources and features essential to the conservation of the species, and which may require special management considerations or protections.

The Migratory Bird Treaty Act (MBTA) of 1918 provides some level of protection to all native bird species from disturbance or harm. The MBTA prohibits actions such as pursuing, capturing, killing, attempting to pursue, capture or kill, or the possession of any part, nest, or egg of any migratory bird. In order for the MBTA to be invoked, violations under the act must be knowingly committed.

The Bald and Golden Eagle Protection Act, originally passed in 1940, provides for the protection of the bald eagle and the golden eagle (as amended in 1962) by prohibiting the take, possession, sale, purchase, barter, offer to sell, purchase or barter, transport, export or import, of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit (16 U.S.C. 668(a); 50 CFR 22).

4.3.1.2 State Status

CDFW, through the California Endangered Species Act (CESA, Fish and Game Code Sections 2050-2068) defines its various categories of sensitive species as follows:

- **Endangered (SE):** A native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease.
- **Threatened (ST)**: A native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts.

- **Rare (SR):** A species, subspecies, or variety is rare when, although not presently threatened with extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens.
- **Candidate (SC)**: 1) A native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the California Fish and Game Commission has formally noticed as being under review by the CDFW for addition to either the list of endangered species or the list of threatened species (SCE, SCT), or 2) a species for which the commission has published a notice of proposed regulation to add the species to either list.
- **Species of Special Concern (SSC** – CSC): species of special concern status applies to animals not listed under the FESA or the CESA, but which nonetheless (1) are declining at a rate that could result in listing, or (2) historically occurred in low numbers and known threats to their persistence currently exist.

State Threatened or Endangered species may not be disturbed, relocated, harmed, or otherwise interfered with (as in disruption of movement corridors) (the functional definition of "taking" in CESA) except as negotiated through consultations and permitting from appropriate agencies. Actions that alter or destroy habitat for listed species may be considered a taking of that species. Senate Bill (SB) 879, amended Section 2081, now allows incidental take if the taking is incidental to an otherwise lawful activity [also per Title 14 CCR, Sections 783.4(a) and (b)]. Impacts of the taking must be minimized and fully mitigated. Additionally, adequate funding must be provided to implement the required minimization and mitigation measures and to monitor compliance with and the effectiveness of the measures. No permit may be issued if there would be jeopardy to the continued existence of the species (SB 879, 1997).

4.3.2 LADWP Mitigation Obligations for Owens Lake

Since implementation of the OLDMP, several agreements and mitigation commitments have been made by LADWP for the protection and enhancement of biological resources on the lake. Construction and operation of the Phase 9/10 Project would be conducted in a manner that is consistent with these existing agreements.

4.3.2.1 T30-1 Wetland Mitigation Area

A 43.5-acre wetland mitigation area has been established in T30-1 DCA as mitigation for impacts from construction of Phase 5 of the OLDMP. No earthwork or other construction activity will occur in T30-1 DCA as part of the Phase 9/10 Project. Installation of dust controls in T32-1-L1 DCA will require construction adjacent to T30-1 DCA, but since Gravel Cover BACM is proposed for T32-1-L1 DCA, connection to water supply pipelines in T30-1 DCA will not be required. The existing wetland mitigation area would not be disturbed under the Phase 9/10 Project.

4.3.2.2 Snowy Plover

A breeding population of Snowy Plover occurs on Owens Dry Lake. Per the terms of previous mitigation measures, LADWP is required to maintain a baseline of at least 272 Snowy Plovers as determined during dedicated annual surveys (GBUAPCD, 2003) and a minimum of 523 acres of

Shallow Flooding habitat for Snowy Plovers in consultation with CDFW (GBUAPCD, 2008a). This habitat is described as a mix of exposed sandy or gravelly substrate suitable for nesting in close proximity to standing water equal to or less than 12 inches in depth; the 523-acre area has been designated along the east side of the lake (east of T23 and T24 DCAs). LADWP also maintains a minimum of 1,000 acres of shorebird and Snowy Plover habitat in T23 DCA and 145 acres of habitat shallow flood suitable for shorebird foraging in T4-3 DCA. These designated habitat areas would not be disturbed as part of the Phase 9/10 Project.

In conjunction with these requirements, LADWP implements an annual week-long lakewide survey for Snowy Plover. These annual surveys have shown an increase in the Snowy Plover population in response to the dust control project. In 2000 and 2001, the 2 years immediately prior to implementation of shallow flooding, lake-wide surveys estimated 112 and 167 Snowy Plovers respectively at Owens Lake (Ruhlen, Page, and Stenzel, 2006). Snowy Plovers responded rapidly to shallow flood habitat and the population has averaged 533 birds in the period 2003 to 2014. Approximately 1,300 Snowy Plover nests have been documented from 2001 to 2014 (LADWP database).

4.3.2.3 Corvid Management Plan

In compliance with the mitigation measures adopted for the 2008 SIP EIR (GBUAPCD, 2008b), LADWP implements a Corvid Management Plan in order to reduce potential direct and cumulative impacts to Snowy Plovers and other migratory shorebirds within the Project area. The Common Raven is a known predator of the eggs and chicks of the Snowy Plover and other shorebirds. Management measures include refuse management and roosting/nesting prevention (on structures, utility lines, and fences). Implementation of the management actions will be expanded to include the Phase 9/10 Project areas. The 2011 Owens Lake Biological Monitoring Report (LADWP, 2011a) summarized corvid management results:

- The breeding population of Common Ravens in the area of Owens Lake has not increased due to lack of any increase in nesting habitat in the project area. Additionally, corvid nesting habitat close to the project area was reduced in the Owens River Delta with the removal of many large tamarisk trees in 2010.
- Common Ravens that forage in the project area, often utilize areas with vegetation, typically away from Snowy Plover and other shorebird nesting areas.
- Snowy Plover counts have significantly increased since dust control project implementation, indicating project benefits to Snowy Plovers and no impact from corvids.

In addition to refuse management and roosting/nesting prevention, all newly constructed utility lines are buried as practicable to minimize local roosting and perching opportunities.

4.3.2.4 Owens Lake Habitat Management Plan

In compliance with mitigation measure Biology-14 of the 2008 SIP FSEIR (GBUAPCD, 2008b), LADWP prepared the Owens Lake Habitat Management Plan (OLHMP) for the Owens Lake Dust Mitigation Project (LADWP, 2010a). The OLHMP serves as a guide for compatibility between construction, maintenance, and operational needs of the Dust Mitigation Program under the 2008 SIP FSEIR, and the needs of resident and migratory wildlife resources utilizing the Owens Lake Dust Control Area. The overall goal of the OLHMP is to avoid direct and cumulative impacts to native wildlife communities that may result from the Dust Control Program. Implementation of Phase 9/10 Project would be consistent with the resource management actions described in the OLHMP.

4.3.3 Environmental Setting

Prior to implementation of the dust control project in 2000, Owens Lake consisted of a large expanse of barren playa, a remnant hypersaline brine pool, and scattered springs and seeps along its shoreline. Sparse vegetation, including saltgrass and occasional shrubs, occurred on the playa within isolated spring mounds. Previous surveys did not identify any listed or locally important plant species for areas that are now part of the dust control project (GBUAPCD, 1997a; CH2M Hill, 2000; Sapphos, 2003; Sapphos, 2008; LADWP, 2011a).

Surveys conducted prior to implementation of dust control identified approximately 81 species of invertebrates from aquatic habitats adjacent to and on the playa, including several species of shore and brine fly supported by spring flow (GBUAPCD, 1997a). Lizards and snakes could be found on the playa adjacent to shrub communities. Bird use of the playa prior to the implementation of dust control was associated with seeps and springs that support invertebrate populations. Pre-dust control mammal use was generally limited to the edge of the playa adjacent to vegetation as a travel corridor for larger mammals. Two bat species were detected prior to the dust control, Spotted Bat (*Euderma maculatum*) and Yuma Myotis (*Myotis yumanensis*).

4.3.3.1 Literature Review

LADWP Watershed Resources staff reviewed previous biological resources surveys conducted on the lake (GPUAPCD, 2008b and LADWP, 2009) and consulted the California Natural Diversity Database (CNDDB) (CDFW, 2014) for information on potentially occurring sensitive species in the Project areas. The CNDDB was searched on July 14, 2014 for Inyo County and nine USGS quadrangle maps including Owens Lake and surrounding quadrangle maps: Lone Pine, Dolomite, Cerro Gordo Peak, Bartlett, Owens Lake, Keeler, Olancha, Vermillion Canyon, and Centennial Canyon. Elevation was limited to below 3,600 feet (approximate historic shoreline). The California Native Plant Society Rare Plant Inventory was searched on July 14, 2014 for Inyo County and the same nine USGS quadrangle maps as above (Owens Lake and surrounding eight maps) for CNPS List 1 and 2 plants, rare or endangered in California. Elevation was limited to below 3,600 feet (approximate historic shoreline), since all Phase 9/10 Project areas are below 3,600 feet in elevation.

4.3.3.2 Field Survey

Field surveys were then conducted to verify current conditions and to describe existing biological resources on areas not previously surveyed. New survey areas included 25-foot buffer zones around DCAs to allow for potential disturbance during construction for new berms and vehicle and equipment traffic. Field surveys were conducted in August 2013 and May 2014. The T18S Transition Area was field verified on October 23, 2013. Vegetation composition was recorded for each surveyed area and all species were identified to the taxonomic level needed to adequately determine rarity and listing status. Percent vegetation cover was determined using point intercept and/or ocular methods and the extent of existing vegetation was documented using a GPS unit where necessary. All vegetation sampling methods were comprehensive, floristic in nature, and utilized systematic sampling techniques to characterize each area's diversity and structural complexity. These methods were consistent with Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFG, 2009). Results are presented in the 2011 SCRD and 2012 SCRD Dust Control Measures Project Biological Resources Survey Report (LADWP, 2015) and are summarized below.

Wetland delineations (per the methods in USACE, 1987 and 2008) were also conducted where hydrophytic vegetation occurred at greater than 5 percent cover in areas that could be impacted by the Phase 9/10 Project. The wetland delineation team selected sampling areas that were representative of varying vegetation communities and soil conditions to provide a comprehensive look at current conditions in the Phase 9/10 Project areas.

Wildlife presence/absence surveys were conducted on May 7 and 8, 2014. In accordance with the CDFW Burrowing Owl mitigation protocol (CDFG, 2012), a Burrowing Owl (*Athene cunicularia*) assessment was conducted. The purpose of this assessment was to determine the need for Burrowing Owl occupancy surveys. A habitat assessment for Mohave Ground Squirrel and Agassiz's Desert Tortoise was also conducted. Wildlife encounters were noted at the time of vegetation/wetland evaluations in August 2013 and October 2013.

4.3.3.3 Existing Biological Resources Setting

Based on 2013/ 2014 field surveys, existing vegetation conditions on the Phase 9/10 Project areas are summarized in **Table 4.3-1**. The vast majority of the acreage of the new DCAs is unvegetated barren playa, areas of Owens Lake bed that were exposed as the lake dried. Smaller areas of alkali meadow and wet alkali meadow are present.

Alkali Meadow. Dry alkali meadow species include saltgrass (*Distichlis spicata*) (dominant species), Parry's saltbush (*Atriplex parryi*), and alkali pink (*Nitrophila occidentalis*).

Wet alkali meadow. Prominent plant species include inland saltgrass, chairmakers bulrush (*Schoenoplectus americanus*), rabbitfoot grass (*Polypogon monspeliensis*), curly dock (*Rumex crispus*), fivehorn smotherweed (*Bassia hyssopifolia*), alkali pink, Baltic rush (*Juncus balticus*), and common spikerush (*Eleocharis palustris*).

Saturated Playa. This barren type comprises DCAs and buffers that are intermittently wetted by operation of dust control measures.

Barren Playa. Vegetation is absent in this area.

Eolian. Plant species include saltgrass, Parry saltbush , and Mojave seablite (*Suaeda moquinii*), greasewood (*Sarcobatus vermiculatus*), and alkali pink.

Standing Water. This classification consisted of ponded water during the survey time period, which varies seasonally. Vegetation is absent in this area.

Road. Vegetation is absent in this area.

Wetlands, including created wetlands, present at the time of survey in the Phase 9 DCAs and the 25-foot buffer areas are summarized in **Table 4.3-2**. Species present in wetland areas include wirerush (*Juba* sp.) saltgrass, saltbush, and Mojave seablite, among other species. No wetlands are present in the Phase 10 DCAs or their buffer areas. Vegetation mapping for the Project areas is provided in **Appendix D**.

At the time of mapping, land cover in the T18S Transition Area was 554.7 acres wet or saturated playa, 413.4 acres of standing water and 197.6 acres of barren playa or access road. The amount and location of saturated playa and standing water vary seasonally. There is a 0.1 acre area of created wetland around the freshwater outlet.

With implementation of the dust control since 2000, vegetation conditions and wildlife use of Owens Lake have changed substantially. Implementation of DCMs has resulted in an increase in the use of Owens Lake (over pre-2000) conditions by many wildlife species as water and vegetation resources are now present on much of the former barren playa. Implementation of DCMs has attracted large numbers of birds, primarily waterfowl, avocets, sandpipers and plovers and gulls (LADWP, 2010a). Since the start of the dust control program, Shallow Flooding DCAs have supported invertebrates including midges (Family Chironomidae), water boatman (Family Corixidae), water scavenger beetles (Family Hydrophilidae), and backswimmers (Family Notonectidae). Brine flies are the most abundant aquatic invertebrate in the Shallow Flooding areas. Brine shrimp (*Artemia* sp.) have also been observed in some DCAs with ponded water (LADWP, 2010a). These species provide forage for various migratory shorebirds and waterfowl that inhabit the Shallow Flood areas. Snowy Plover, American Avocet, and Black-necked Stilt are known to nest successfully in existing Shallow Flooding areas. Fish are not present in the Shallow Flooding ponds. Lizards have been observed on roads, in alkali meadow areas, and adjacent to scrub habitat. Due to the lack of cover and food resources, small mammal use of the open playa is limited, although deer mice (*Peromyscus maniculatus*) have been observed within some shallow flood cells. Pocket gopher, Owens Valley Vole, deer mice and other small mammals are more abundant and expected in areas of dry alkali meadow. Larger mammals (coyote, kit fox, and bobcat) may hunt in alkali meadow and upland scrub areas and on the playa and dust control cells (LADWP, 2010a).
Wildlife use of the Phase 9/10 Project areas observed during the field surveys is noted in **Table 4.3-3**. A detailed description of wildlife use in the dust control areas on Owens Lake is included in the Owens Lake Habitat Management Plan (LADWP, 2010a).

Sensitive Species. Based on the CNDDB listings for the Project area (CDFW, 2013, 2014), and LADWP knowledge of the areas, sensitive plant and animal species with the potential to occur on or near the Project sites are summarized in **Tables 4.3-4** (Listed Species), **4.3-5** (Sensitive Species) and **4.3-6** (Locally Important Species). Occurrence information from 2008 is also provided for additional reference. Species not included in these tables due to change in regulatory status are: Double-crested Cormorant (*Phalacrocorax auritus*), White-faced Ibis (*Plegadis chihi*), Osprey (*Pandion haliaetus*), Sharp-shinned Hawk (*Accipiter striatus*) Cooper's Hawk (*Accipiter cooperi*) Ferruginous Hawk (*Buteo regalis*), Merlin (*Falco columbarius*), Prairie Falcon (*Falco mexicanus*) Long-billed Curlew (*Numenius americanus*), California Gull (*Larus californicus*), and Virginia's Warbler (*Oreothlypis luciae*). Additionally, the Project area is outside the breeding range for the sensitive subspecies of California Horned Lark (*Eremophila alpestris actia*) and Tricolored Blackbird *(Agelaius tricolor)*. Southern grasshopper mouse (*Onychomys torridus ramona*) and Bell’s Sage Sparrow (*Artemisiospiza belli belli*) are not present in the Project area.

Other species considered, but not anticipated to be adversely impacted, include:

American White Pelican. American White Pelican (*Pelecanus erythrorhynchos*) use Owens Lake as a temporary stopover site in migration. Birds encountered are often seen sleeping or resting. American White Pelicans are limited ecologically by the availability of remote nesting sites and rich foraging habitats (Shuford and Gardali, 2008). The Owens Valley is not within the historic breeding range for this species and there is no available breeding habitat at Owens Lake. In addition, due to the lack of fish in the dust control ponds, the Project area does not provide foraging habitat.

Long-eared Owl. The Long-eared Owl (*Asio otus*) nests in dense woodlands adjacent to grasslands and meadows or shrublands that are used for foraging. No potential nesting habitat will be impacted by the Project as no woodlands occur within the Project area. Of the existing approximately 22 acres of meadow habitat on the Project DCAs, approximately 18 acres will be replaced with 152 acres of Managed Vegetation in Duck Pond L-1 and C2-L1 DCAs of increased acreage, cover, and species diversity over existing conditions. Thus there is the potential for temporary disturbance to foraging habitat for this species, if present. Over the long-term, there will be a slight increase in meadow habitat acreage and quality.

Black Swift. Black Swifts have unique nesting habitats in that their nesting sites are associated with sheer cliff and waterfalls, often nesting behind waterfalls (Lowther and Collins, 2002). Black Swifts are aerial insectivores and range widely over forested and open areas in montane habitats when foraging (Lowther and Collins, 2002). No nesting habitat exists within or adjacent to the Project area. Black Swifts may occur as a rare migrant or occasional visitor in the Project area.

Vaux’s Swift. In the summer, the Vaux’s Swift (*Chaetura vauxi*) is found in coastal California and most commonly in the redwood zone where they nest in tree cavities (Shuford and Gardali, 2008). During migration, they are found throughout California in a variety of habitats. Vaux’s Swift occur regularly in Owens Valley during migration and have been observed over Owens Lake. There will be no impact to nesting habitat for this species as nesting does not occur in this area. Foraging opportunities for this species are abundant and widespread at Owens Lake, and impacts from the Project are expected to be minimal.

LeConte’s Thrasher. The Special Status for LeConte’s Thrasher (*Toxostoma lecontei*) only applies to the population of Le Conte’s Thrashers breeding in the San Joaquin Valley of California.

Bank Swallow. The Bank Swallow (*Riparia riparia*) is an aerial insectivore that nests in the cavities along the banks of streams and rivers, and feeds over waterbodies, streams and fields

(Garrison, 1999). The average height of nesting banks in California is 3.3 meters (Garrison, 1999). There is no nesting habitat for this species in the Project area and no known colonies near Owens Lake. Bank Swallows occur as seasonal migrants at Owens Lake and as foraging opportunities for this species are abundant and widespread at Owens Lake, impacts from the Project are expected to be minimal.

Willow Flycatcher. Willow Flycatcher (*Empidonax traillii*) is a riparian obligate species that inhabits riparian deciduous shrubs, particularly willow species (Grinnell and Miller, 1944). Willow Flycatchers are common migrants in the region, and habitats used in migration are generally similar to those used for breeding (Sedgwick, 2000). The Southwestern Willow Flycatcher (*E. t. extimus*) is the subspecies that breeds in Owens Valley and the minimum habitat patch size required is 1.98 acres (USFWS, 2002). There is no nesting or suitable migratory habitat for this species with the Project area.

American Peregrine Falcon. The Peregrine Falcon (*Falco peregrinus anatum*) is a cliff-nesting Fully Protected Species that forages in a wide variety of habitats, often in areas of high prey concentrations. There is no nesting habitat for the species in the Project area. Peregrine Falcons are seen at Owens Lake somewhat regularly. As habitat value acres will be maintained or enhanced, no long-term impact is anticipated to habitat of potential prey.

Table 4.3-1
Existing Vegetation and Land Cover Conditions in Phase 9/10 Project Areas
(acres)

DCA	Alkali Meadow	Wet Alkali Meadow	Seasonally Wet Playa	Barren Playa	Eolian	Seasonally Standing Water	Road
Phase 9 DCAs							
C2-L1	3.3	3.8	3.1	36.5	3.6	0.0	0.0
Duck Pond-L1	10.9	0.0	0.0	89.0	1.3	0.0	0.0
T10-1-L1	1.1	0.0	0.0	40.0	0.0	0.0	0.0
T17-2-L1	0.0	0.0	0.0	76.1	0.0	0.0	0.0
T18S	0.0	0.1	554.7	162.8	0.0	413.4	34.8
T21-L1	0.0	0.0	56.9	311.3	0.0	0.0	0.0
T21-L2	0.0	0.0	0.0	138.0	0.4	0.0	0.0
T32-1-L1	1.9	1.0	0.0	475.3	121.5	0.3	0.0
T35-2-L1	0.0	0.0	5.5	24.8	0.0	0.0	0.0
T37-1-L1	0.0	0.0	0.0	0.0	112.9	0.0	0.0
T37-2-L1	0.0	0.0	0.0	108.1	8.2	0.0	0.0
T37-2-L2	0.0	0.0	0.0	41.6	0.0	0.0	0.0
T37-2-L3	0.0	0.0	0.0	31.3	0.0	0.0	0.0
T37-2-L4	0.0	0.0	3.1	117.0	0.0	0.0	0.0

DCA	Alkali Meadow	Wet Alkali Meadow	Seasonally Wet Playa	Barren Playa	Eolian	Seasonally Standing Water	Road
Phase 10 DCAs							
Duck Pond-L2	0.0	0.0	0.1	10.1	0.1	0.0	0.0
T10-3-L1	0.0	0.0	0.0	315.2	0.0	0.0	0.0
T21-L3	0.0	0.0	2.3	101.6	0.0	0.0	0.0
T21-L4	0.0	0.0	0.0	56.6	0.0	0.0	0.0
Totals for Phase 9/10 Project	17.2	5.0	625.6	2,134.2	248.1	413.7	34.8
Totals with DCAs plus 25 ft buffer area	**22.2**	**5.7**	**629.3**	**2,209.0**	**270.3**	**413.7**	**34.8**

Note: Table summarizes conditions observed at the time of vegetation mapping (August 2013); standing water and wet playa in T18S as of May 2013. Duck Pond-2 acreages include privately-owned land (removed from the Project in January 2015).

Table 4.3-2
Wetland Distribution in the Phase 9 DCAs
(acres)

DCA	Created Wetland	Wetland	Upland
Main Area of the DCA			
C2-L1	2.1	5.0	43.3
DuckPond-L1	0.0	10.9	90.3
T10-1-L1	0.0	1.1	40.0
T17-2-L1	0.0	0.0	76.1
T18S	0.1	0.0	1165.8
T21-L1	0.0	0.0	368.2
T21-L2	0.0	<0.1	138.4
T32-1-L1	2.9	0.0	596.8
T35-2-L1	0.0	0.0	30.3
T37-1-L1	0.0	0.0	112.9
T37-2-L1	0.0	0.0	116.2
T37-2-L2	0.0	0.0	41.6
T37-2-L3	0.0	0.0	31.3
T37-2-L4	0.0	0.0	120.0
TOTAL	**5.1**	**17.1**	**2971.3**
25-Foot Buffer Areas			
C2-L1	0.8	1.2	4.8
DuckPond-L1	0.0	3.4	4.2
T10-1-L1	0.0	0.2	3.1
T17-2-L1	0.0	0.0	4.7
T21-L1	0.0	0.0	11.1
T21-L2	0.0	<0.1	7.4
T32-1-L1	0.0	0.0	31.6
T35-2-L1	0.0	0.0	2.8
T37-1-L1	0.0	0.0	7.4
T37-2-L1	0.0	0.0	8.2
T37-2-L2	0.0	0.0	5.0
T37-2-L3	0.0	0.0	3.1
T37-2-L4	0.0	0.0	7.3
TOTAL	**0.8**	**4.8**	**100.7**

Table 4.3-3
Existing Wildlife Conditions in the Phase 9/10 Project DCAs

DCA	Existing Wildlife Conditions
C2-L1	No Snowy Plover nests were found in this area (not surveyed during lakewide counts). Two Snowy Plover nests were found in 2012 to the north, one on the T2-1 Addition west berm road and other on the playa to the west (channel area). No wildlife was observed during August 2013 and May 2014 surveys.
DuckPond-L1	In 2009, a Snowy Plover nest was found north of this area where T2-1 Addition now exists. No wildlife was observed in the cell/buffer area during the August 2013 and May 2014 surveys. Wildlife observed in the constructed wet ponds to the north of the Project area include Waterfowl (*Anas* species), Diving Waterbirds (Ruddy Duck, Bufflehead), Shorebird (American Avocet, Black-necked Stilt, Greater Yellowlegs, sandpipers [*Calidris* sp.]) and other species (American Coot, White-faced Ibis, Violet-Green Swallow, Northern Harrier, Yellow-Headed Blackbird and Common Raven).
T10-1-L1	Three Snowy Plover nests were observed in this area in 2001. No wildlife was observed during August 2013 and May 2014 surveys.
T17-2-L1	No Snowy Plover nests were observed in this area; though Snowy Plover nests occur to the north on the T18S road and to the east in the T17. No wildlife was observed during August 2013 and May 2014 surveys.
T18S	Twenty-nine Snowy Plover nests were observed in T18S from 2001-2014. The majority were on perimeter berms with 2 nests on the playa (2005). Other birds observed during seasonal surveys observations are noted in LADWP, 2015.
T21-L1	Three Snowy Plover nests were observed in the area in 2002, 2006 and 2007. One additional Snowy Plover nest was found in 2001 on the playa to the west of the proposed area. No wildlife was observed during the August 2013 and May 2014 surveys.
T21-L2	One Snowy Plover nest was found in this area in 2012 and a couple other Snowy Plover nests were found in the playa to the east and west of the area in 2001 and 2007. No wildlife was observed during August 2013 and May 2014 surveys.
T32-1-L1	Two Snowy Plover nests were found in 2007 in this area. No wildlife was observed during the August 2013 and May 2014 surveys.
T35-2-L1	One Snowy Plover nest was found in 2003 on the berm dividing T36-1 to the east and this area. No wildlife was observed during the August 2013 and May 2014 surveys.
T37-1-L1	No Snowy Plover nests have been found near this area. No wildlife was observed during the August 2013 and May 2014 surveys.
T37-2-L1	No Snowy Plover nests have been observed near this area. No wildlife was observed during the August 2013 and May 2014 surveys.
T37-2-L2	One Snowy Plover nest was observed in 2007 on the playa to the south of the proposed area (between T37-2 L2 and T37-2 L3). No wildlife was observed during the August 2013 and May 2014 surveys.
T37-2-L3	One Snowy Plover nest was observed in 2007 on the playa to the north of the proposed area (between T37-2 L2 and T37-2 L3). No wildlife was observed during the August 2013 and May 2014 surveys.

DCA	Existing Wildlife Conditions
T37-2-L4	One Snowy Plover nest was observed in 2008 in the T37-2 area to the north. No wildlife was observed during the August 2013 and May 2014 surveys.
Duck Pond-L2	No Snowy Plover nests have been found in this area. No Burrowing Owl or other special status species were found during 2014 surveys.
T10-3-L1	One Snowy Plover nest was found on north berm road between T10-3 and T11 in 2006. No Burrowing Owl or other special status species were found during 2014 surveys.
T21-L3	One Snowy Plover nest was found in playa of polygon, east of main line road, in 2001. No Burrowing Owl or other special status species were found during 2014 surveys.
T21-L4	One Snowy Plover nest was found on main line road in 2001, southwest corner of T21-L4 polygon. No Burrowing Owl or other special status species were found during 2014 surveys.

Table 4.3-4
Summary of Listed Species with the Potential to Occur in the Region of the Phase 9/10 Project Areas

Species	Status	Habitat	Occurrence in Owens Lake Area[1]	2013/2014 Occurrence in Phase 9/10 Project Areas
Plants				
Owens Valley checkerbloom (*Sidalcea covillei)*	SE	Associated with alkaline meadows in Owens Valley at elevation range of 1,075-1,425 meters.	Surveyed for in 1995-1996, 1999-2001, and 2003 Dust Control Project sites, but not found; not found at two air quality monitoring sites during surveys on west side of Owens Lake 2004; determined absent as a result of presence/absence surveys of supplemental DCM sites in 2007. Species found at Willow Dip in 2011.	This species was not observed during 2013/2014 surveys for Phase 9/10 Project DCAs, Transition Area or buffer zones. Based on survey results, species not anticipated to be present in Phase 9/10 Project areas.
Fish and Wildlife				
Owens tui chub (*Gila bicolor snyderi*)	FE, SE	Endemic to the Owens River basin in a variety of habitats needing clear, clean water and aquatic vegetation.	Surveyed for in 1995-1996 and 2002-2003 at Dust Control Project sites, but not found; historic distribution includes Owens Basin habitats from the headwaters of the Owens River in Long Valley to the terminal reach of Owens Lake; known occurrences in the local area include Cabin Bar Ranch south of Olancha.	This species was not observed during 2013/2014 surveys for Phase 9/10 Project DCAs. No suitable habitat present within Project sites.
Owens pupfish (*Cyprinodon radiosus)*	FE, SE	Typical habitat for the Owens pupfish is shallow (2 inches to 3 feet), still to slow moving warm waters with good water quality, sparse cattails and bulrush, and a sand-silt detritus bottom.	Surveyed for in 1995-1996 and 2002-2003 at Dust Control Project sites, but not found; historically occurred from Fish Slough south to Lone Pine, but never recorded as far south as Owens Lake.	This species was not observed during 2013/2014 surveys for Phase 9/10 Project DCAs. No suitable habitat present within Project sites.
Desert tortoise (*Gopherus agassizii)*	FT, ST	Requires friable soils for burrow construction in open desert scrub, desert wash, and Joshua tree woodland.	Surveyed for in 1995-1996 and 2002-2003 at Dust Control Project sites, but not found; potential burrows found; known south of Owens Valley; an adult was observed in July 1995 to the east of Owens Lake.	This species was not observed during 2013/2014 surveys for new DCAs, transition area, or buffer zones. No suitable habitat present within Project sites.
Bald Eagle (*Haliaeetus leucocephalus)*	SE	Scarce migrants may occur at sites in the desert where suitable avian prey is concentrated, such as waterbird populations on	Surveyed for in 1996 and spring 2003 at Dust Control Project sites, but not found. This species has been observed occasionally at Owens Lake during the nonbreeding season.	There are no records of this species in Phase 9/10 Project areas. No suitable habitat present within Project sites.

Species	Status	Habitat	Occurrence in Owens Lake Area[1]	2013/2014 Occurrence in Phase 9/10 Project Areas
		flooded areas of Owens Lake.		
Swainson's Hawk (*Buteo swainsoni)*	ST	Needs trees or large shrubs to nest in, and nearby grassland or agricultural areas in which to forage; migrants may occur throughout the desert.	Breeding pairs have been found near Olancha. Not found during 2002-2003 surveys in the project area; found during directed surveys along the Owens River in 1996 less than 1 mile from the proposed project.	There are no records of this species in Phase 9/10 Project areas. No suitable nesting habitat is present in Project areas. Transient use in the Project areas may occur.
Least Bell's Vireo (*Vireo bellii pusillus)*	FE, SE	Riparian obligate breeding species that occurs in cottonwood-willow woodlands, oak woodlands, and mule fat scrub	Surveyed for in 1995-1996 and spring 2003 at Dust Control Project sites, but not found; not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004; habitat assessment performed in 2002-2003 and no suitable vireo habitat found in the proposed project area.	No suitable habitat present within Phase 9/10 Project areas. No records of this species in the Project areas.
Big horn sheep (*Ovis canadensis sierrae*)	FE, SE	Optimal habitat is visually open and contains steep, generally rocky slopes.	Not referenced.	This species was not observed during 2013/2014 surveys for Phase 9/10 Project DCAs. Suitable habitat is not present in the Project areas.
Mohave ground squirrel (*Spermophilus mohavensis)*	ST	Prefers sandy gravelly soils in open desert scrub, alkali scrub, and Joshua tree woodland	Surveyed for in 1995-1996 at Dust Control Project sites, but not found; not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004; habitat assessment in 2003 determined no suitable habitat present within the proposed project area; record from south of Owens Lake along State Highway 395 near Olancha.	This species was not observed during 2013/2014 surveys for Phase 9/10 Project DCAs. Suitable habitat is not present in the Project areas.

[1] Source: GBUAPCD, 2008b (Table 4.4.3-1 of the Biological Resources Technical Report)
FE = Listed as endangered under the federal ESA
FC = Listed as candidate under the federal ESA
FT = Listed as threatened under the federal ESA
PE = Proposed to be listed as endangered under the federal ESA
PT = Proposed to be listed as threatened under the federal ESA
SE = Listed as endangered by the State of California
SR = Listed as rare by the State of California
ST = Listed as threatened under the State of California

Table 4.3-5
Sensitive Species with the Potential to Occur In the Region of the Phase 9/10 Project Areas

Species	Status	Habitat	Past Noted Occurrence on Owens Lake[1]	2013/2014 Occurrence in Phase 9/10 Project Areas
Fish and Wildlife				
Owens speckled dace *(Rhinichthys osculus ssp.)*	CSC	Habitat generalist that occupies a variety of habitats including small to medium sized streams, thermal springs, headwater streams, small creeks, and large rivers	Surveyed for in 1995-1996 and 2002-2003 at Dust Control Project sites, but not found; currently found in systems isolated from introduced predatory game species such as canals and small creeks of northern Owens Valley, and in Fish Slough. A population occurs on private property in nearby Little Lake.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project DCAs. No suitable habitat exists within the Project areas.
Owens sucker *(Catostomus umeiventris)*	CSC	Freshwater streams and seeps, including the Owens River Delta and creeks within the Owens Valley	Surveyed for in 1995-1996 and 2002-2003 at Dust Control Project sites, but not found; 1989 surveys found species in northern Owens Valley habitats occupied by brown trout.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project DCAs. No suitable habitat exists within the Project areas.
Sierra Nevada yellow-legged frog (*Rana sierrae*)	CSC	Ponds, meadow and pools of high elevation mountain habitats in the central and southern Sierra Nevada	Not referenced.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project DCAs. No suitable habitat exists within the Project areas.
Inyo Mountains slender salamander (*Batrachoseps campi*)	CSC	Uncommon species known only from several canyons of the west and east slopes of the Inyo Mountains east of Lone Pine in Inyo County. Appears to exist only in moist microhabitats surrounded by desert.	Not Referenced.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project DCAs. No suitable habitat exists within the Project areas.
Northern sagebrush lizard (*Sceloporus graciosus graciosus)*	BLM	Occurs in mainly sagebrush or other shrub habitat, chiefly at higher elevations where it prefers open ground with scattered low bushes	Not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004; unlikely but may occur in vicinity of Owens Lake.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project DCAs. No suitable habitat exists within the Project areas.

Species	Status	Habitat	Past Noted Occurrence on Owens Lake[1]	2013/2014 Occurrence in Phase 9/10 Project Areas
Western Least Bittern *(Ixobrychus exilis hesperis)*	CSC	Nests among fresh and brackish marshes with dense and tall aquatic and semiaquatic vegetation	Not found during 1995-1996 and 2002-2003 surveys within the Dust Control Project sites; not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004; suitable habitat was absent in 2003 within the proposed project area; found at Cottonwood Marsh in 1995 and Cottonwood Springs in 1996 and in the Owens River Delta in 2005 and 2009.	There are no records of this species in Phase 9/10 Project areas. No suitable habitat exists within the Project areas.
Northern Harrier (*Circus cyaneus)* (Nesting)	CSC	Nests in riparian and marshland habitats and forages over open grasslands, marshes, and wetland areas	Has been observed nesting in the Owens River Delta, Keeler Ponds, and Swedes Pasture; Has been the most abundant raptor at Owens Lake. Most frequently seen over areas supporting wetland vegetation. Northern Harriers have been seen at T30, T36, Northwest Spring, Whiskey Spring, Lizard Tail, Olancha Pond and T13, areas adjacent to Phase 9/10 Project areas.	Northern Harrier have been seen in widespread locations throughout Owens Lake and areas adjacent to Project areas though not specifically in the Phase 9/10 Project areas.
Golden Eagle (*Aquila chrysaetos)* (Nesting and wintering)	FPS	Nests on steep cliff faces or atop tall species of trees with snags	Found foraging in Owens River delta in 1995-1996; found frequently foraging along margins of Owens Lake; not found during spring 2003 surveys within the proposed project area; not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004; observed flying over proposed project site in 2007.	This species was not observed during 2013/2014 surveys for Phase 9/10 Project DCAs. No suitable nesting and wintering habitat exists within the Project areas.
Snowy Plover (*Charadrius nivosus) (inland breeding population)*	CSC	Prefers sandy beaches, salt pond levees and shores of large alkali lakes	Snowy Plover commonly use Owens Lake DCAs for nesting and foraging.	Snowy Plover nests have been found adjacent to Phase 9 Project areas, in DCAs T2-1 Addition, C2, T10-1, T17-2, T21, T21 T36-1, T29-1, T30 and T18S. A few Snowy Plover nests have been found in Phase 10 Project areas (T10-3-L1, T21-L3) and adjacent to Phase 10 Project areas.

Species	Status	Habitat	Past Noted Occurrence on Owens Lake[1]	2013/2014 Occurrence in Phase 9/10 Project Areas
Mountain Plover *(Charadrius montanus)*	PT, CSC	Agricultural fields and meadow areas	Four observed at meadow at Keeler Ponds (Horse Pasture) in 1995, 0.5 mile north of project site. Ten recorded at Owens Lake October 2007, specific location not recorded; 3 in T29-2 in February 2008; one in T4-4 in October 2013	This species was not observed during 2013/2014 surveys of Phase 9/10 Project DCAs. Possible fall migrant although this species has not been observed in the Project areas.
Burrowing Owl (*Athene cunicularia)* (Burrow sites)	CSC	Nests and resides in desert scrub and agricultural habitats.	Found during autumn 1995 surveys west of Point Bartlett; found along Cottonwood Creek during 2002 and 2014; not found during spring 2003 surveys within the proposed project area; not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004. GBUAPCD has documented use of pipes for burrows within Dust Control project areas. Habitat not found in proposed project site.	Burrowing Owl has been observed near Cottonwood, in upland habitat on the west side of Owens Lake. The Phase 9/10 Project areas do not have suitable habitat for Burrowing Owl. This species was not observed during 2013/2014 surveys of Phase 9/10 Project DCAs.
Loggerhead Shrike *(Lanius ludovicianus)* (Nesting)	CSC	Nests and resides in desert scrub and savannah woodland habitats	Found at Keeler Ponds and Cottonwood Creek during 1995-1996 and 2002 surveys; a resident breeding species in the Owens River delta area; not found during spring 2003 surveys within the proposed project area; not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004; found during April 2006 surveys when it was common at Managed Vegetation areas within the proposed project site; observed adjacent to supplemental DCMs in 2007; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project DCAs. Potentially suitable nesting habitat adjacent to, but not in, the Project areas.

Species	Status	Habitat	Past Noted Occurrence on Owens Lake[1]	2013/2014 Occurrence in Phase 9/10 Project Areas
Yellow Warbler (*Setophaga petechia brewsteri)* (Nesting)	CSC	Nests in willow riparian habitats	Not found during spring 2003 surveys within proposed project area; suitable habitat does not exist within the proposed project area (regardless, listed as potentially present); occur as migrants only in the Owens River delta Habitat not found in proposed project site.	There are no records of this species in Phase 9/10 Project areas. No suitable habitat exists within the Project areas.
Yellow-breasted Chat *(Icteria virens)* (Nesting)	CSC	Resides in low, dense riparian habitat consisting of willow, blackberry, and wild grape.	Surveyed for in 1995-1996 and 2002-2003 at Dust Control Project sites, but not found; not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004; suitable habitat does not exist within the proposed project area (regardless, listed as potentially present); found south of Cabin Bar Ranch in July 1995, but not found during 1996. Habitat not found in proposed project site.	There are no records of this species in Phase 9/10 Project areas. No suitable habitat exists within the Project areas.
Pallid bat *(Antrozous pallidus)*	CSC, BLM	Roosts in natural cavities; Inhabits deserts, grasslands, shrublands; most common in open, dry habitats with rock areas	Not found during 1995-1996 at Dust Control Project sites; not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004; found foraging over meadows at Owens River delta, Keeler Ponds, and Dirty Socks in 1995-1996; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	Potential foraging habitat present in Phase 9/10 Project areas. No suitable roosting habitat present in Project areas.
Townsend's big-eared bat *(Corynorhinus townsendii)*	CSC, BLM	Generally roosts in caves and mines in a variety of habitats throughout the desert regions of California; forages over mesic and riparian corridors	Surveyed for in 1995-1996 at Dust Control Project sites, but not found; found east of State Highway 136 outside of project area; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	Potential foraging habitat present in Phase 9/10 Project areas. No suitable roosting habitat present in Project areas.

Species	Status	Habitat	Past Noted Occurrence on Owens Lake[1]	2013/2014 Occurrence in Phase 9/10 Project Areas
Spotted bat *(Euderma maculatum)*	CSC, BLM	Roosts in large, steep rock formations; forages over varied habitats	Found foraging over Owens Lake during 1995-1996 and 2003 surveys; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	Potential foraging habitat present in Phase 9/10 Project areas. No suitable roosting habitat present in Project areas.
Western small-footed myotis *(Myotis ciliolabrum)*	BLM	Found throughout the desert; solitary species	Found foraging over aquatic habitats in 1995-1996 at Dust Control Project Site; found foraging over Owens Lake in 2003; not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004.	Potential foraging habitat present in Phase 9/10 Project areas. No suitable roosting habitat present in Project areas.
Long-eared myotis *(Myotis evotis)*	BLM	Found in coniferous forests; migrates through riparian habitat in Owens River Valley	Found in 1996 at cattle tank north of North Seep and west of Keeler; found in autumn 1995 and spring 1996 in Owens Lake area.	Potential foraging habitat present in Phase 9/10 Project areas. No suitable roosting habitat present in Project areas.
Long-legged myotis *(Myotis volans)*	BLM	Found in the desert up to 2,500 meters in forested regions and brushy areas; roosts in buildings, trees, and crevices	Found foraging over aquatic habitats in 1995-1996 at Dust Control Project Site; possibly detected by acoustic signature in 2003 at Owens Lake.	Potential foraging habitat present in Phase 9/10 Project areas. No suitable roosting habitat present in Project areas.
Yuma myotis (*Myotis yumanensis)*	BLM	Found in the desert, especially along wooded canyon bottoms; common in southeastern California; colonial species, roosting in caves and old buildings	Found foraging over aquatic habitats in 1995-1996 at Dust Control Project Site; found foraging over Owens Lake in 2003.	Potential foraging habitat present in Phase 9/10 Project areas. No suitable roosting habitat present in Project areas.
Owens Valley vole *(Microtus californicus vallicola)*	CSC	Found in friable soils of wetlands and lush grassy ground in the Owens Valley	Surveyed for during May 1990 survey in support of Lake Minerals project; several found during 1996 surveys at	This species was not observed during 2013/2014 surveys of Phase 9/10 Project DCAs. No suitable habitat

Species	Status	Habitat	Past Noted Occurrence on Owens Lake[1]	2013/2014 Occurrence in Phase 9/10 Project Areas
			the north flood irrigation plot site; found during focused surveys in Swedes Pasture and Dirty Socks Spring; sign found at Sulfur Springs and Sulfur Springs Road in 2003; not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004; determined absent as a result of small mammal trapping for supplemental DCMs in 2007.	present in the Project areas.
American badger (*Taxidea taxus*)	CSC	Most numerous in California in the Great Basin region, fluctuating with populations of squirrels and pocket gophers, in open areas including deserts	During surveys for predatory mammals conducted in the fall of 1995 a badger dig was observed in the shadscale scrub west of the Owens River riparian area.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project DCAs. No suitable habitat present in the Project areas.

[1] Source: GBUAPCD, 2008b (Table 4.4.3-2 of the Biological Resources Technical Report)

Notes:

CSC = California Species of Special Concern

BLM = BLM Sensitive Species

FPS = Federally Protected Species

Table 4.3-6
Locally Important Species with the Potential to Occur in the Region of the Phase 9/10 Project Areas

Species	Status	Habitat	Past Noted Occurrence on Owens Lake[1]	2013/2014 Occurrence in Phase 9/10 Project Areas
Plants				
Sanicle cymopterus *(Cymopterus ripleyi* var. *saniculoides)*	CNPS 1B	Typically associated with Joshua tree woodland, Mojavean desert scrub of Inyo County at elevation range of 1,000-1,675 meters	Observed among scrub habitat near Dirty Socks well, Owens Lake basin; surveyed for in 1995-1996, 1999-2001, and 2003-2004 at Dust Control Project sites and proposed project area, but not found.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Habitat not found in Project areas.
Parish's popcorn-flower (*Plagiobothrys parishii)*	CNPS 1B	Great Basin scrub	Found north of Cartago, Inyo County; flowering period is May-June (and uncommonly in November).	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Reported from Willow Dip and Ash Creek spring (outside of the project area). Species absent from Project areas.
Darwin rock cress (*Arabis pulchra* var. *munciensis)*	CNPS 2	Found on limestone among Chenopod scrub, Mohavean desert scrub in Inyo County at elevation range of 1,100-2,075 meters	Not found during 1995-1996, 1999-2001, and 2003 surveys at Dust Control Project sites or within the proposed project area.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Habitat not found in Project areas.
Naked milk-vetch *(Astragalus serenoi* var. *shockleyi)*	CNPS 2	Found on course granitic alluvium among Chenopod scrub, Great Basin scrub at elevation range of 1,500-2,250 meters	Not found during 1995-1996 and 1999-2001 surveys at Dust Control Project sites; not found during 2003 focused surveys within the proposed project area.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Habitat not found in Project areas.
Horn's milk-vetch (*Astragalus hornii*)	CNPS 1B	Found on lake margins, meadows and seeps, playas	Not referenced.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Not anticipated to be present in the Project areas.
Inyo phacelia *(Phacelia inyoensis)*	CNPS 1B	Found in alkaline meadows and seeps of Inyo County at elevation range of 900-3,200 meters	Surveyed for in 1999-2001 at Dust Control Project sites, but not found; not found during 2003-2004 focused surveys within the proposed project area; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Species absent from the Project areas.

Species	Status	Habitat	Past Noted Occurrence on Owens Lake[1]	2013/2014 Occurrence in Phase 9/10 Project Areas
Creamy blazing star *(Mentzelia tridentata)*	CNPS 1B	Found in Mojavean desert scrub at elevation range of 700-1,160 meters; flowering period is March-May	Habitat not found in proposed project site.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Habitat not found in Project areas.
Booth's evening primrose *(Camissonia boothii ssp. boothii)*	CNPS 2	Typically associated with Joshua tree woodland and pinyon and juniper woodland; observed among stabilized dunes at Owens Lake basin at elevation range of 900-2,400 meters; blooms April to September	Surveyed for in 1995-1996 and 1999-2001 at Dust Control Project sites, but not found; not found during 2003-2004 focused surveys within the proposed project area.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Habitat not found in proposed Project sites.
Sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum)*	CNPS 2	Associated with desert dunes. Great Basin scrub of Inyo County at elevation range of 700-1,625 meters; blooms April to May	Surveyed for in 1999 and 2001 at Dust Control Project sites, but not found; not found during 2003-2004 focused surveys within the proposed project area. Habitat not found in proposed project site.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Habitat not found in Project areas.
Narrow-leaved cottonwood *(Populus angustifolia)*	CNPS 2	Found along creeks and rivers in riparian forest of Inyo County at elevation range of 500-2,125 meters; flowering period is March-April	Surveyed for in 1995-1996 and 1999-2001 at Dust Control Project sites, but not found; not found during 2003 focused surveys within the proposed project area.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Habitat not found in Project areas.
Nevada oryctes *(Oryctes nevadensis)*	CNPS 2	Found in dry, sandy soil in washes and open scrub habitat in the Owens Valley at elevation range of 1,100-2,550 meters	Surveyed for in 1995-1996 and 1999-2001 at Dust Control Project sites, but not found; not found during 2003-2004 focused surveys within the proposed project area.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Species absent from the Project areas.
Inyo County star-tulip *(Calochortus excavatus)*	CNPS 1B	Found among alkaline meadows in shadscale scrub at elevation range of 1,150-2,000 meters	Surveyed for in 1995-1996, 1999, 2000, and 2001 at Dust Control Project sites, but not found; not found during 2003-2004 focused surveys within the proposed project area; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Habitat not found in Project areas.
Alkali cord grass (*Spartina gracilis)*	CNPS 4	Found in alkali meadows and seeps of Inyo County; observed at Owens	Surveyed for in 1995-1996 and 1999-2001 at Dust Control Project	This species was not observed during 2013/2014 surveys of Phase 9/10 Project

Species	Status	Habitat	Past Noted Occurrence on Owens Lake[1]	2013/2014 Occurrence in Phase 9/10 Project Areas
		Lake basin at elevation range of 1,000-2,100 meters; blooms June to August	sites, but not found; not found during 2003-2004 focused surveys within the proposed project area; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	areas. Species absent from Project areas.
Father Crowley's lupine (*Lupinus dedeckerae*)	CNPS 1B, CR	Found in decomposed granitic substrate in Great Basin scrub, Riparian forest, Riparian scrub, Upper montane coniferous forest	Not referenced.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Habitat not found in Project areas.
DeDecker's clover *(Trifolium macilentum var. dedeckerae)*	CNPS 1B	Found in granitic, rocky substrate in Lower montane coniferous forest, Pinyon and juniper woodland, Subalpine coniferous forest, Upper montane coniferous forest	Not referenced.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Habitat not found in Project areas.
Bald daisy (*Erigeron calvus*)	CNPS 1B	Found in Great Basin scrub.	Not referenced.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Habitat not found in Project areas.
July gold *(Dedeckera eurekensis)*	CNPS 1B, CR	Found in limestone outcrops, 3500 to 7000 ft elevation	Not referenced.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Habitat not found in Project areas.
Wildlife				
Moth *(Tescalsia guilianata)*	Locally rare	Dune and alkali meadow habitats	Found at Olancha Dunes and Southwest Seeps during 1995-1996 surveys; not found during 2003 surveys within the proposed project area; suitable habitat was found in dunes and sand hummocks during 2003 surveys within the proposed project area; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	This species was not observed during 2013/2014 surveys Phase 9/10 Project areas. Habitat not found in Project areas.
Monarch butterfly (*Danaus plexippus)*	Locally rare	Riparian and woodland habitats; found near Olancha in autumn 1995	Found in Owens River delta during 1995-1996 surveys; adults, milkweed, or larval host plants during the 2003 surveys were not found; determined absent as a result of presence/absence surveys in	This species was not observed during 2013/2014 surveys for Phase 9/10 Project areas.

Species	Status	Habitat	Past Noted Occurrence on Owens Lake[1]	2013/2014 Occurrence in Phase 9/10 Project Areas
			supplemental DCMs in 2007.	
Alkali skipper *(Pseudocopae-odes eunus)*	Locally rare	Dune and alkali meadow habitats	Observed at Dirty Socks during 1995-1996 surveys; not found during 2003 surveys within the proposed project area; suitable habitat was found in saltgrass dominated transmontane alkaline meadow during 2003 surveys within the proposed project area; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Potentially suitable habitat may exist in Project areas with dry alkali meadow.
Owens valley tiger beetle (*Cicindela tranquebarica inyo)*	Locally rare	Dune and alkali meadow habitats	Found at Olancha Pond, Dirty Socks, and Swedes Pasture during 1995-1996 surveys; found in saltgrass dominated transmontane alkaline meadow during 2003 surveys within the proposed project area; observed within the Channel Area as a result of presence/absence surveys in supplemental DCMs in 2007.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Suitable habitat exists in the T18S Transition Area and saturated playa areas.
Alkali flats tiger beetle *(Cicindela willistoni pseudosenilis)*	Locally rare	Dune and alkali meadow habitats	Found at Dirty Socks, southwest seep, and northwest of Dirty Socks during 1995-1996 surveys; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Suitable habitat exists in the T18S Transition Area and saturated playa areas.

Species	Status	Habitat	Past Noted Occurrence on Owens Lake[1]	2013/2014 Occurrence in Phase 9/10 Project Areas
Slender-girdled tiger beetle *(Cicindla tenuicincta)*	Locally rare	Dune and alkali meadow habitats	Observed at southwest seep, and northeast of Dirty Socks during 1995-1996 surveys; not found during 2003 surveys within the proposed project area; suitable habitat was found in saltgrass dominated transmontane alkaline meadow during 2003 surveys within the proposed project area; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Suitable habitat exists in the T18S Transition Area and dry alkali meadow areas.
Owens dune weevil (*Trigonoscuta owensii)*	Locally rare	Dune and alkali meadow habitats	Found at Olancha Dunes and dunes northeast of Keeler during 1995-1996 surveys; found during 2003 surveys within the proposed project area; suitable habitat was found in dunes and sand hummocks during 2003 surveys within the proposed project area; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Potentially suitable habitat may exist in Project areas with dry alkali meadow.
Wong's springsnail (*Pyrgulopsis wongi*)	OBWS	Typically inhabit only springs and short sections of spring brooks with good water quality	Not referenced.	This species was not observed during 2013/2014 surveys of Phase 9/10 Project areas. Known from some west side springs on Owens Lake. No suitable aquatic habitat present in the Project areas.
Willet (*Catoptrop-horus semipalmatus)*	Locally rare	Found in marshes and Shallow Flooding areas during winter and spring	This species is a somewhat common spring and fall migrant and uncommon wintering species at Owens Lake. There has been no evidence of breeding in dust control project areas.	From 2012-2014, a total of188 Willets have been recorded during lakewide surveys; a total of six of these have been found in the T18S Transition Area. No Willets were found in Phase 10 Project areas.
Franklin's Gull *(Larus pipixcan)*	Locally rare	Uses ponds, shallow-flood areas, and fields for foraging, including habitat elements within the proposed project area	This species is a somewhat rare spring and a rare fall migrant at Owens Lake.	From 2012-214, a total of 53 Franklin's Gulls have been recorded during lakewide surveys; including on in T18-S.
Nuttall's	Locally	Found in woodlands and riparian	Has been seen in the Owens River	There are no records of this species in the

Species	Status	Habitat	Past Noted Occurrence on Owens Lake[1]	2013/2014 Occurrence in Phase 9/10 Project Areas
Woodpecker (*Picoides nuttallii)*	rare	areas	Delta riparian area in 2005, 2008 and 2009. Suitable habitat does not exist within the proposed project area.	Phase 9/10 Project areas. There is no suitable habitat present within the Project areas.

[1] Source: GBUAPCD, 2008b (Table 4.4.3-3 of the Biological Resources Technical Report)
Notes:
CNPS ranking system:
- List 1B: Rare, threatened or endangered in California and elsewhere
- List 2: Plants is rare, threatened or endangered in California but more common elsewhere.
- List 3: Plants about which we need more information.
- List 4: Plants of limited distribution

Threat ranks: 0.1: Seriously threatened in California; 2: Fairly threatened in California; 0.3: Not very threatened in California
Locally rare - Designated as locally important by Inyo County, the Audubon Society, CDFW, and/or the 1997 EIR
OBWS: Owens Basin Wetland and Aquatic Species
CR: California rare

4.3.3.4 Avian Use of Project Vicinity

A designated Nationally Significant Important Bird Area by the National Audubon Society and America Bird Conservancy, Owens Lake serves as a migratory stop-over site for shorebirds and waterfowl during spring and fall migration. American Avocets, Western and Least Sandpipers dominate during migration. Wilson's and Red-necked Phalaropes are common during migration particularly in fall. Owens Lake is also an important site for waterfowl and supports large numbers of Northern Shoveler and Ruddy Ducks, particularly in migration. Use of the Project vicinity by various waterbirds is much less notable in summer and winter. However, Snowy Plover and American Avocets commonly breed in dust control areas and around lake-fringing wetlands.

Multiple bird count surveys were conducted in 2011, 2012, and 2013. In 2012 and 2013, the surveys consisted of:

- Two annual spring surveys – conducted within the last two weeks of both March and April
- One Snowy Plover/all species breeding survey – conducted in late May
- Three fall surveys – conducted in the last two weeks of August, September, and October
- One winter survey – conducted in January

Results of the bird counts in 2011, 2012 and 2013 are summarized by guild in **Appendix D**. Based on these data, conditions in the existing Shallow Flood DCA included in the Project, T18S, can be described as follows:

- T18S supports the highest species richness of all Owens Lake DCAs. Diving waterbird and waterfowl richness is also among the highest of all DCAs.

- Shorebird (including Snowy Plover, American Avocet, Black-necked Stilt and Killdeer) use of Transition Area T18S was moderate to high compared to other DCAs where shorebirds were found. These individuals represent adults observed during the breeding season and may include many non-breeding individuals.

- Waterfowl use during the breeding season (which may consist of non-breeding individuals including Gadwall, Cinnamon Teal and Mallard) of T18S was low to moderate compared to other DCAs. T36-1 East and T29-1 had high breeding waterfowl use.

- Diving waterbird use (including Eared Grebe, Ruddy Duck and Bufflehead) of T18S ranged from low (2011) to moderate (2012) to high (2013). In 2013, T18S had the highest diving waterbird use of DCAs counted. Other high waterbird use cells are T16, T1A-2 and T30s.

- Migrating shorebird use (including Least and Western Sandpipers, phalaropes, and Long-billed Curlew) was low (2011-2012) to high (2013) in T18S.

- Migrating waterfowl use (including Northern Shoveler, Mallard, Cinnamon Teal, and Gadwall) was moderate (2011-2012) to high (2013) in T18S.

4.3.3.5 Toxicology Monitoring

Ecological monitoring is on-going at Owens Lake in compliance with the Lahontan Regional Board's Amended Monitoring and Reporting Program (AMRP). Water, sediment, and aquatic and avian biota sampling is intended to track the exposure of birds and other wildlife to naturally occurring trace elements in new and previously established aquatic habitat features within portions of the Owens Lake playa where dust-control projects are being implemented. Ecological sampling is conducted annually for media with potential to be consumed by birds that live and feed in the shallow flood habitats: bottom sediments, water, algae and aquatic macroinvertebrates. Salvaged bird eggs and tissues from salvaged bird carcasses are also analyzed for chemicals of potential ecological concern (COPEC).

Based on June 2013 sampling (GANDA, 2014):

- **Water Quality** – Arsenic, barium, boron, cadmium, chromium, copper, iron, lithium, molybdenum, nickel, selenium, and vanadium were above eco-risk screening values for at least one of the sites sampled. Of these COPECs, arsenic, barium, boron, chromium, copper, lithium, molybdenum, nickel, and vanadium most consistently exceeded eco-risk screening values for surface water at shallow-flood habitat types throughout the northern, central, and southern portions of the dust mitigation area.

- **Sediment** - Barium and vanadium were above eco-risk screening values for at least one of the sites sampled. Of these analytes, only barium consistently exceeded eco-risk screening values at shallow-flood habitat types throughout the northern, central, and southern portions of the Project Area; aluminum was consistently above screening thresholds for sediment in the central portion of the dust mitigation area.

- **Algae** - Aluminum, arsenic, barium, boron, calcium, chromium, copper, lead, molybdenum, selenium, vanadium, and zinc were above eco-risk screening values for at least one of the sites sampled. Of these analytes, aluminum, barium, boron, chromium, molybdenum, and vanadium consistently exceeded eco-risk screening values for biota at shallow-flood habitat types throughout the northern, central, and southern portions of the dust mitigation area.

- **Aquatic Macroinvertebrates** (dominated by brine flies of the genus *Ephydra* (family Ephydridae) and the brine shrimp *Artemia franciscana* (family Artemiidae)) - Aluminum, arsenic, barium, boron, chromium, molybdenum, selenium, vanadium, and zinc were above eco-risk screening values for at least one of the sites sampled. Of these analytes, aluminum, barium, boron, and vanadium most consistently exceeded eco-risk screening values for biota at shallow-flood habitat types throughout the northern, central, and southern portions of the dust mitigation area.

- **Avian Biota** – In 2013, the only avian tissue samples submitted for COPEC analyses included one gull egg sample, two gull bone samples, and one pelican bone sample. For the egg sample, only barium was above the eco-risk screening value. Boron, chromium, and zinc exceeded the eco-risk screening values in all three bone samples collected in 2013; selenium also exceeded the screening values in one of the three bone samples.

- **Water Quality** - Water quality sampling is conducted quarterly. Parameters elevated above eco-risk screening values were: arsenic, barium, boron, cadmium, chromium, copper, lithium, molybdenum, nickel, and vanadium. Seasonal and location variations were noted.

Based on the results of sampling in 2013 and in previous years (2008 through 2012), ecological risk by parameter was analyzed (GANDA, 2014). Previous data from the Owens Lake region have indicated low-level risks to wildlife from elevated concentrations of barium, boron, and other trace elements in abiotic media, as well as some evidence of bioaccumulation of certain COPECs in biotic media (i.e., algae and aquatic macroinvertebrates). Data from 2013 are generally consistent with these findings and further reiterate the potential risks to avian fauna, particularly from barium and boron, for which eco-risk screening thresholds were exceeded in most media in 2013 (and in previous study years), including avian tissue samples. Biotic media, which represent potential avian dietary items, had generally higher concentrations of chromium, molybdenum, selenium, and vanadium in 2013 than in previous study years. Avian tissue samples exceeded screening values for barium, boron, chromium, selenium, and zinc in 2013. While additional monitoring and data from avian tissue evaluations will be conducted to draw conclusions regarding bioaccumulation, mortality, and sub-lethal impacts from the listed COPECs, previous information on egg shell thickness indicates that at least one species, American Avocet, is not exhibiting egg shell thinning due to potential toxic exposures.

4.3.4 Significance Criteria

Based on State CEQA Guidelines, Appendix G, significant impacts to biological resources (direct or indirect), may occur if a project action:

- Has 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 Wildlife or U.S. Fish and Wildlife Service
- Has 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 Wildlife or U.S. Fish and Wildlife Service
- Has 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
- Interferes 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

4.3.5 Impacts

The following analysis considers impacts from installation of dust control on 3.61 square miles of the Phase 9/10 Project areas and transition of 1.82 square miles of existing Shallow Flooding to a mix of Gravel Cover and Pond Shallow Flooding (original Phase 9/10 Project). However, as noted previously, LADWP has identified an environmentally superior alternative (Avoidance Alternative, see **Section 5**) which would reduce impacts on significant cultural resources to less than significant levels, and reduce dust to the maximum extent feasible. Under the Avoidance Alternative, BACM would not be installed on approximately 278 acres of the 3.61 square miles of DCAs identified for dust control (plus any archaeologically significant sites on BLM or private land, or discovered during construction). Since the Avoidance Alternative would construct and operate DCMs on a smaller area than the Project and thereby cause fewer impacts than the Phase 9/10 Project, the following analysis of the biological resources impacts of the Project presents a worst-case impact assessment.

4.3.5.1 Summary of Impacts to Vegetation Types

The Phase 9/10 Project would alter approximately 3,605 acres of Owens Lake (approximately 3,478 acres of DCAs and 127 acres of buffer around surrounding the DCAs) through construction involving land leveling; earthwork necessary for berm, roadway, and pipeline installation; installation of Gravel Cover; installation of irrigation systems; and vegetation planting. Overall, the following land forms (approximate acres) would be disturbed for construction of the Project:

- 22 acres of alkali meadow
- 6 acres of wet alkali meadow
- 627 acres of wet playa
- 2,233 acres of barren playa
- 270 acres of eolian
- 414 acres of standing water
- 35 acres of road

In addition to land and vegetation disturbance, construction activity could impact wildlife, through direct disturbance or indirectly from construction noise. After Project completion, the locations of water available to birds and other wildlife on the lake would be altered.

Once constructed, the Phase 9/10 Project would provide approximately 152 acres of Managed Vegetation, 1,000 acres of Shallow Flooding (ponds, standing water and saturated soils), and 2,326 acres of Gravel Cover. Managed Vegetation in C2-L1 and Duck Pond-L1 may include areas that are shrub dominated and other areas that are predominantly meadow. It is assumed that upgradient, less saline, areas would be shrub dominated. Shallow flooding would contain up to 650 acres of ponded area, and up to 350 acres of lateral shallow flooding (**Table 4.3-7**).

Under existing conditions, ponded area greater than 10 cm depth is present seasonally in T18S. With the Project, four ponds would be created in T18S, two deep and two shallow. Post-project, T18S would have a greater length of usable shoreline. Gravel adjacent to water would provide potential nesting and loafing habitat for shorebirds and loafing habitat for waterfowl.

Table 4.3-7
Existing Vegetation Conditions vs. Expected Conditions with the Phase 9/10 Project (acres)

Summary of Existing Conditions (acres)					Summary of Anticipated Future Conditions (approximate acres)			
DCA	Alkali Meadow	Barren Playa and Roads	Desert Saltbush Scrub	Seasonal Standing Water and Wet Playa	Managed Vegetation	Unvegetated (Gravel Cover, roads and other facilities)	Pond Shallow Flood (will contain dry playa, saturated soil and ponded water)	Lateral Shallow Flood (contains dry playa, saturated soil and some ponded water)
C2-L1	7.1	36.5	3.6	3.1	50.4			
Duck Pond-L1	10.9	89	1.3	0	101.3			
T10-1-L1	1.1	40	0	0				41.1
T17-2-L1	0	76.1	0	0		76.1		
T18S	0.1	197.6	0	968.1		516.0	650.0	
T21-L1	0	311.3	0	56.9		138.4		
T21-L2	0	138	0.4	0		368.2		
T32-1-L1	2.9	475.3	121.5	0.3		600.0		
T35-2-L1	0	24.8	0	5.5		30.3		
T37-1-L1	0	0	112.9	0		112.9		
T37-2-L1	0	108.1	8.2	0				116.3
T37-2-L2	0	41.6	0	0				41.6
T37-2-L3	0	31.3	0	0				31.3
T37-2-L4	0	117	0	3.1				120.1
Duck Pond-L2	0	9.9	0.1	0		9.24		
T10-3-L1	0	315	0	0		315.0		
T21-L3	0	104	0	0		103.8		
T21-L4	0	56	0	0		55.6		
Total	**22.1**	**2171.5**	**248.0**	**1037.0**	**151.7**	**2,325.6**	**650.0**	**350.4**

4.3.5.2 Impacts to Habitat Values

Habitat Suitability Model

Baseline habitat values were quantified using a collaboratively developed Habitat Suitability Model (HSM) (LADWP, 2011b). The HSM hypothesizes a functional relationship between the quality of a resource or variable and its suitability value for a species (Schamberger, et. al., 1982). The HSM was developed for each guild by the Owens Lake Master Planning habitat workgroup which included members from CDFW, GBUAPCD, Eastern Sierra Audubon, California Audubon, Bristlecone Chapter of the California Native Plant Society, and LADWP. These models were reviewed and further refined by Bart O'Brien (Rancho Santa Ana Botanical Garden), Gary Page (Point Reyes Bird Observatory) and Don Sada (Desert Research Institute). Pre-project habitat values in Phase 9/10 Project areas were compared to post-project habitat values using the HSM (LADWP, 2014).

The wildlife that use Owens Lake and the dust control project area can be organized into species guilds or species with similar habitat requirements, and therefore habitat use at Owens Lake. These guilds are: diving waterbirds, breeding waterfowl, migrating waterfowl, breeding shorebirds, migrating shorebirds, and alkali meadow species (LADWP, 2015). The HSM is evaluated by mathematically combining individual Suitability Index Values (SIVs) for each habitat parameter. These parameters were found to be the most important to describe habitat for each guild. SIVs are assigned to measurements in each parameter in the model based on measurements which are preferred by each guild. The SIVs range from 0 to 1, which indicate the suitability of each component parameter. For example, in the shorebird habitat model, shorebirds prefer shallow water for the water depth habitat parameter, therefore the SIV assigned to this parameter when shallow water is measured is 1. Each parameter's SIVs are combined mathematically to obtain the HSM value. The HSM value for each guild in each area can range from 0.0 (low or non-suitable habitat) to 1.0 (highly suitable habitat).

The **diving waterbird** guild consists of waterfowl that may dive when foraging, the most abundant being the Ruddy Duck, and the taxonomically unrelated Eared Grebe. Based on data from 2010, only ponds that were greater than 40 acres were used by this guild. Habitat value for diving waterbird species was found to be best described by three parameters: open water depth, salinity (which influences the productivity of aquatic invertebrates), and the seasonal availability of water. The 25-40 cm depth profile, salinity level of 15-50 mS/cm, and water availability in spring and fall were given the highest rankings for diving waterbirds.

The **breeding waterfowl** guild includes all species of the genus *Anas*, or dabbling ducks, including those which have been known to breed on Owens Lake - Mallard, Gadwall, Northern Pintail, Cinnamon Teal, and potentially Green-winged Teal. Habitat value for breeding waterfowl is best described by six parameters: water depth, salinity, seasonal water availability, proportion of islands, vegetated extent, and vegetation structure. Highest rankings were given for water depths between 13-30 cm, fresh salinity levels of up to 5 mS/cm, water availability in the breeding and brooding period of spring and summer, ≥10 percent islands, 40-60 percent vegetated cover, and high herbaceous structural diversity. The most important parameters for calculating breeding waterfowl habitat suitability are water depth and salinity.

Migrating waterfowl includes all members of the Family Anatidae, which includes all species of swan, goose, dabbling duck, with the exception of diving ducks and mergansers which are placed in the diving waterbird guild. Migrating waterfowl use of Owens Lake includes seasonal migrants and winter residents. Habitat value for waterfowl is best described by four parameters: water depth, salinity, seasonal water availability, and proportion of islands. Highest rankings were given for water depths between 13-30 cm, brackish to productive saline levels of 5-50 mS/cm, water availability in fall, and ≥10 percent islands. Water depth is the most important predictor for habitat use for waterfowl.

The **breeding shorebird** guild includes all members of the Order Charadriiformes, which may breed on Owens Lake. This includes Snowy Plover, Black-necked Stilt, American Avocet, Killdeer, and potentially Long-billed Curlew. Habitat value for shorebirds is best described by seven parameters: water depth, salinity, seasonal water availability, islands, vegetated extent, the proportion of dry area in a cell, and the microtopographic relief of dry area. Highest rankings were given for water depths between 0-10 cm, productive saline to saline levels of 15-70 mS/cm, water availability in the breeding period of spring and summer, ≥10 percent islands, dry area between 30-60 percent, microtopographic relief of dry areas between 5-20 cm, and 0-10 percent vegetated extent. Water depth and dry area are the most important parameters for calculating breeding shorebird habitat suitability.

The **migrating shorebird** guild includes all members of the Order Charadriiformes excluding the family Laridae (gulls) and includes plovers, stilts and avocets, phalaropes, and all sandpipers (Family Scolopacidae). Habitat value for migrating shorebirds is best described by five parameters: water depth, salinity, seasonal water availability, islands, and vegetated extent. Highest rankings were given for water depths between 0-10 cm, productive saline levels of 15-50 mS/cm, water availability in spring and fall, ≥10 percent islands, and 0-10 percent vegetated extent. Water depth, salinity, proportion of islands and vegetated extent each have similar SIVs compared to the breeding shorebirds. The major difference between breeding and migrating shorebirds is the timing of water availability and the need for nesting habitat (microtopography and dry area).

The **alkali meadow** guild includes all species associated with herbaceous-dominated communities on or adjacent to Owens Lake. Typical species include reptiles such as side-blotched lizard, gopher snake; mammals such as Owens Valley vole, deer mouse, tule elk; and birds such as Northern Harrier, Savannah Sparrow, and Western Meadowlark. Meadow habitats also support many invertebrate and plant species. Vegetation cover provides essential food and cover for herbivorous species, and plays a role in mediating predator prey interaction and promoting diversity. Therefore, vegetation cover is the most important parameter for calculating alkali meadow habitat suitability. Highest rankings were given for >50 percent vegetation cover, >40 plant species, presence of special status plant species, multiple herbaceous layers and some native woody riparian, and high topographic diversity.

Habitat Values of Existing Conditions

Habitat value for each guild was primarily based on data from wetland delineations of the Phase 9/10 Project DCAs and Transition Area T18S. Initial mapping was compiled from color-infrared

(CIR) GeoEye imagery dated July 17, 2012. Preliminary mapping was verified and refined through field studies. Maps of vegetation and wetland types, field descriptions, and photos were compiled. Seven vegetation and land cover types were identified: alkali meadow, wet alkali meadow, wet playa, dry playa, eolian, standing water, and road. Other habitat values were characterized as follows:

- **Water Depth** - Open water occurs only in T18S DCA. Water depth was estimated for conditions in late May 2013 based on a spectral classification of a GeoEye satellite image dated May 19, 2013 and on LiDAR measures of surface elevation obtained in August 2012, when surface water was mostly absent in the DCA to obtain elevations in lower parts of the area.

- **Salinity** - Salinity measurements were taken in April 2013. The salinity for most of the new areas was estimated to be 80 mS/cm for habitat modeling purposes. The two areas in the south (C2-L1 and DuckPond-1 DCAs) are adjacent to spring fed wetlands and were estimated to have salinity in the 30 mS/cm range. Two areas immediately adjacent to the brinepool were estimated to be hypersaline (T37-2-L2 and T37-2-L3 DCAs). Post-project water salinities are expected to be in the same range as pre-project in areas with no water application. New areas with shallow flood were projected to be in similar salinity ranges to adjacent shallow flood cells in current operation that have similar infrastructure. The T18S ponds would be managed to maintain water salinity in the optimum range for shorebirds (15-50 mS/cm) during the dust control season.

- **Seasonal Water Availability** - Seasonal water presence was evaluated based on two Landsat7 images dated January 13, 2013 and November 5, 2013 and two GeoEye images dated May 19, 2013 and July 4, 2013.

- **Islands** – Islands were identified as areas of dry playa surrounded by water (sometimes with a wet playa transition). Islands identified based on spectral analysis of the May 19, 2013 GeoEye Image comprise 83.1 acres (7.1 percent) of T18S. Post-project island area for each pond was estimated from design drawings and grading plans.

- **Vegetated Extent** – Vegetation was mapped in conjunction with wetland delineations based on the July 7, 2012 GeoEye image. Mapping was refined and vegetation types were described in the field. Post project vegetation extent was estimated using design drawings for managed vegetation construction.

- **Dry Area** - The proportional area (percentage) that was both unvegetated and dry was determined as the area of "dry playa" identified for wetland delineations, based on the July 7, 2012 GeoEye image. Post-project dry area was calculated from design drawings. Gravel areas were considered dry; dry area in shallow flooding was assessed using saturation proportions typical during operations of pond and Lateral Shallow Flooding (20-25 percent dry).

- **Microtopographic Relief** - Microtopographic relief was evaluated using a 1-foot grid generated from a LiDAR point-cloud captured in August 2012 when open water was mostly absent on the lake bed. Post project microtopographical relief was projected to increase in gravel areas. Lateral Shallow Flood areas were also expected to increase due to the more uniform application of water and less need to have a smooth gradient for sheet flow from bubblers. The Transition Area was projected to have a higher or similar range in microtopography to pre-project conditions.

- **Vegetation Cover** – Wetland delineations entailed describing vegetation cover for each vegetation type in each DCA. Post-project vegetation cover was projected from acreage of Managed Vegetation area in design drawings. The projected cover classes were calculated from vegetative cover compliance thresholds. Areas without Managed Vegetation are not expected to have additional vegetation develop.

- **Vegetation Richness and Vegetation Structure** – Plant species were identified during the wetland delineation; cover was estimated for tree, sapling/shrub, and herbaceous strata for representative areas of each vegetation type. Vegetation data for the dominant community were used to assign a vegetation structure to the entire DCA or transition area.

  The numbers of plant species in each DCA were summed for use in habitat modeling. The dominant and most common species observed was saltgrass, with common three-square, Mojave seablite, alkali pink, Parry's saltbush commonly observed. In areas of Managed Vegetation, the vegetation structure is expected to increase with increased vegetation and number of species. These managed vegetation areas should have high herbaceous structural diversity and some shrubs. Other areas are expected to have no vegetation.

- **Vegetated Topographic Diversity** – This variable was assessed during the wetland delineation using topographic complexity attribute in California Rapid Assessment Methods for Wetlands (CRAM, 2009) that was slightly modified for Owens Lake. Two areas adjacent to the historic shoreline have relatively flat playa interfacing with shoreline features. C2-L1 and historic drainage features also have small areas of topographic diversity. Other areas were flat with no topographic diversity.

Habitat Suitability Model Results

The habitat parameters are presented by guild for existing conditions in 2013 and post-project projections after completion of construction and the requisite growing seasons for vegetation. Using the habitat parameters, the habitat value was modeled for each guild in all Phase 9/10 Project areas using the HSM. Habitat value-acres for each guild are the product of the habitat suitability model output value and the acreage of the DCA. Existing habitat value for each Owens Lake species guilds in 2013 within Project areas was calculated and compared to projections after completion of the Project (**Table 4.3-8**). Projected impacts by guild are described below. Since the predicted future habitat values indicate maintenance or enhancement for all guilds, the impact of the proposed Project on habitat values would be less than significant.

Table 4.3-8
Projected Existing and Future Habitat Value (value-acres) of Phase 9/10 Project Areas

Area Name	DCM	Projected Habitat Value					
		Diving Waterbird	Breeding Waterfowl	Migrating Waterfowl	Breeding Shorebird	Migrating Shorebird	Alkali Meadow
C2-L1	MV	0	6	3	4	5	31
DuckPond-L1	MV	0	12	7	7	11	62
T10-1-L1	SF	0	0	16	22	24	0
T17-2-L1	GC	0	0	0	2	0	0
T18S	GC/SF	1166	0	445	731	534	0
T21-L1	GC	0	0	0	0	0	0
T21-L2	GC	0	0	0	0	0	0
T32-1-L1	GC	0	0	0	0	0	0
T35-2-L1	GC	0	0	0	0	0	0
T37-1-L1	GC	0	0	0	0	0	0
T37-2-L1	GC	0	0	27	57	48	0
T37-2-L2	SF	0	0	9	20	17	0
T37-2-L3	SF	0	0	7	15	13	0
T37-2-L4	SF	0	0	27	59	49	0
DuckPond-L2	GC	0	0	0	0	0	0
T10-3-L1	GC	0	0	0	0	0	0
T21-L3	GC	0	0	0	0	0	0
T21-L4	GC	0	0	0	0	0	0
Post-Project Sum		**1166**	**18**	**541**	**917**	**701**	**93**
		Existing Conditions (2013)					
C2-L1	None	0	4	2	11	4	5
DuckPond-L1	None	0	0	0	3	0	3
T10-1-L1	None	0	0	0	1	0	0
T17-2-L1	None	0	0	0	1	0	0
T18S	SF	903	0	393	415	466	0
T21-L1	None	0	0	18	68	47	0
T21-L2	None	0	0	0	3	0	0
T32-1-L1	None	0	0	0	9	0	50
T35-2-L1	None	0	0	1	3	4	0
T37-1-L1	None	0	0	0	2	0	18
T37-2-L1	None	0	0	0	2	0	2
T37-2-L2	None	0	0	0	1	0	0
T37-2-L3	None	0	0	0	0	0	0
T37-2-L4	None	0	0	1	11	2	0
DuckPond-L2	None	0	0	0	1	0	0
T10-3-L1	None	0	0	0	5	0	0
T21-L3	None	0	0	1	9	2	0
T21-L4	None	0	0	0	1	0	0
Pre-Project Sum		**903**	**4**	**416**	**546**	**525**	**78**
Percent change		29.1%	350.0%	30.0%	67.9%	33.5%	19.2%
Net change		**263**	**14**	**125**	**371**	**176**	**15**

Diving Waterbirds - In T18S DCA, two deep ponds of approximately 125 acres in size would be constructed where the optimal foraging water depth will be approximately 40 percent of each pond area. The acreage of water at the optimal water depth (25-40cm) of the ponds is projected to be similar to existing acreage in the two larger ponds in T18S (**Figure 3-6**). In addition, unlike current conditions where water is applied without regard to the resulting salinity, the ponds would be managed to maintain productive saline conditions (15-50 mS/cm range) during the dust control season. The current configuration of T18S DCA does not allow for effective management of salinity and the DCA has been increasing in salinity in recent years. Proposed design of these ponds provides for moving water to down gradient areas and ultimately to a brine area to reduce or maintain salinity at levels conducive to supporting invertebrate populations.

Breeding Waterfowl - Little breeding waterfowl habitat exists in the Project area. Only a small portion of C2-L1 DCA has some breeding waterfowl habitat with some created and natural wetland vegetation. Under existing conditions, this wetland vegetation does not have sufficient cover to prevent dust emissions; therefore, vegetation enhanced with irrigation is proposed to maintain sufficient cover. Additionally, 10 or more species of alkali meadow plants will be seeded in the area, increasing the diversity of the vegetation and enhancing nesting opportunities adjacent to current Shallow Flood ponds.

Migrating Waterfowl - Habitat value acres for migrating waterfowl would be maintained and enhanced in T18S DCA by a combination of constructing areas of preferred water depth in two additional ponds, the creation of habitat islands and salinity management. The largest of the four ponds (315 acres) in T18S DCA would have 75 percent of the water in the shallow depth range (<30 cm) used by waterfowl for foraging, with 200 acres in the optimal foraging range (13-30cm deep). Portions of the two deeper ponds within T18S DCA will also have shallow water (50 acres in sum) for optimal waterfowl foraging adjacent to habitat islands. In addition, instead of the pre-project condition of straight shorelines, ponds will be designed with increased sinuosity that, along with the construction of islands, will provide increased linear acreage of potential shoreline foraging habitat.

Habitat islands will be added to all ponds, creating roosting and loafing areas for waterfowl. The habitat islands would range from 0.4 acres to 4 acres in size, have shallowly sloped shorelines, and multiple fingers of shallow water adjacent to dry areas suitable for roosting. The habitat islands are thus being designed to provide abundant foraging opportunities within close proximity to topographically variable loafing and roosting areas for migratory waterfowl. The management of salinity as discussed for diving waterbirds will also increase habitat value for migrating waterfowl.

Breeding Shorebirds - The two deeper ponds in T18S DCA would have habitat islands to provide roosting and nesting sites that would provide increased protection from predators by limiting terrestrial predator access and increasing predators search efforts. Placement of these small habitat islands inside of ponds should increase both nesting and successful fledging of shorebirds. The increased topography provided by habitat islands will also provide for better camouflage to ground nesting shorebirds and their eggs over current conditions consisting of relatively flat playa.

Additionally, a third large pond in T18S will target shorebird foraging habitat and have over 240 acres of water in the shallow depth range with approximately 130 acres in the optimal foraging range (0-10 cm deep). This pond will also have habitat islands for nesting, roosting and loafing. A fourth 85-acre pond will have an additional 30 acres constructed at the optimal foraging water depth. Salinity in all ponds will be managed for productive saline conditions.

Under the proposed Project, the shallow water depth acreage that is optimal for shorebird foraging will exceed the existing shallow water depth acreage in T18S.

Migrating Shorebirds - The habitat for migrating shorebirds is much the same as for breeding shorebirds. All ponds will have shallow water foraging habitat adjacent to habitat islands. Portions of the two deeper ponds will have shallow water (40 acres in sum) for optimal shorebird foraging adjacent to habitat islands. The size of habitat islands will range from 0.4 acres to 4 acres and will have fingers of shallow water adjacent to dry area. This will allow for foraging habitat adjacent to roosting and loafing habitat. Instead of the existing condition of straight shorelines, ponds will be designed with increased sinuosity that, along with the addition of islands, will provide increased acreage of productive shoreline foraging habitat.

A third pond will target shorebird foraging habitat with the majority of water (240 acres) in the shallow depth range. Habitat islands will be constructed in the pond surrounded by water for roosting and loafing. A fourth 85-acre pond will have an additional 30 acres constructed at the optimal foraging water depth. Salinity in all ponds will also be managed for productive saline conditions.

Alkali Meadow - The Project would create approximately 150 acres of Managed Vegetation in the southern part of the Project area and increase the overall plant species and structural diversity on the lake. In addition to saltgrass, 20 to 25 additional species (out of the 39 approved species) will create additional habitat diversity and vegetative resources for alkali meadow species in these Managed Vegetation areas.

Some areas in the north part of the Project area are shrub dominant upland and provide some habitat value to alkali meadow species. The cover is typically less 10 percent and not enough to control dust emissions. A small portion of T32-1-L1 DCA contains created wetland due to operation and irrigation of the adjacent vegetation test area called VOS. The remainder of the vegetation in T32-1-L1 DCA is upland saltbush scrub. These emissive areas are proposed for Gravel Cover dust control.

The increased number of plant species in the Managed Vegetation areas will provide additional resources beyond the low diversity of existing vegetation. Along with increased cover, these additional species add foliage height diversity in terms of growth form and height. Species such as blue grass (*Poa secunda*) and bulrush (*Schoenoplectus* (*Scirpus*) spp.) provide additional height and longer leaves for use by wildlife for nesting and escape cover not provided by low stature saltgrass. Yerba Mansa, while having many ethnobotanical uses, has a different growth form compared to many other species with broad fleshy leaves that will provide additional habitat diversity for alkali meadow species. Additional flowering plants that offer a nectar source for insects such as heliotrope (*Heliotropium curassavicum*) and bird's beak (*Cordylanthus maritimus*) are also included in the species list. Along with grasses and other herbaceous species, shrubs have been included in the proposed species list (e.g. greasewood and Parry's saltbush) that provide more diverse structure and additional foraging resources, as well as woody perches for small passerines and potential nesting sites for shrub nesting birds. With the increased plant species richness and structural diversity provided by the expanded Managed Vegetation, these additional plant species will provide an increase in the amount and variety of seed production for granivorous species such as harvester ants (*Pogonomyrmex* spp., weevils - Family Curculionidae) and some birds (e.g., sparrows and finches). These resources in turn offer foraging resources for insectivorous species that glean insects from foliage (e.g., Marsh Wren) and birds that forage on the wing (e.g., various swallow species).

Since cover from predation and thermal extremes appears to be a limiting resource for reptiles in the area (LADWP, 2010) the use of the Project areas by reptiles may also increase due to the increased cover of vegetation and topographic diversity. Topography created to maintain drainage of soils will provide areas for burrow creation compared to the existing flat and saline soils. Various small mammals, such as rodents (e.g., white-footed mice and Owens Valley vole), and their predators will also benefit from increases in vegetative cover and food resources.

4.3.5.3 Habitat Value Monitoring

Many of the design concepts for the Phase 9/10 Project were developed through collaboration and discussion with the Owens Lake Master Project Advisory Committee (formerly the Owens Lake Planning Committee). As with Phase 7a, the focus is on habitat value modeling, designing features to maintain overall habitat value, and approaches to installing new areas for dust mitigation while conserving water. Although the time commitments included in the 2014 Stipulated Judgment make it necessary to implement the Phase 9/10 Project before the Owens Lake Master Project has been completed, design of the Phase 9/10 Project was based on the Master Project planning approach. Habitat value would be maintained and enhanced by the design of the DCAs under Phase 9/10 Project. Project design, along with biological monitoring and adaptive management, would result in a long-term benefit to wildlife over existing conditions. Under the Phase 9/10 Project, LADWP is committing to the Master Project concepts of designing, maintaining and adaptively managing new DCAs and the T18S Transition Area for habitat value, public use, and other resources, and not solely for dust mitigation.

As described above, predicted future habitat values indicate maintenance or enhancement for all guilds. Consistent with permits with CDFW for previous phases of the OLDMP, LADWP will conduct a Habitat Value Acre (HVA) review to confirm predicted habitat impacts. After several years of Project operation, the assessment of 2013 HVA will be compared with actual HVA for each guild. The specific due date for the HVA review will be as prescribed in the Lake Alteration Agreement with CDFW. Measurements within 10 percent of baseline will be considered maintenance of habitat value. The HVA review will incorporate the results of the HSM validation to be conducted for the Phase 7a Project. The validation is being conducted to determine if the identified parameters are effectively providing habitat for target guilds. Modifications in the HSM identified during the Phase 7a validation will be incorporated into future HVA reviews for the Phase 9/10 Project. Additionally, as is current practice, LADWP will provide an annual Biological Compliance Monitoring Report on Owens Lake to CDFW; once construction commences for the Phase 9/10 Project, these areas will be included in the annual report.

The habitat parameter (water depth, salinity, island area, dry area, microtopographic relief, seasonal water availability, and vegetation) monitoring schedule will be as described in the Owens Lake Master Project Planning Committee review draft and further described in the Lake Alteration Agreement with CDFW.

4.3.5.4 Direct Impacts to Wildlife Species

Nesting Birds. Several common bird species may nest in the vicinity of the lake bed. The Migratory Bird Treaty Act (MBTA) protects migratory birds, their nests, and eggs. If construction is initiated during the bird nesting season (i.e., January 15 to July 31), it could impact nesting birds protected by the MBTA. The loss of any active bird nest would be considered a potentially significant impact. Implementation of mitigation measure BIO-5 would reduce this impact to a less than significant level.

Wildlife Impacts Related to Concrete Block Mat. As described in **Section 3**, flexible concrete block mat may be used for berm armoring. Since manufacture of the concrete blocks would use the same gravel sources as the existing Gravel Cover on the lake (from the Dolomite mine and/or LADWP Shale Borrow Pit), impacts related to temperature of the block mat on wildlife are not anticipated to be substantially different than existing and proposed Gravel Cover areas. The concrete blocks are small (6.5 inches x 6.5 inches x 2.25 inches) with 1.5-inch spacing between the blocks to give the mat flexibility and to allow contouring to the land. The blocks would be tapered to the gaps such that the 1.5-inch spacing between blocks would not impede or strand plover or other shorebird chicks.

Wildlife Impacts Related to Installation of Geotextile Fabric. Geotextile fabric is proposed in Phase 9/10 Project Gravel Cover DCAs as well as for new berms. The geotextile would be HDPE, minimum of 40 mils thick, and would be covered by a minimum of 2 inches of gravel (4 inches of gravel cover on berms). The geotextile is chemically inert and generally not affected by acids and alkalis that may be present in the soils. Existing OLDMP berms (some more than 10 years old) have geotextile fabric under the gravel; degraded fabric has not been observed. As part of berm and Gravel Cover DCA maintenance, the integrity of the geotextile fabric would be periodically assessed; areas with substantial degradation would then be repaired. Significant impacts to wildlife from ingestion of geotextile fabric fragments have not been observed, have not been found in stomachs of any bird carcasses (including any other plastics), and are expected to be rare events.

4.3.5.5 Impacts to Sensitive Species

Sensitive Plant Species. As summarized in **Tables 4.3-4** and **4.3-6**, one state endangered and 17 locally important plant species have the potential to be present in the Project region. Based on the surveys conducted in 2013 and 2014, review of relevant literature, and LADWP staff knowledge of the Owens Lake environment, none of these species were observed to be present on the Phase 9/10 Project areas and none are anticipated to occur on the Project sites. In most cases, habitat suitable to support these plant species is not present in the Project areas. There are records of Owens Valley checkerbloom at Willow Dip, and Parish's popcorn-flower at Willow Dip and Ash Creek spring. However, these areas would not be disturbed by the Project. Therefore, since none are known for the Project sites, construction and operation of the Phase 9/10 Project would have no impact on sensitive plant species.

Locally Important Invertebrates. As summarized in **Table 4.3-6**, eight locally important invertebrate species have the potential to be present in the Project region. None of these species were observed during 2013 or 2014 surveys of the Phase 9/10 Project areas. Six species were determined absent during 2007 surveys. Owens valley tiger beetle was observed in the Channel Area in 2007, at the southern end of the lake. Increases in saturated areas in Duck Pond L-1 and C2-L1 DCAs may increase the abundance and distribution of some tiger beetles. Records for Wong's springsnail are known from Northwest Spring (adjacent to Owens Lake). CDFW notes springsnails at off-lake springs closer to Lone Pine. Springs will not be disturbed as part of construction for the Phase 9/10 Project. Springsnails have not been found in on-lake springs, and the Project would not alter flow patterns to any spring that may contain springsnails. Once constructed, the Phase 9/10 Project would increase the vegetation cover, richness and structure of Duck Pond L-1 and C2-L1 DCAs, potentially increasing habitat for invertebrates found there (moth, skipper, tiger beetles). Therefore, construction and operation of the Phase 9/10 Project would have a less than significant impact on locally important invertebrates.

Sensitive Fishes. As summarized in **Table 4.3-4** and **4.3-5**, two endangered and two sensitive fish species have the potential to be present in Project region. None of these fishes are known for the Project site and suitable habitat is not present on the Phase 9/10 Project parcels; fish are not present in the Shallow Flooding ponds. The Project would not alter flow patterns to any off-site waterways that may contain these species. Therefore, construction and operation of the Phase 9/10 Project would have no impact on sensitive fishes.

Sensitive Reptiles and Amphibians. As summarized in **Tables 4.3-4** and **4.3-5**, one threatened reptile, two sensitive amphibians, and one BLM sensitive reptile have the potential to be present in the Project region. An adult desert tortoise was observed east of Owens Lake over 19 years ago; this species has not been observed on the lake. The Sierra Nevada yellow-legged frog and Inyo Mountains slender salamander have not been documented on the valley floor and are not known to occur on the Project site. Suitable habitat for northern sagebrush lizards is not present on the Phase 9/10 Project parcels. Therefore, construction and operation of the Phase 9/10 Project would have no impact on sensitive reptile or amphibian species.

Sensitive Bird Species. As summarized in **Tables 4.3-4, 4.3-5** and **4.3-6**, three listed, nine sensitive and three locally important bird species have the potential to be present in the Project region. Although suitable nesting habitat is not present in the new Phase 9/10 Project DCAs, transient foraging by Bald Eagle or Swainson's Hawk is possible in the T18S Transition Area. Northern Harriers have not been observed in the Phase 9/10 Project areas, but this species is common on Owens Lake and has been observed in areas adjacent to Project areas. No suitable habitat for Western Least Bittern is present in the Project areas. Mountain Plover is a possible fall migrant, although this species has not been observed in the project areas. Although Burrowing Owls have been observed on the lake, there is no suitable habitat found in the Project areas and this species was not noted during the 2013 or 2014 surveys. There is potentially suitable nesting habitat for Loggerhead Shrike adjacent to, but not in, the Phase 9/10 Project areas.

At Owens Lake, the breeding habitat of the Snowy Plover appears to be open, dry playa or gravel areas within 0.5 miles of springs, seeps, outflows, or Shallow Flooding that supports invertebrate production. Since 2001, approximately 1,300 Snowy Plover nests have been recorded on the lake; with the exception of T37-1-L1 DCA, nests have been found near all the Phase 9/10 Project DCAs. Snowy Plover are counted in an annual census on Owens Lake. Snowy Plover numbers have ranged from 360 to 730 from 2003 to 2014. The 13-year average (2002-2014) is 533 Snowy Plover.

If present, Phase 9/10 Project construction and maintenance activity could subject Snowy Plovers to noise, vehicular traffic and foot traffic. Continued or repeated disturbance of nesting birds can result in nest failure. While Project areas have low use of Snowy Plover, loss of nests, disturbance to breeding and foraging activities, and mortality of individuals due to ground disturbing activities could occur. During Project construction, plovers could be killed or injured by vehicle traffic or active nests could be crushed beneath heavy construction equipment. Therefore, potential disruption of snowy plovers during construction and maintenance of the Phase 9/10 Project would be a significant impact.

Construction activity could also disrupt foraging by sensitive bird species, if any are present near the construction zones. When 1.82 square miles of Shallow Flooding in T18S DCA is taken out of operation for earthwork and reconfiguration of the water distribution system, the availability of water on the lake would be temporarily altered. However, over 30 square miles of Shallow Flood would remain in operation and unaffected by the Project. Construction of the Phase 9/10 Project would occur over 1.5 years. Impacts on foraging by sensitive bird species, if any, would be temporary. After construction of the Project, the amount of quality of suitable habitat would be increased over existing conditions, which should maintain or increase foraging and nesting opportunities. Successful nesting by sensitive bird species other than Snowy Plover is not known for the Phase 9/10 Project areas. However, sensitive bird species nests, if any, could be impacted by Project construction and maintenance activities. Therefore, potential disruption of sensitive bird species nests during construction and maintenance of Phase 9/10 Project would be a significant impact.

Implementation of mitigation measures BIO-1 through BIO-5 during Project construction, and subsequently during Project maintenance activities, would reduce impacts to sensitive bird species to a less than significant level.

Once construction is complete, future use of the Phase 9/10 Project areas by Snowy Plover is anticipated. The large, shallow and topographically variable wetlands that will result from the Project in T18S DCA are anticipated to have more species diversity than the existing Shallow Flooding DCA. New Managed Vegetation and Shallow Flooding DCAs will provide additional water and foraging resources on existing barren playa areas. Additionally, controlling sand movement in these new areas, along with reducing dust emissions, will allow for additional nesting area as potential nesting areas will not be sporadically buried by moving sand. Therefore, the overall increases in ponded or saturated area and vegetation will increase foraging and nesting habitat for Snowy Plover and other shorebird species. The proposed areas of Gravel Cover may also be used by Snowy Plover for nesting. Multiple snowy plovers have been found using the areas along the existing gravel Corridor 1 and commonly nest on gravel roads adjacent to shallow flood elsewhere on Owens Lake. Overall, the impact of Project operation is beneficial for sensitive bird species.

Sensitive Bat Species. As summarized in **Table 4.3-5**, seven sensitive (CSC and BLM sensitive) bat species have the potential to be present in Project region. All seven of these species may forage over existing Shallow Flooding ponds. However, potential roosting habitat (rock crevices or hollow trees) is not present on the Phase 9/10 Project areas. Bat foraging in Shallow Flood areas would not be expected to be directly impacted during construction of the Phase 9/10 Project since construction activity will occur primarily in the daytime. However, the draining of T18S for earthwork and installation of water distribution systems will temporarily alter available water on the lake and therefore potentially alter availability of forage for the bats. Construction of the Phase 9/10 Project would occur over 1.5 years, with construction in T18S DCA estimated at several months. Additionally, the over 30 square miles of other Shallow Flooding DCAs present on the lake will not be impacted by the Project. Impacts on sensitive bat species, if any, will be temporary. After construction of the Project, the acreage of pond and saturated areas will be increased over existing conditions and therefore forage for bats may increase. Therefore, construction and operation of the Phase 9/10 Project would have a less than significant impact on sensitive bat species.

Other Sensitive Mammals. As summarized in **Table 4.3-4** and **4.3-5**, one endangered (big horn sheep), one threatened (Mohave ground squirrel), and two sensitive mammal species other than bats have the potential to be present in the Project region. Sierra Nevada bighorn sheep inhabit alpine meadows, grassy mountain slopes and foothill country near rocky cliffs and bluffs. They are not expected to occur on or near the Project site since they are rarely observed on the valley floor. Mojave ground squirrel has been observed south of Owens Lake but suitable habitat is not present on the Phase 9/10 Project areas. Regarding the potential for Mojave ground squirrels near the LADWP Shale Borrow Pit, Gravel Cover will be obtained from the Dolomite mine. The LADWP Shale Borrow Pit will continue to be used as a source for berm replacement material. The proposed Project would not expand the permitting acreage of any mine, nor require new road construction. Suitable habitat for American badger is not present in the Phase 9/10 Project areas. Owens Valley vole, a subspecies of the California vole, is known from wetlands, grasslands, and other grass-dominated sites and has been observed in Swedes Pasture and Dirty Socks Spring. Suitable habitat is not present in the new Phase 9/10 Project DCAs. Once constructed, the Phase 9/10 Project would not substantially reduce the overall acreage of vegetation present on the lake, and would therefore not substantially decrease the potential habitat for Owens Valley vole. Managed Vegetation in Duck Pond L-1 and C2-L1 DCAs would increase vegetation cover, richness and structure in these DCAs; a potential improvement in small mammal habitat. Therefore, construction and operation of the Phase 9/10 Project would have a less than significant impact on sensitive mammal species.

4.3.5.6 Impacts to Sensitive Natural Communities

Dry alkali meadow and wetlands are the sensitive natural communities present in the Phase 9/10 Project areas. The Phase 9/10 Project areas contain wetlands areas that could potentially fall under federal jurisdiction (Clean Water Act Section 404 administered by the U.S. Army Corps of Engineers) such as areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support wetland vegetation. A wetland delineation was conducted for 13 new Phase 9 Project DCAs and the T18S Transition Area, plus a 25-foot wide buffer around each of the new Phase 9 Project DCAs (see **Table 4.3-2**). Wetland delineations were conducted where hydrophytic vegetation occurred at greater than 5 percent cover in areas that could be impacted under the Phase 9/10 Project. Wetland delineations followed the methods described in the U.S. Army Corps of Engineers' 1987 Wetland Delineation Manual and 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) using hydrophytic status of plant species from a recently revised plant list (Lichvar, 2013).

The National Wetland Inventory (NWI) is a broad-scale delineation of wetland compiled by the USFWS. Four wetland types were identified in the DCAs. Seasonally flooded, intermittently flooded, and artificially flooded/excavated lake bed (L2USC, L2USJ, and L2USKx) total about 2,696 acres (86.9 percent) of the DCAs and are typically barren playa. Saturated Palustrine wetland with emergent vegetation was identified for about 16 acres (0.5 percent) of the DCAs. Undifferentiated upland comprises about 389 acres (12.5 percent) of the DCAs.

Extensive man-induced wetlands are a result of LADWP dust control efforts in several DCAs, particularly on the northeast side of the lake. These wetlands exhibit wetland hydrology, hydrophytic vegetation, and hydric soils, yet they cannot be sustained without the artificial addition of water to the cells through current dust control. Wetland conditions observed in the Phase 9/10 Project area in 2014 are summarized above in **Table 4.3-2**. [A wetland delineation summary is provided in Appendix A of LADWP, 2015.] No wetlands are present in the Phase 10 Project DCAs or their buffer areas. No riparian habitat or other sensitive communities occur within the Phase 9/10 Project areas.

About 5.1 acres of created wetland in the DCAs and 0.8 acres of created wetland in the buffers are sustained by application of dust control measures. About 17.1 acres of jurisdictional wetland was identified in four DCAs and 4.8 acres in corresponding 25 foot buffers:

- **C2-L1**: About 5.0 acres of alkali meadow and wet alkali meadow in the DCA and 1.2 acres in the buffer are sustained by seasonal high water discharge of Cartago Creek and/or springs west of the DCA.

- **T10-1-L1**: About 1.1 acres of alkali meadow in the DCA and 0.2 acres of alkali meadow in the buffer are sustained by seasonal high water table.

- **DuckPond-L1**: About 10.9 acres of alkali meadow occur on private land along the south flank of the DCA and an additional 3.4 acres of alkali meadow are present in the contiguous 25 foot buffer.

- **T21-L2**: Two small areas of alkali meadow comprise 0.01 acres in the DCA and three small areas of alkali meadow comprise 0.05 acres in the buffer. These wetlands appear to be sustained by seasonal high water table.

The remaining 2,971.3 acres of the DCAs and 100.7 acres of buffers are upland. The total area of jurisdictional wetland in the new Phase 9 Project DCAs, transition area, and corresponding 25 foot buffers is 21.9 acres.

Under the proposed Project, 0.1 acre of created wetland in T18S, 3.2 acres of created wetland in T32-1-L1 DCA, 1.1 acres of wetland in T10-1-L1 and less than 0.1 acre of wetland in T21-L2 DCA would be eliminated by the placement of Gravel Cover BACM. However, Duck Pond-L1 and C2-L1, including the 2.1 acres of created wetland and 15.9 acres of wetland present in those DCAs, would be enhanced by the implementation of Managed Vegetation. Since the success rate of vegetation establishment is unknown, and since the hydrologic regime will be determined based on dust compliance, the exact acreage of wetlands created under the Project cannot be predicted. Whether specific areas that currently meet Corps of Engineers criteria as wetlands will continue to exhibit all three wetland characteristics (hydrology, soils and vegetation) is unknown. However, enhancement of habitat values in the 152 acres of Managed Vegetation proposed under the Project would be anticipated to more than offset the loss of 1.2 acre of wetland and 3.3 acres of created wetland in the Gravel Cover DCAs. It is anticipated that some of the Managed Vegetation areas will continue to meet Corps of Engineers wetland criteria. Since the proposed Project will increase habitat values on the vegetated areas, the impact on sensitive plant communities would be less than significant.

4.3.5.7 Impacts to Wildlife Corridors

There are no known migration corridors for mammals within the Phase 9/10 Project area. Tule elk calving is known in the Owens River Delta. During calving, cows and calves would not be expected to stray far from vegetative cover and forage. Tule elk have also been observed in the Northwest Seep area. Tule elk would not be expected to move across the Phase 9/10 Project areas on any regular basis. There are no known or documented migration corridors for small terrestrial mammals or medium-sized mammals on Owens Dry Lake (GBUAPCD, 2008b).

Owens Lake is an important site along the Pacific Flyway for migratory waterbirds. Potential impacts to Snowy Plover and other nesting birds are discussed above. Overall, the impact from construction and operation of the Phase 9/10 Project on wildlife migration corridors and nursery sites would be less than significant.

4.3.5.8 Impacts Related to Invasive Species

Several noxious weed species, such as salt cedar (*Tamarix ramosissima*) and Russian olive (*Elaeagnus angustifolia*) are present in the Project vicinity (e.g., the Owens River Delta and the town of Keeler). Other species of potential concern are: sandbur (*Cenchrus* spp.), hoary cress (*Cardaria* spp.), halogeton (*Halogeton glomeratus*), puncturevine (*Tribulus tetrestris*) and perennial pepperweed (*Lepidium latifolium*). By expanding the area of Managed Vegetation on the lake, implementation of the proposed Project could potentially facilitate increases in invasive species.

However, LADWP currently implements a Noxious Weed Control Program (LADWP, 2008a). Based on the reproductive cycle of the noxious weeds, field surveys are conducted semi-annually, with the first survey occurring in April - May and the second survey occurring in

August - September. Additionally, LADWP Operations and Maintenance staff members are trained to identify noxious weeds as part of normal daily operations. Based on the results of the semi-annual field surveys, eradication and control measures are implemented for noxious weeds that are identified within the OLDMP area. The type of eradication and control measures used depends upon a variety of factors, including which noxious weed species are present, the size/age of the plants, the presence of native vegetation, and site conditions. Methods include: mechanical and hand removal, foliar application of herbicide (e.g., Rodeo®, Habitat®), cut-stump herbicide application, basal bark application and flooding. Herbicides are applied under the supervision of LADWP staff licensed with the California Department of Pesticide Regulation. Following successful implementation of control measures, populations are tracked for at least 1 year to ensure the effectiveness of the control effort. Mapping and reporting is conducted annually. With continuation of this existing Noxious Weed Control Program, and inclusion of the Phase 9/10 Project areas, impacts of the proposed Project on invasive species would be less than significant.

4.3.5.9 Impacts Related to Ecological Risks

Water-based dust mitigation attracts wildlife and has the potential to expose animals to concentrations of COPECs at levels that pose ecological risks. The Phase 9/10 Project will include 350 acres of new Shallow Flooding (T10-1-L1, T37-2-L1, T37-2-L2, T37-2-L3, and T37-2-L4 DCAs) and a reduction of existing Shallow Flooding in T18S (reduction of 516 acres). Since the proposed Project would not increase the area of Shallow Flooding on Owens Lake, the Project would not increase levels of ecological risk to wildlife. Further, transition of T18S will include improved design for salinity management, reducing the concentrations of salts and metals in T18S ponds over existing conditions. However, monitoring the toxicity of aquatic environments and bird dietary items in the region, and screening those data for potential ecological risks to avian and other wildlife users, are important for adequately informing resource management decisions for the OLDMP and will be continued as required by the Lahontan Regional Board. Overall, the impact of the proposed Project on ecological risk is less than significant.

4.3.5.10 Impact Summary

As discussed above, the Project will not exceed biological resources thresholds of significance with implementation of mitigation measures; therefore, impacts would be less than significant.

4.3.6 Mitigation Measures

4.3.6.1 General Approach to Mitigation for Biological Resources

The OLHMP serves as a guide for compatibility between construction, maintenance, and operational needs of the Dust Mitigation Program under the 2008 SIP FSEIR, and the needs of resident and migratory wildlife resources utilizing the Owens Lake Dust Control Area. The overall goal of the OLHMP is to avoid direct and cumulative impacts to native wildlife communities that may result from the Dust Control Program. Implementation of Phase 9/10 Project would be consistent with the resource management actions described in the OLHMP; relevant measures are consistent with the mitigation measures listed below.

Mitigation Measures BIO-1 through BIO-4 were described in the 2008 SIP Supplemental EIR (GBUAPCD, 2008a) for the 15.1 square miles of DCMs proposed under that project. These measures are still relevant to the Phase 9/10 Project areas. Mitigation Measure BIO-5 would reduce impacts on other nesting birds, if any are present during construction or maintenance of the Phase 9/10 Project. To reduce impacts to biological resources to a less than significant level, the following mitigation measures shall be implemented.

BIO-1. Lake Bed Worker Education Program. To minimize potential direct impacts to Snowy Plover from construction activities, LADWP shall continue the lake bed worker education program consistent with the previous approach and per CDFW recommendations. The program shall be based on Snowy Plover identification, basic biology and natural history, alarm behavior of the snowy plover, and applicable mitigation procedures required of LADWP and construction personnel. The program shall be conducted by a biologist familiar with the biology of the Snowy Plover at Owens Dry Lake and familiar with special status plant and wildlife species of the Owens Lake basin. The education program shall explain the need for the speed limit in the snowy plover buffer areas and the identification and meaning of buffer markers. All construction, operation, and maintenance personnel working within the Project area shall complete the program prior to their working on the lake bed. A list of personnel who have completed the education program shall be maintained and made available to GBUAPCD and CDFW upon request.

BIO-2. Preconstruction Surveys for Snowy Plover. To minimize potential direct impacts to Snowy Plover within the Project area due to construction activities, LADWP shall conduct a preconstruction survey for Snowy Plover in all potential snowy plover habitat prior to any construction activity that is performed during the Snowy Plover breeding season (March 15 to August 15). Preconstruction surveys shall be performed no more than 7 days prior to the start of ground-disturbing activities. A 200-foot buffer shall be placed around all active snowy plover nests that are discovered within the construction area. This buffer shall protect the plover nest from both destruction and construction noise. Green-colored stakes of less than 60 inches in height shall be used to mark buffer edges, with stakes spaced at approximate cardinal directions. The location of the nest (global positioning system coordinates) and current status of the nest shall be reported within 24 hours of discovery to GBUAPCD and CDFW. Maps of snowy plover nest locations shall be posted at the construction office and made available to all site personnel and GBUAPCD staff, and submitted to CDFW. The activity of the nest shall be monitored by a biological monitor, as per existing guidelines for the North Sand Sheet and Southern Zones dust control projects and any revisions to the monitoring protocol that have been approved by CDFW. Active snowy plover nests shall be monitored at least weekly. The nest buffer shall remain in place until such time as the biological monitor determines that the nest is no longer active and that fledglings are no longer in danger from proposed construction activities in the area. Buffers shall be more densely marked where they intersect project-maintained roads. Vehicles shall be allowed to pass through nest buffers on maintained roads at speeds less than 15 miles per hour, but shall not be allowed to stop or park within active nest buffers. Permitted activity within the nest buffer shall be limited to foot crews working with hand tools and shall be limited to 15-minute intervals, at least 1 hour apart, within a nest buffer at any one time.

BIO-3. Snowy Plover Nest Speed Limit. To minimize potential direct and cumulative impacts to Snowy Plover and other sensitive biological resources from vehicles construction activities, LADWP shall implement a speed limit of 30 miles per hour within all active construction areas on Owens Dry Lake during construction of dust control measures. Speed limits shall be 15 miles per hour within active snowy plover nest buffers. Designated speed limits for other construction areas outside of active nest buffers shall be maintained at 30 miles per hour where it is determined to be safe according to vehicle capabilities, weather conditions, and road conditions. Site personnel and GBUAPCD staff shall be informed daily of locations where active nest buffers overlap with roads in the construction area. Signs shall be posted that clearly state required speed limits. Speed limit signs shall be posted at all entry points to the lake. The number of speed limit signs shall be kept at a minimum near active snowy plover nest areas to reduce potential perches for raptors and other snowy plover predators and shall be outfitted with Nixalite or the functional equivalent if greater than 72 inches (increased from the original 60 inches) in height at entry points to the lake and 60 inches in height by active snowy plover nest areas.

BIO-4. Lighting Best Management Practices. To minimize indirect impacts to nesting bird species associated with Project lighting during construction activities, LADWP shall institute all best management practices to minimize lighting impacts on nocturnal wildlife consistent with previous requirements and CDFW recommendations. Best management practices include those listed below, and are included in the Project Description of the GBUAPCD 2008 State Implementation Plan Subsequent Environmental Impact Report. Previous construction has occurred during nighttime hours to complete construction schedules and to prevent personnel from working during times of high temperatures. If night work is deemed necessary, then construction crews shall make every effort to shield lighting on equipment downward and away from natural vegetation communities or playa areas, and especially away from known nesting areas for snowy plovers during the nesting season (March 15 to August 15). All lighting, in particular any permanent lighting, on newly built facilities shall be minimized to the greatest extent possible, while still being in compliance with all applicable safety requirements. Required lighting shall be shielded so that light is directed downward and away from vegetation or playa areas.

BIO-5. Preconstruction Surveys for Nesting Birds. If vegetation removal activities are scheduled to occur during the bird breeding season (January 15 to July 31), pre-construction surveys for bird nests shall be conducted no more than 7 days prior to the start of ground-disturbing activities. Surveys shall be conducted in areas of suitable nesting habitat that will be impacted by construction. Active nests will be marked at a safe distance with visible flagging and the construction crew supervisor will be made aware of these locations. Construction may commence in all areas without active bird nests. All bird nests will remain undisturbed while they are active. After a nest ceases to be active (fledges or fails), and the qualified biologist has made this determination, construction may proceed in the area. If construction is initiated in one breeding season and persists into subsequent breeding seasons, additional surveys are not necessary unless construction activities involve additional vegetation removal.

4.3.7 Impact Significance After Incorporation of Mitigation Measures

With implementation of the above mitigation measures, Project-related impacts on biological resources would be less than significant.

Section 4.4
Cultural Resources

4.4 CULTURAL RESOURCES

Cultural resources encompass historical, archaeological, and paleontological resources. In prehistoric and historic times, Owens Lake and surrounding lands would have been appealing locations for human occupation because of the availability of water. As a result, prehistoric, historic and paleontological resources have been encountered in the Project area. As presented in the Initial Study for the Phase 9/10 Project (**Appendix A**), LADWP has determined that the Project would have the potential to significantly impact cultural resources. Additionally, comment letters on the NOP which addressed cultural resources were received from BLM, NAHC and SHPO. These letters stress the sensitivity of cultural resources in the Project area and urge the inclusion of appropriate agencies and local Native American tribes in the environmental review process. Therefore, consideration of historical, archaeological, and paleontological resources has been carried forward for detailed analysis in this EIR.

Cultural resources pedestrian surveys of the Phase 9/10 Project areas, testing and evaluation of identified resources, and the interpretation of subsequent results were conducted by Garcia and Associates (GANDA). Tribal members from the Lone Pine Paiute-Shoshone Reservation were present during the archaeological survey and testing phases. Phase I pedestrian surveys were conducted between June 5, 2013 and July 19, 2013 for the Phase 9 Project area, including access roads (GANDA, 2014a), and between July 10, 2013 and July 19, 2013 for the Phase 10 Project area (GANDA 2014c). Phase II testing and evaluation of potentially significant resources were conducted between September 25, 2013 and October 23, 2013 for the Phase 9 Project area (GANDA, 2014b), and between October 1, 2014 and October 4, 2014 for the Phase 10 Project area (GANDA 2014d).

Cultural resources are defined as buildings, sites, humanly modified landscapes, Traditional Cultural Properties (TCPs), structures, or objects that may have historical, architectural, cultural, or scientific importance. In accordance with CEQA, if a project will cause a substantial adverse change in the significance of a cultural resource, the lead agency shall identify measures to avoid or mitigate the changes. However, only significant cultural resources require consideration in mitigation plans. Paleontological resources include fossil remains and formations that have produced fossil finds. Paleontological specimens and localities are also nonrenewable resources protected under CEQA.

4.4.1 Confidentiality of Archaeological Resources

As nonrenewable resources, archaeological sites can be significantly impacted by disturbances that can affect their cultural, scientific, and artistic values. Under CEQA, lead agencies generally disclose likely impacts; however, in the case of confidential issues, such as the contents and locations of sensitive archaeological resources, less disclosure is judicious. In accordance with CEQA Section 15120(d), "No document prepared pursuant to this article that is available for public examination shall include a "trade secret" as defined in Section 6254.7 of the Government Code, information about the location of archaeological sites and sacred lands, or any other information that is subject to the disclosure restrictions of Section 6254 of the Government Code." In addition, among the objectives of Senate Bill 18 (SB18), known as the Tribal Consultation Guidelines, and passed by the California legislature in 2005, is "protecting the confidentiality of California Native American prehistoric, archaeological, cultural, spiritual, and ceremonial places" (State of California, 2005:25). Further, recent case law for *Clover Valley Foundation v. City of Rocklin* provides authority for agencies to withhold from public disclosure detailed information about the precise location and contents of potentially affected Native American cultural sites in order to safeguard those sites from destruction, vandalism, or looting (C061808 Cal Ct App, 2011).

Therefore, the locations of archaeological resources identified previously, and during the 2013/2014 field work for the Phase 9/10 Project areas, are confidential in order to protect the integrity of the resources. As a result, the precise locations of each of the archaeological sites are not disclosed in this document.

This EIR contains a summary of the results of previous investigations and the Phase I and Phase II archaeological resources evaluations conducted for the Project. However, the reports associated with those investigations are confidential and are not appended to this document.

4.4.2 Phase 9/10 Project Areas

In accordance with CEQA, a lead agency must determine if there are historical resources listed in the California Register of Historic Resources (CRHR) present within a given project area, or if there are properties not yet listed that may be eligible as historical resources or unique archaeological sites. CEQA requires a review of projects sponsored by public agencies to determine the effects of the project on historical resources, and both public and private projects with financing or approval from a public agency must assess the effects of the project on cultural resources (Public Resources Code Section 21082, 21083.2, and 21084.1 and California Code of Regulations 15064.5). The Phase 9/10 Project consists of seventeen new DCAs totaling 3.61 square miles (including 13 DCAs totaling 2.86 square miles in the Phase 9 Project area, and four DCAs totaling 0.76 square miles in the Phase 10 Project area), as well as associated access roads for two of the DCAs. DCAs in Phase 9 include: C2-L1, Duck Pond-L1 (including an access road), T10-1-L1 (including an access road), T17-2-L1, T21-L1, T21-L2, T32-1-L1, T35-2-L1, T37-1-L1, T37-2-L1, T37-2-L2, T37-2-L3, and T37-2-L4. DCAs in Phase 10 include Duck Pond-L2, T10-3-L1, T21-L3, and T21-L4. T18S, a previously disturbed DCA proposed for transition from Shallow Flooding to Gravel Cover is also included in the proposed Project; cultural resources assessment of this area is based on work completed in an earlier phase of the OLDMP.

Construction for the Phase 9/10 Project would require land leveling, berm creation, gravel application, seeding and planting, installation of surface and/or subsurface irrigation pipelines as well as excavation for pond creation.

4.4.3 Regulatory Framework

The federal government first addressed the protection of cultural resources in the Antiquities Act of 1906 (Title 16, United States Code, §431-433). Other federal laws pertaining to the protection of cultural and ethnographic resources include Section 106 (36 C.F.R. Part 800) of the National Historic Preservation Act (NHPA), Executive Order 11593, the American Indian Religious Freedom Act, and the Native American Graves Protection and Repatriation Act of 1990 (**Table 4.4-1**). Archaeological studies performed on federal lands are required to conform to standards set out in Section 106 of the NHPA. Although only a small portion of the OLDMP is on public lands managed by BLM, in their NOP letter they have stated that the entire Project footprint is considered a federal undertaking subject to Section 106 of the NHPA regarding impacts to cultural resources (**Appendix B**). It is the opinion of the BLM that the USEPA is the proper lead agency for the proposed Project. BLM (and potentially USEPA) would conduct consultations under Section 106 with the SHPO and local tribes. BLM has indicated that detailed review of impacts to cultural resources would be required prior to grant of a ROW for the Project. BLM's cultural resources management program is designed to protect and preserve in place representative examples of the full array of cultural resources on public lands for the benefit of scientific and public use by present and future generations; and to ensure that proposed land uses, initiated or authorized by the BLM, avoid inadvertent damage to Federal and non-Federal cultural resources (BLM, 2014). BLM's analysis of Project impacts on cultural resources is pending. In a NOP comment letter prepared by the CSLC, they requested advisement of the results of the Section 106 process. NEPA review and the Section 106 process will be carried out by the appropriate federal agency independent of LADWP's CEQA process. LADWP's coordination with BLM is on-going.

The U.S. Secretary of the Interior has published a set of Standards and Guidelines for Archaeology and Historic Preservation, which describe suitable professional methods and techniques used to recover and preserve archaeological and historic properties. The State Historic Preservation Office (SHPO) refers to these standards in its requirements for the mitigation of impacts to cultural resources on public lands in California.

Table 4.4-1
Federal Ordinances, Regulations & Standards for Cultural Resources

Legislation and Programs	Definition
National Historic Preservation Act of 1996 (16 U.S.C. § 470)	The NHPA established the National Register of Historic Places, which recognizes properties that are significant at the national, State, and local levels. The NHPA is primarily implemented by its "Section 106" process. To be eligible for listing in the National Register, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must meet one or more of the four established criteria. In addition to meeting the criteria of significance, a property must have integrity, or "the ability of a property to convey its significance."
Section 106 (36 C.F.R. Part 800) of the National Historic	Requires federal agencies to take into account the effects of their undertakings on historic properties through consultation with federal

Legislation and Programs	Definition
Preservation Act (16 U.S.C. § 470)	agencies and the SHPO beginning at the early stages of project planning. Regulations revised in 1997 (36 C.F.R. Part 800 et. seq.) set forth procedures to be followed for determining eligibility of properties for the National Register of Historic Places (NRHP). The eligibility criteria and process are used by federal, state, and local agencies in the evaluation of the significance of cultural resources. Very similar criteria and procedures are used by California to identify cultural resources eligible for listing in the CRHR. Revisions to Section 106 in 1999 emphasized the importance of Native American consultation. Section 106 may be completed separate from NEPA review or the process may be coordinated with a project's NEPA review.
Executive order 11593, "Protection of the Cultural Environment," May 13, 1971, (36 C.F.R. Part 8921)	Orders the protection and enhancement of the cultural environment through providing leadership, establishing state offices of historic preservation, and developing criteria for assessing resource values.
American Indian Religious Freedom Act, Title 42, U.S.C. § 1996	Protects Native American religious practices, ethnic heritage sites, and land uses.
Native American Graves Protection and Repatriation Act (1990), Title 25, U.S.C. § 3001, *et seq.*	Defines "cultural items," "sacred objects," and "objects of cultural patrimony"; establishes an ownership hierarchy; provides for review by the Reviewing Committee; allows excavation of human remains, but stipulates return of the remains according to ownership; sets penalties; calls for inventories; and provides for return of specified cultural items.
American Antiquities Act of 1906, 16 USC 431-433	Enacted by the Senate and House of Representatives of the United States of America in Congress. Declares that any person who excavates or destroys any historic or prehistoric site, ruin or monument on lands owned or controlled by the government without permission is subject to fines and imprisonment.
Archaeological Resources Protection Act (16 U.S.C. 470aa-470mm)	ARPA contains requirements that must be satisfied before a federal agency can authorize the excavation or removal of any archeological resource on federal or tribal lands. The requirements primarily involve curation, and the Secretary of the Interior has issued more detailed regulations, but there are tribal notice and consultation requirements as well.
Archaeological and Historic Preservation Act of 1974 (16 U.S.C. 469 et seq.)	This Act provides for consultation with the Secretary of the Interior if a federal agency determines that certain activities may result in the loss or damage to "significant scientific, prehistorical, historical, or archeological data."
Federal Land Policy Management Act (43 USC § 1701 ets eq.)	This Act applies to many federally-owned lands that are managed by the Department of the Interior through BLM. The Act establishes policies and criteria for the management of the federal land, including its use. The Act covers rights-of-way. (43 USC §§ 1761 et seq.) The Act contains requirements to minimize adverse impacts on cultural resources. (See, e.g., 43 USC §§ 1732, 1765.)

4.4.3.1 State

The Phase 9/10 Project is subject to compliance regulations stipulated by CEQA, as summarized in **Table 4.4-2**. In accordance with CEQA Public Resources Code Section 21083.2 and CEQA Guidelines Section 15064.5(a), all cultural resources within the Project area that may be adversely affected by the Project must be evaluated to determine their significance. The lead agency shall then identify potentially feasible measures to mitigate significant adverse changes in the significance of an historical resource.

Table 4.4-2
State Laws, Ordinances, Regulations & Standards for Cultural Resources

Legislation and Programs	Definition
California Office of Historic Preservation	OHP implements the federal National Register of Historic Places in California and administers the California Register of Historical Resources. Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally determined eligible for, or listed in, the National Register. The criteria for eligibility for the California Register are based upon National Register criteria (they are nearly identical). But it is possible that a historic resource may not retain sufficient integrity to meet the criteria for listing in the National Register, but it may still be eligible for listing in the California Register. OHP maintains the California Historic Resources Inventory and conducts statewide comprehensive resource surveys and preservation programs. The State implements the NHPA through OHP. The SHPO engages in the Section 106 consultation process on behalf of the State.
Public Resources Code, Section 5020.1	Defines several terms, including the following: (j) “Historical resource” includes, but is not limited to, any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California. (k) “Substantial adverse change” means demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired.
Public Resources Code, Section 5024 & 5024.5	Sections 5024 & 5024.5 of the California Public Resources Code require state agencies to take a number of actions to ensure preservation of state-owned historical resources under their jurisdictions. Section 5024 establishes a CRHR; sets forth criteria

Legislation and Programs	Definition
	to determine significance; defines eligible properties; and lists nomination procedures. Section 5024.5 provides that no State agency may alter, relocate, or demolish a historic resource without meeting notice and consultation requirements with the SHPO. The SHPO may help the State agency develop mitigation measures.
Public Resources Code, Section 5097.2	Section 5097.2 of the Public Resources Code states that "[u]pon receipt of plans for a proposed construction project upon state lands, the [OHP] may conduct an archaeological site survey on the affected state lands in order to determine whether the lands may contain any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological sites, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, paleontological or historical feature. The [OHP] shall submit to the state agency, by or on whose behalf the project is to be constructed, its recommendations concerning the preservation, photographing, recording, or excavation for, any archaeological, paleontological, or historical features which may be located upon the lands."
Public Resources Code, Section 5097.5a	"No person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, paleontological, or historical feature, situated on public lands, except with the express permission of the public agency have jurisdiction over the lands. Violation of this section is a misdemeanor."
Public Resources Code, Section 5097.94	Section 5097.94 establishes the NAHC and provides that the NAHC has the following powers and duties, in part: To identify and catalog places of special religious or social significance to Native Americans, and known graves and cemeteries of Native Americans on private lands. To make recommendations relative to Native American sacred places that are located on private lands, are inaccessible to Native Americans, and have cultural significance to Native Americans for acquisition by the state or other public agencies for the purpose of facilitating or assuring access thereto by Native Americans. To bring an action to prevent severe and irreparable damage to, or assure appropriate access for Native

Legislation and Programs	Definition
	Americans to, a Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine located on public property. Additionally, the NAHC must notify the “most likely descendant,” or MLD, of the deceased Native American. The MLD(s), with landowner permission, may inspect the discovery of the Native American remains and may recommend an approach for the “treating or disposing, with appropriate dignity, the human remains and any associated grave goods.” Section 5097.98 provides deadlines for this process. If there is no MLD, or no agreement with the MLD’s recommendation, the remains may be reinterred “with appropriate dignity on the property in a location not subject to further subsurface disturbance.”
Public Resources Code, Section 5097.98	Defines procedures for notification of discovery of Native American artifacts or remains and for the disposition of such materials. This section also prohibits obtaining or possessing Native American artifacts or human remains taken from a grave or cairn and sets penalties for these actions.
Public Resources Code, Section 5097.993	The Native American Historic Resource Protection Act (Cal. Pub. Resources Code § 5097.993 et seq. prohibits vandalism of a Native American historic, cultural, or sacred site.
The California Environmental Quality Act (CEQA) (Public Resources Code, Section 21000 et seq.; Title 14, California Code of Regulations, Section 15000 et seq.)	Requires analysis of potential environmental impacts of proposed projects and requires application of feasible mitigation measures.
Public Resources Code Section 21082	States that “*All public agencies shall adopt by ordinance, resolution, rule, or regulation, objectives, criteria, and procedures for the evaluation of projects and the preparation of environmental impact reports and negative declarations pursuant to this division.”*
Public Resources Code Section 21083.2	Requires the lead agency to determine whether a project may have a significant effect on “unique” archaeological resources; if so, an EIR shall address these resources. If a potential for damage to unique archaeological resources can be demonstrated, the lead agency may require reasonable steps to preserve the resource in place. Otherwise, mitigation measures shall be required as prescribed in this section. The section discusses excavation as mitigation; limits the applicant’s cost of mitigation; sets time frames for excavation; defines “unique and non-unique archaeological resources”; and provides for mitigation of unexpected resources.
Public Resources Code Section 21084.1	States that an exemption is not available for a project that has a significant impact on historical or archaeological resources.

Legislation and Programs	Definition
	Indicates that a project may have a significant effect on the environment if it causes a substantial adverse change in the significance of a historic resource; the section further defines a “historic resource” and describes what constitutes a “significant” historic resource.
Public Resources Code Section 21168.5(i)(2)	Provides a basis for an injunction against a project if the “project site contains unforeseen important Native American artifacts or unforeseen important historical, archaeological, or ecological values that would be materially, permanently, and adversely affected by the continued construction or operation of the project.”
CEQA Guidelines, Title 14, California Code of Regulations, Section 15126.4(b)	Prescribes the manner of maintenance, repair, stabilization, restoration, conservation, or reconstruction as mitigation of a project’s impact on a historical resource; discusses documentation as a mitigation measure; and discusses mitigation through avoidance of damaging effects on any historical resource of an archaeological nature, preferably by preservation in place, or by data recovery through excavation if avoidance or preservation in place is not feasible. Data recovery must be conducted in accordance with an adopted data recovery plan.
CEQA Guidelines, Section 15064.5	Defines the term “historical resources,” explains when a project may have a significant effect on historic resources, describes CEQA’s applicability to archaeological sites, and specifies the relationship between “historical resources” and “unique archaeological resources.” It includes specific provisions regarding the discovery of Native American human remains or archaeological resources within the project.
CEQA Guidelines, Section 15126.4(b)	Provides requirements for mitigation measures for impacts on historical and archaeological resources. With regard to archaeological resources, the CEQA Guidelines state that public agencies “should, whenever feasible, seek to avoid damaging effects on any historical resource of an archaeological nature.” “Preservation in place is the preferred manner of mitigating impacts to archaeological sites.” If “data recovery through excavation is the only feasible mitigation,” a data recovery plan must be prepared and adopted prior to any excavation.
Penal Code, Section 622 1/2	States that anyone who willfully damages an object or thing of archaeological or historic interest is guilty of a misdemeanor.
CEQA Guidelines, Appendix G, Section V	Lists questions that are relevant to evaluating a project’s impacts on archaeological, historic, and paleontological resources.
California Health and Safety Code, Section 7050.5	States that if human remains are discovered during construction, the project owner is required to contact the county coroner.

Legislation and Programs	Definition
Public Records Act (California Gov. Code § 6254(r), 6254.10)	Contains provisions regarding the confidentiality of information concerning the location of archaeological resources.
Senate Bill 18 (Chapter 905, Statutes of 2004) – Tribal Consultation Guidelines	Cities and counties are required to consult with Native American tribes when adopting and amending their general plans or specific plans. The guidelines also describe methods to protect the confidentiality of information regarding cultural places.
California Assembly Bill No. 52	Section 21084.3.of AB 52 specifies that "a project having a potential to cause a substantial adverse change to a tribal cultural resource, as defined, to be a project that may have a significant effect on the environment." It describes mitigation measures that, if feasible, may be considered to avoid or minimize the significant adverse impacts." Which may include avoidance and *insitu* preservation; protecting the cultural character and integrity of the resource; protecting the traditional use of the resource; protecting the confidentiality of the resource; permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or place; and protecting the resource. This bill applies only to projects with a NOP or a ND or MND filed on or after July 1, 2015.

CEQA defines significant historical resources as resources listed or eligible for listing in the CRHR (Public Resources Code Section 5024.1). A property may be considered "historically significant" if it meets the following criteria for listing on the CRHR:

1. It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage; or

2. It is associated with the lives of persons important to California's past; or

3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

4. It has yielded or is likely to yield information important in prehistory or history.

4.4.3.2 CEQA Regulations Regarding Human Remains

Section 15064.5 of the CEQA Guidelines specifies procedures to be used in the event of an unexpected discovery of Native American human remains on state lands. The procedures are outlined in Public Resources Code Sections 5097 and 5097.98. The codes protect such remains from disturbance, vandalism, and inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during project construction; and establishes the Native American Heritage Commission (NAHC) as the authority to resolve disputes regarding disposition of such remains.

4.4.3.3 Local

According to the Inyo County General Plan's Land Use/Conservation/Open Space Element (Inyo County, 2001), the County's cultural resources goal (CUL-1) is to "Preserve and promote the historic and prehistoric cultural heritage of the County." The following Inyo County General Plan policies relate to cultural resources:

<u>Partnerships in Cultural Programs - Policy CUL-1.1</u>: Encourage and promote private programs and public/private partnership that express the cultural heritage of the area.

<u>Interpretive Opportunities - Policy CUL-1.2</u>: Support and promote the development of interpretive facilities, such as roadside kiosks, museums, and restored historic buildings that highlight the County's cultural resources.

<u>Protection of Cultural Resources - Policy CUL-1.3</u>: Preserve and protect key resources that have contributed to the social, political, and economic history and prehistory of the area, unless overriding considerations are warranted.

<u>Regulatory Compliance - Policy CUL-1.4</u>: Development and/or demolition shall be reviewed in accordance with the requirements of CEQA and the NHPA.

<u>Native American Consultation - Policy CUL-1.5</u>: The County and private organizations shall work with appropriate Native American groups when potential Native American resources could be affected by development proposals.

Further, Ordinance Title 9, Section 9.52.030 (Project or action – Commission approval, Requirements) of the Inyo County Code asserts the following (Inyo County, 1973):

> No publicly or privately sponsored project or action shall be expressly permitted by the county planning commission, hereinafter, "the commission," or any other county agency where the commission finds that any archaeological, paleontological, and historical features, or Native California Indian burial sites may be disturbed in any way by the project or action; provided, the commission may conditionally expressly permit the project or action if the project or action sponsor takes responsibility for preservation, protection, or relocation of the features or sites in accordance with a specific plan for preservation, protection, or relocation that shall be reviewed and approved by the commission after a public hearing. The public hearing shall be held, in the instance of Native California Indian burial sites, following the review and comment required by Section 9.52.020.

4.4.4 Environmental Context

Prior to the 1980s, limited archaeological research was conducted in Owens Valley and the greater southwestern region of the Great Basin. Aside from general information obtained from better known sites (e.g., Cottonwood Creek and the Stahl and Rose Spring sites) and from archaeological survey work conducted at the northern end of Owens Valley (Bettinger, 1975, 1977), investigations focused on small surveys in specific locations. The resulting technical reports focused primarily on surface survey information and not on regional questions related to prehistory.

In the 1970s and 1980s, researchers conducted a small number of more formal excavations in Owens Valley, but technical reports generated from these excavations lacked detail and interpretive data (Peak, 1975; Wilke, 1983). However, archaeological research in the 1990s has helped refine the cultural chronological sequence for the Owens Valley and the southwestern region of the Great Basin in general (Basgall, 1990; Basgall and Giambastiani, 1995; Delacorte et al., 1995; Gilreath and Hildebrandt, 1997). Importantly, spatio-temporal data and diagnostic artifacts recovered from CA-INY-30 in southern Owens Valley have helped to clarify our understanding of prehistoric cultural development and change in this region of the Great Basin (Basgall and McGuire, 1988).

4.4.4.1 Paleo-Indian Complex (10,000 to 8000 cal B.C.)

Prior to 10,000 years ago, inhabitants of this region were predominantly foragers who subsisted on an assortment of plant and animal food sources (Moratto, 1984). They may have hunted large game, such as mammoths and sloths, as suggested by the presence of larger spear points in archaeological sites (Earle et al., 1995). Pleistocene aged sites from the Paleo-Indian Complex are common around lakeshores, grasslands, and mountain passes. By 10,000 years ago, some of the interior populace migrated to the coast and began to exploit new resources (Moratto, 1984). Other interior groups relied heavily on retreating lakeshores for survival. Both areas experienced a trend with respect to increased subsistence from both smaller game animals and plant foods as larger game became extinct (Earle et al., 1995). Importantly, fluted projectile points, indicative of this period, have been reported in the Rose Valley area, south of Owens Lake (Borden, 1971; Yohe, 1992).

4.4.4.2 Lake Mojave Period (9000 to 6000 B.P.) and Little Lake Period (6000 to 3150 B.P.)

Because evidence from the Lake Mojave and Little Lake periods in the Southern Owens Valley is scarce, and the change in technology is minor, they are discussed together. The Lake Mojave Period generally dates before 6000 B.P. (Bettinger and Taylor 1974); however, several sources provide a more refined dating of 9500 B.P. to 7000 B.P. (Basgall and McGuire 1988; Gilreath 1995). Large-stemmed, basally thinned, concave-base projectile points and a variety of other bifacial and unifacial tool forms mark this period. Projectile points of the Little Lake/Pinto/Gatecliff series characterize the Little Lake Period (6000–3150 B.P.) (Bettinger and Taylor, 1974).

Basgall and McGuire's (1988) work at CA-INY-30, finds evidence that early aboriginal peoples were highly mobile and only sporadically occupied village sites such as CA-INY-30. Artifacts recovered indicate a culture that was oriented toward the exploitation of animal resources.

Artifacts from this period are primarily general-use items, reflecting the need of a relatively mobile society to employ implements that have multiple uses. Consequently, sites show a considerable degree of uniformity, regardless of their size or position within the overall settlement system (Delacorte et al., 1995).

The lithic assemblage associated with the mid-Holocene epoch includes a high percentage of cores and chopping tools, small bifaces, and large- stemmed point forms. Projectile point forms produced by percussion flaking on relatively large, thick preforms—suggest an emphasis on durable tools rather than more gracile forms. Milling equipment, which is not abundant, usually consists of unshaped specimens that exhibit light wear from use. These include thin slab metates and hand stones typically made of locally available materials. These items appear to have been used for immediate needs and then discarded. The paucity of milling equipment suggests a relatively low emphasis on seed resources.

4.4.4.3 Newberry Period (3150 B.P. to 1350 B.P.)

Elko and Humboldt basal-notched series projectile-point forms characterize the Newberry Period (Heizer and Hester, 1978; O'Connell, 1967; Thomas, 1983). Available data reveal seasonally occupied habitation sites, suggesting that groups from this period were more mobile than those from later prehistoric periods (Basgall and McGuire, 1988). Basgall and McGuire noted that at approximately 2200 B.P., a period of climatic instability (warmer and drier conditions) began that may have caused a shift in the adaptive stance of the region's hunter/gatherers. However, more recent regional climatic data suggest that the warmer and dryer conditions occurred at 1900 B.P., with warm and moist conditions occurring from 1400 to 1000 B.P. (Halford, 1998:51).

Nonetheless, it appears that the disruption, around 1900 B.P., of the somewhat stable environmental conditions may have affected the seasonal availability, abundance, and distribution of resources. Although it is not known whether the overall carrying capacity was absolutely reduced, as some have argued (Grayson, 1993), it is apparent that the formerly relatively static population began to fluctuate or became more mobile as new adaptive conditions were presented. In addition, recovered faunal remains from this period indicate that a narrower range of animal resources was exploited (Delacorte et al., 1995). Storage facilities and other permanent structures may have become important at this time to offset deficiencies in the availability of critical resources.

4.4.4.4 Haiwee Period (1350 B.P. to 650 B.P.)

Rose Spring and Eastgate series projectile point types characterize the Haiwee period. General settlement characteristics of this period indicate reduced hunter-gatherer mobility and a pattern of more centralized or restricted land-use areas. Tool inventories suggest the use of both plant and animal resources (Basgall and McGuire, 1988). The focus appears to be on high cost subsistence items or strategies and the intensification of specific resources. Early substantial evidence of resource intensification is indicated by the use and exploitation of resources of characteristically marginal habitats such as the high altitude White Mountains, the labor-intensive collection and processing of piñon (*Pinus monophylla*) cones, and the heavy economic focus on lacustrine avifauna from Owens Lake.

The pattern of increasing settlement centralization and subsistence intensification emerged sometime between 1500 and 1300 B.P. at the beginning of the Haiwee period (Delacorte et al., 1995; Delacorte, 1999; Gilreath, 1995; Zeanah et al., 2000). Recovered archaeofaunal remains from previous investigations at CA-INY-30 and CA-INY-3806/H indicate a dramatic increase in the use of avifauna at approximately 1300 B.P.; this increase correlates with the increased number of Haiwee and Marana period Owens Lake shore sites (Gilreath, 1995; Basgall and McGuire, 1988; Delacorte and McGuire, 1993). Regional archaeological data indicate occupation of sites was for longer durations and used more intensively during this time (Delacorte et al. 1995; Delacorte, 1999). A recent study of 184 prehistoric sites in the pinyon-juniper zone of the Naval Air Weapons Station, China Lake supports the theory that an increase in the exploitation of green piñon nuts versus brown-cone harvesting after 1350 B.P. is the result of population pressure (Hildebrandt and Ruby, 2006). Groundstone types carried over from earlier forms, but they also included a very thin, portable slab milling stone that was notched so it could be suspended from a cord for carrying (Delacorte et al., 1995). The smaller and lighter attributes of these groundstone implements support a pattern of increased mobility. Bedrock mortars also came into use, often in the same locations as the milling stones. A movement from the biface orientation to the use of nonspecialized and more expedient flake tools becomes apparent; the latter were usually made casually and were used only briefly before being discarded.

Although a warm and moist period is indicated for the earliest part of the Haiwee Period (1400–1000 B.P.), a cooling and drying trend began around 1000 B.P. This climatic change appears to have been of short duration, lasting approximately 100 years before an apparent shift to warm and dry conditions from approximately 900 to 600 B.P. (Halford, 1998:51). Stine (1994, 1998) postulated that Owens Lake was dry between 900 and 600 B.P. and argues for a model in which people moved from moderately low lakeside sites to the playa floor to exploit resources associated with playa springs.

The appearance of Rose Spring and Eastgate series projectile points signaled the introduction of the bow and arrow, which replaced the atlatl as the principal hunting implement (Bettinger and Eerkens, 1999). Along with these changes, pressure flaking became a more prominent method for finishing/sharpening flaked stone implements in comparison to earlier time periods when pressure flaking was either not used or was less commonly employed to finish/sharpen stone tools. By 1500 B.P., the archaeological record begins to show a higher degree of resource intensification, settlement nucleation, and elaborate sociopolitical integration as well as the emergence of social differentiation. Evidence from this period indicates population growth and increased exploitation of high-cost resources from relatively sedentary villages. This change in the archaeological record may reflect population replacement of a pre-Numic speaking culture (highly mobile and reliant on widely dispersed resources) by the contact-period Numic-speaking culture, which was less mobile and exploited diversified local resources. This population replacement is estimated to have occurred within the last 700 years (Bettinger and Baumhoff, 1982; Lamb, 1958).

4.4.4.5 Marana Period (650 B.P. to Contact)

Desert Side-Notched and Cottonwood projectile points, as well as Owens Valley brownware ceramics, mark the Marana period. This era is marked by an increase in population, coinciding with an intensified exploitation of vegetal resources, and further restrictions in mobility (Delacorte et al., 1995). Obsidian source analysis supports this conclusion. Unlike the Newberry Period profiles, obsidian sources are not represented in differential frequencies across artifact classes. Although a relatively broad range of obsidian sources was exploited, they occur in similar proportions across artifact classes and stages in the reduction trajectory. This change likely represents exchange through trade within a relatively sedentary settlement pattern (Basgall and Giambastiani, 1995).

Subsistence efforts were further concentrated on riverine and lacustrine environments, and low-ranked resources, such as freshwater mussels (*Anodonta* sp.). Other resources of low rank, such as small seeds (*Orzopsysis hymenoides*), were added to the diet. Piñon nuts were harvested while still green. A significant amount of activity took place away from the main settlements at special procurement sites such as piñon camps, reflecting an extensively logistical organization. Irrigation of tracts of wild flora in Owens Valley began late in the period, and trade and food storage became important characteristics by which seasonal and areal shortages were regulated (Bettinger and King, 1971). Pottery also marks the Marana Period, with relatively crude and utilitarian brownware pots entering the archaeological record. Recent studies suggest that pottery only emerged as a result of population densities making ceramic industries sufficiently economical, further suggesting an increase in population in the Marana Period (Eerkins, 2001).

Various dating methods, applied to a human-made rock cairn site at the east side of Owens Lake, revealed occupation as early as the 14th or 15th centuries, with human remains dating to 530 B.P. (Halford and Carpenter, 2005).

4.4.5 Ethnographic Context

The Project areas are near the historic boundary of two Native American groups: the Owens Valley Paiute and the Koso Shoshoni (Thomas et al., 1986; Yohe, 2001). Both groups speak languages that belong to the Numic branch of the Uto-Aztecan language family (Miller, 1986).

4.4.5.1 Owens Valley Paiute

Owens Valley and its surrounding uplands were occupied during the contact period by the Owens Valley Paiute, who spoke dialects of the Mono language, a division of the Western Numic branch of the Uto-Aztecan language family (Bettinger and Baumhoff, 1982; Liljeblad and Fowler, 1986). General territorial boundaries were the Sierra Nevada to the west, the Inyo-White Mountains to the east, the southern shore of Owens Lake to the south, and the Benton Range and Long Valley to the north (Delacorte et al., 1995). Estimates of the aboriginal population vary between 1,000 and 2,000 individuals, making Owens Valley the most densely populated area in the Great Basin. At times, the population of Owens Valley numbered more than two people per square mile. This densely settled valley might have been a source of social and technological innovation for surrounding areas of the western Great Basin, while being influenced itself by cultures of the North American Southwest and other regions of California.

Inhabitants of the Owens Valley occupied semi-permanent base camps named for topographic features. The same families occupied these small transitory and unstructured communities temporarily from year to year. The basic sociopolitical unit typically consisted of a large main village and several surrounding allied settlements. Each of these villages was a territorial unit with a substantial population presided over by a designated headman (Liljeblad and Fowler, 1986). This pattern was unlike other Great Basin sociopolitical systems in which the household or nuclear family was the primary productive unit and the band the highest level of social integration. The most obvious parallel is with the tribelet organization that typified populous regions of areas in California to the west (Kroeber, 1932). Julian Steward (1933:325-326) recorded 19 villages in the immediate vicinity of Owens Lake.

Steward (1933) noted at least seven such units in Owens Valley, which he described as composite land-owning bands. These bands displayed the highest level of organization among any of the Western Numic speakers - the groups sharing broadly similar subsistence techniques and languages. The relatively high level of organization can be discerned in several important traits. First, these bands held communal ownership of seed and piñon nut patches, and the hereditary chief coordinated irrigation of communal seed patches. These irrigation systems were present throughout the valley, but were more prevalent in the northern portion of the valley, near present-day Bishop (Lawton et al., 1976). While individual hunting occurred, the band would also engage in communal rabbit, deer, and pronghorn antelope drives.

Finally, individual villages shared a single sweathouse that also functioned as a male dormitory (Steward, 1938). The singular nature of this organizational structure is obvious when nearby groups are considered. The neighboring Shoshone had no communal ownership of piñon nut or seed patches except in Saline Valley, where territorial ownership had likely been adopted from, or in response to encroachment by, other groups or the neighboring Owens Valley Paiute (Steward, 1938). Rather than lineages with the nuclear family as the dominant unit of production and reproduction, broad kindred relationships seem to have been the basic kinship pattern among the Owens Valley Paiute. Kinship groups were not in and of themselves territorial; however, most settlements excluded all blood kin to the level of third cousin from marrying (Liljeblad and Fowler, 1986).

Owens Valley Paiute ceremonies were predominantly outdoor social events (Liljeblad and Fowler, 1986), in contrast to the California pattern, in which most ceremonies were held in large structures. Perhaps the most important ceremony was the annual fall mourning ceremony held in honor of those who had died during the previous year. During this time, a widow or widower was released from a yearlong mourning period and allowed to reenter social relationships, including marriage.

Several types of habitation structures were ethnographically documented in the region, with three main subtypes occurring within the Owens Valley. These include a large, round, semi-subterranean, earth-covered assembly house; a smaller domestic version; and a simple brush dwelling built at ground level with a superstructure of bent willow poles for summer use. In addition, wooden lean-tos were used at higher elevations, and ramadas and brush enclosures were used during summer months on the valley floor.

The narrowness of the Owens Valley contributed to the overlap of several proximal but distinct environmental zones. Important food resources for the Owens Valley Paiute included migratory and resident waterfowl, artiodactyls, lagomorphs (*Lepus californicus* and *Sylvilagus floridanus*), fish (*Catostomus arenarius* and *Siphateles obesus*), and freshwater mussels (*Anodonta* *californiensis*). Important invertebrates included brine shrimp (*Artemia* sp.) and brine fly (*Ephydra* sp.) larva and pupae from the saline waters of Mono and Owens lakes, grasshoppers (*Melanoplus* sp.), and Pandora moth caterpillars (*Coloradia pandora*) collected from the yellow-pine belt of the Sierra Nevada. Important vegetable resources included chia (*Salvia columbariae*), rice grass, and numerous grass seeds and tubers from the valley; piñon nuts from the Inyo-White Mountains; and acorns from the eastern slopes of the Sierra Nevada.

Piñon nuts and acorns were highly valued because they were easily stored. Individual family or kin groups harvested piñon nuts or, when the crop was especially good, multifamily groups harvested the nuts. The preferred type of acorn was that of the black oak (*Quercus kellogii*), which is abundant on the western slope of the Sierra Nevada. The acorns were obtained either directly or through trade. In addition, taboose (nutgrass, *Cyprus* sp.) and other types of productive wild plants were irrigated by a system of check dams and feeder ditches that enlarged the plants' natural habitat (Liljeblad and Fowler, 1986). Larger game included mule deer and bighorn sheep. Individuals and small groups hunted both deer and bighorn sheep. Communal antelope (*Antilocarpa americana*) drives were necessary to drive the animals into corrals through long systems of drift fences (Steward, 1938).

In addition to their own rich homeland, the people dwelling in Owens Valley had access through trade to products of the Sierra Nevada and the Great Basin biotic zones as well as those of the Mojave Desert to the immediate south. Trade and marriage ties closely linked the Owens Valley Paiute with surrounding groups such as the Yokuts, Miwok, Tubatulabal, and Mono to the west, and other outlying Paiute-Shoshonean groups to the east (Steward, 1938; Thomas et al., 1986). These interactions allowed the accumulation of considerable wealth, contributing to further cultural elaboration. The Owens Valley groups exhibited a highly sedentary orientation to the environment. This orientation distinguished them from all other Great Basin ethnic groups, who followed a predominately mobile pattern (Binford, 1980).

4.4.5.2 Koso Shoshoni

A group of Numic-speaking Native Americans, referred to by anthropologists as the Koso Shoshoni, Panamint Shoshone (incorrectly), and Little Lake Shoshone, inhabited the southern portion of Owens Valley (Kroeber, 1932; Steward, 1938). The Koso Shoshoni speak a local dialect of the Panamint language (hence Kroeber's classification of Koso Shoshoni as Panamint Shoshoni), which consists of Panamint and Koso Shoshoni dialects (Miller, 1986; Steward, 1937).

The Shoshoni of Inyo County occupied territorial units that Steward referred to as districts (Steward, 1937, 1938). One or more men in each district were headmen or political leaders (*poganabi*), who announced the timing of annual gatherings and communal drives; directed piñon nut harvests, hand games, and dances; and served as the chief negotiator for inter-district affairs. Although the district *poganabi* supervised these activities, the headmen typically delegated specific tasks to other individuals, who were considered *poganabi* for those tasks (Irwin, 1980). Delegation of leadership probably accounts for Steward's statement that rabbit drives were either directed by a headman or the net owners (Steward, 1938). Local *poganabi* also represented their family or village in internal politics (Irwin, 1980).

Koso villages typically consisted of one or more related families that traveled near one another during the seasonal round; although, villages also consisted of unrelated families because the Koso frequently changed residence. Parents arranged marriages between unrelated individuals. The groom's parents affected the marriage by paying a bride price in shell money to the bride's parents. In return, the bride's parents gave food and buckskins to the groom's parents. Village endogamy was permitted if individuals were unrelated, though village exogamy was the norm. District exogamy was also common among the Koso Shoshoni. Post-marital residence rules were flexible, though preferably matrilocal until the birth of a couple's first child. The Koso Shoshoni also married with other groups during the historic period—Kawaiisu, Tübatulabal, Owens Valley Paiute, and Euroamericans (Irwin, 1980; Steward, 1938).

Although the Koso Shoshoni "lacked…intervillage cohesion" (Steward, 1938), they possessed several means of social integration. Three of these, piñon nut harvests, rabbit drives, and antelope drives, are described below. The other two means of integration were annual fall gatherings and the mourning ceremony (Irwin, 1980; cf. Steward, 1938). Fall gatherings, termed *fandangos* by some researchers (Thomas, 1983), were the setting for dances, games, and socializing. The Koso Shoshoni held fall festivals at different villages in a given district over the years, and families from other districts often participated in the festivities. The host village distributed food, beads, and coins (in the historic period) to visitors from other villages and districts. Because the location of festivals changed from year to year, fall festivals constituted a kind of exchange system among the Koso Shoshoni. The festivals doubtless permitted information exchange about resource availability and quality (Irwin, 1980; Steward, 1938; Thomas, 1983; Thomas et al., 1986).

Steward stated that the Koso Shoshoni "had no large mourning ceremony to unite different villages" (Steward, 1938). He notes, however, that George Gregory (Shoshoni) remembered the Koso Shoshoni as holding mourning ceremonies every few years. Family members kept valuables belonging to deceased individuals until the mourning ceremony, at which time the belongings were burned to honor the dead (Steward, 1938). Irwin indicates that other valuables were distributed to visiting participants and asserts that these ceremonies functioned as exchange systems because they were held at different locations (Irwin, 1980). Alternatively, Steward states that only close neighbors participated in mourning ceremonies (Steward, 1938).

The Koso Shoshoni practiced a seasonal round. The family is the key subsistence and economic unit among the Koso Shoshoni; families and clusters of related families foraged together from spring to fall. Plants comprised the bulk of the Koso Shoshoni diet, although small game were killed and eaten throughout the year on an encounter basis (Irwin, 1980; Steward, 1938; Thomas, 1983; Thomas et al., 1986). In spring, single families or family clusters gathered ripening greens and bulbs such as varieties of prince's plume (*Stanleya pinnata* and *S. elata*), desert thistle (*Cirsium* spp.), fiddlenecks (*Amsinckia* spp.), blue dicks (*Dichelostemma capitatum*), sego lily (*Calochortus nuttallii*), and broom rape (*Orobanche ludoviciana*). Seeds of various plants were gathered at this time as well, though seed harvesting intensified from June to September. During these months, Koso Shoshoni families moved into the Coso Mountains to gather seeds. If seed yields were especially productive, the Koso Shoshoni often cached seeds in the gathering area for winter use. Families usually remained within one day's march of their winter villages so that trips to seed caches were not inconvenient (Irwin, 1980; Steward, 1938). A number of small game animals and birds were exploited at this time, including badger, chuckwalla, gopher, mice, rats, doves, eagles, hawks, crows, and snakes. The Koso Shoshoni also hunted bear, mountain lion, and wild cats (Steward, 1938).

By August or September, those families that were not already living in the Coso Mountains traveled there to harvest piñon nuts. The headman often designated specific areas for piñon nut harvests by multiple-family groups. When piñon nut crops were poor, individual families would travel to the Panamint Mountains and gather piñon nuts there instead (Irwin, 1980; Steward, 1938). The Koso Shoshoni in the vicinity of Olancha likely gathered acorns at the eastern foot of the Sierra Nevada as well. Occasionally, families hunted ducks at Owens Lake in the fall (Steward, 1938). The Koso Shoshoni wintered in lowland villages; although, if piñon nut yields were exceptional, the Koso Shoshoni might winter near the piñon nut caches.

The Koso Shoshoni also carried out two other subsistence activities during the fall: major rabbit drives and pronghorn antelope drives. Large rabbit drives were cooperative efforts on the part of several neighboring families. Major drives, such as those at Olancha, drew people from as far as Keeler (40 km/25 miles away) and Saline Valley (80 km/50 miles away). Eight to ten men beat the brush, flushing rabbits toward one or two nets. Nets were about 100 feet or greater in length, two feet tall, and were propped at intervals by sticks. When the rabbits ran into the nets, the net owners clubbed the rabbits to death (Steward, 1938:82–83). The Koso Shoshoni sometimes used fire to drive rabbits as well. The Koso Shoshoni conducted major rabbit drives in fall and occasionally winter because the animals' fur was thickest during these seasons; rabbit skins were valued for making blankets. Charles Irwin relates a report by George Gregory that the Shoshoni employed another method of rabbit hunting. Men smoked out an area by setting fire to brush. Rabbits would eventually tire from heat exhaustion and smoke inhalation, at which time they lay under brush. The hunters then dispatched the animals with bow and arrow (Irwin, 1980).

Fall antelope drives were undertaken at several locations in Koso Shoshoni territory, including Indian Wells Valley, the northern end of Saline Valley, and the area between the Coso Mountains and Owens Lake. A designated antelope-drive director announced the timing and place of a major drive several days before the event. Eight to ten men drove the antelope into a brush corral where the antelope milled around in confusion. Archers stationed at intervals along the length of the corral dispatched the animals (Steward, 1938).

The Koso Shoshoni also hunted pronghorn antelope individually, in addition to mule deer and bighorn sheep. Mule deer were also hunted by smoking out a limited area, as with rabbits. Bighorn sheep were more profitably hunted by a small group of men driving sheep into bottlenecks, where other hunters lay in wait (Irwin, 1980).

4.4.5.3 Traditional Cultural Landscapes

As described in guidance provided by Caltrans (Caltrans, 1999), the National Park Service (NPS, 1990a, 1990b), and elsewhere, cultural landscapes, or historical landscapes, typically refer to places that have undergone past modification by human design or use in an identifiable pattern, are the relatively unaltered sites of significant events, are natural landscapes with important traditional cultural values, or are a combination of these various aspects. Cultural landscapes are not resources in themselves, but typically consist of groups of interrelated and linked buildings, archaeological sites, or landscape features that, together, represent an identifiable theme of human relationship to the land within a defined geographic locale. As with other resource types, cultural landscapes typically are assessed based on age, association, and integrity. Unlike districts, with also consist of thematically related resources, cultural landscapes can be quite expansive, and landforms and natural features figure prominently in their definition.

Of the various types of cultural landscapes, including designed, vernacular and historic sites, in the context of this EIR, the Owens Lake might best be considered an ethnographic landscape. Ethnographic landscapes contain natural and cultural resources that are associated with traditional cultural values and traditional use of an area. This association may include prehistoric use of the area as well, indicated by the presence of archaeological resources. Although they must consist of tangible properties, these landscapes may include features, such as contemporary settlements, sacred sites, natural resource areas, and important topographic features, as well as intangible qualities related to these features.

Previous sections of this overview describe the long history of prehistoric and ethnographic use of Owens Lake. Undoubtedly, Owens Lake can be seen as a discrete geographic feature that drew human occupation and use for millennia. Evidence of this can be seen in the abundance of prehistoric archaeological sites around the lake, often associated with various shorelines and geographic features, as well as in the continuing importance of the lake to local Native American communities. These communities continue to make use of natural resource around the lake, they continue to ascribe traditional importance to the lake and associated natural features, and they recognize the long history of their association with the lake. Many of the significant archaeological resources around the lake are significant not just for their scientific importance (Criterion 4 in the CRHR). They are also significant for their traditional values (typically Criterion 1), including associations with past events and past uses of the lake that still hold importance for modern communities. To these communities, the cultural resources associated with the lake are not individual discrete resources, but rather, the lake in its entirely is considered a culturally significant place. The CRTF tribal members note in their recommendations dated December 2, 2014 that, "This landscape is an irreplaceable part of tribal culture and traditions, and as such, an irreplaceable part of American history. It must be protected." Recognizing portions of the Owens Lake as a Cultural Landscape would help clarify the inter-relationships between archaeological resources and other aspects of the landscape that are important to local tribal communities.

4.4.6 Historic Overview

4.4.6.1 Early Explorers and Early Settlement (A.D. 1820s - 1866)

French and American explorers traveled near the Project areas as early as 1820. These early explorations made inroads into the region that would later be followed by settlers and gold seekers alike, as well as introducing new diseases to the native populations. A devastating cholera epidemic was introduced that reduced the native population by 75 percent in the 1830s. When the Mexican and American immigrants arrived in the coming decades, the native population was already significantly weakened (Cook, 1955).

Jedediah Strong Smith, an American trapper, is possibly the first non-Indian to travel through the Owens Valley area in 1829. Another expedition came through in 1831 under the leadership of Peter Skene Ogden, a trapper for the Hudson Bay Company. The Joseph Reddeford Walker expedition passed through the area in 1834, blazing a trail as they went. Walker also entered Owens Valley again in 1843 from the north, following his old trail with the Chiles emigrant party who were the second wagon train to enter California from the east. In 1845, Walker accompanied the main part of John C. Fremont's second expedition to California. Fremont and a small portion of the party actually entered California via Donner Pass, but the parties met in the San Joaquin Valley. The other party included Richard Owens, who Fremont valued so highly he named the river, lake, and valley in his honor. It is ironic that the person for whom the valley is named never saw it (Hoover et al., 1970).

The Hudson's Bay Company and other parties of American trappers continued hunting throughout the region until the early 1840s when the trapping industry rapidly decreased. By 1842, the Hudson's Bay Company terminated its California operations due, in part, to less yields and low profits (Thompson, 1957).

After California became the thirty-first state in September of 1850, A. W. von Schmidt surveyed the eastern Sierra Nevada Mountains and Owens Valley for the State of California in 1855 and 1856; his observations of the area were not favorable (Wilke and Lawton 1976:26; Babb 1992:264). Captain John W. Davidson headed a later expedition into the Owens Valley in 1859 to recover livestock that had migrated from Fort Tejon and to make contact with Native American tribes. Davidson's glowing report of the valley's resources brought public attention to the area (Wilke and Lawton, 1976:26). At the behest of the federal government, E. F. Beale of the Surveyor General's Office surveyed Owens Valley in 1861. In 1864, William H. Brewer observed large grassy meadows suitable for grazing cattle in the area (Farquhar, 1966 *in* Babb, 1992:263). Cattle grazing and agriculture opportunities began attracting settlers following these accounts of the area. The increase in the local population resulted in the California State Legislature's organization of Inyo County from sections of Mono and Tulare counties in 1866. That same year, the town of Independence, which had flourished due to the proximity of Camp Independence, became the county seat (Inyo County Board of Supervisors, 1966).

4.4.6.2 Mining (1850-1880s)

Beginning in 1850, gold and silver discoveries in the eastern Sierras ignited a major population increase in northern California as immigrants poured into Owens Valley seeking gold or the opportunities it presented (Robinson, 1979; Sauder, 1994; Wilke and Lawton, 1976). Gold, silver, and lead mining camps were established throughout the region. In 1865, the silver mine at Cerro Gordo, near Keeler, was discovered by Pablo Flores; it proved to be the richest silver strike in California. In the years between the 1850s and 1860s, mining was the single largest industry in Inyo County. Small mining camps grew into towns, while food and lumber production developed as secondary industries, which led to a need for infrastructure: complex communications and transportation networks sprang up to connect the towns and mines in the area.

The U.S. Army was well aware of the mineral properties of the Owens Lake deposits; in 1876, a survey team estimated that the lake water contained a 100-year-supply of sodium carbonite

(Jones & Stokes, 2007:13). After 1877, silver and lead mining gradually began to decline at Cerro Gordo and other mining camps because the price of silver had dropped severely (Sauder, 1990:89).

4.4.6.3 Agriculture (1861-1920)

The abundance of grasslands in the northern portion of the valley was attractive to cattle ranchers. The first cattle drive into the area occurred in 1861 when cattle "were driven up via the south end of the valley from Kern County" (Vorster, 1992:271). Circa 1870s and 1880s, most immigrants to the Owens Valley region came for mining, but some stayed to farm and ranch. It was the miners' demand for supplies that inspired farmers to overcome the challenges that the arid nature of the region presented and led to the creation of permanent settlements (Sauder 1990:82). Cattle and sheep ranchers, in turn, came into the valley to support the various mining camps and the neighboring towns (Halford and Carpenter, 2005:13).

Most of the farms were in the northern portion of the valley, near the Bishop-Round Valley area where water was more plentiful (Babb, 1992:266; Sauder, 1990:83). During the 1870s and 1880s, the settlements of Cartago, Cottonwood Shade, Keeler, Lone Pine, Lone Pine Station, Olancha, and Swansea begin to appear on topographic maps. Ferguson's Landing was located at the northwest corner of the lake. Cottonwood Landing, also known as Stevens Wharf, was on the west central edge of the lake.

Farmers initially practiced the Midwestern three-crop rotation of corn, small grains, and alfalfa hay on small farms with horses, cows, cattle, and pigs. These small one-quarter section farms were located on the valley floor. Paiute laborers were hired to help maximize production, and surplus crops and livestock were sold to the mining settlements and the local markets at Bishop, Big Pine, Independence, and Lone Pine (Sauder, 1990:86). In the 1880s, barley was in demand in the mining centers, and replaced alfalfa in the three-crop rotation scheme. To meet the demand for livestock hay, alfalfa was grown as a single crop because it could yield two to three crops per year (Sauder, 1990:89).

In 1877, the Desert Land Act opened the Owens River for agricultural irrigation and encouraged the settlement of larger 640-acre tracts of arid land. Farmers established cooperative alliances for the financing and building of irrigation canals. The economic importance of agriculture had surpassed mining in the valley by the 1880s. Despite the economic downturn as the result of the mining industry slowdown, and the absence of a freight train that connected the valley with Los Angeles that could transport goods for sale, a system of seventeen ditches and canals sprawled 200 miles throughout the Owens Valley by 1901. One reason the ditch and canal construction continued was that valley residents hoped a rail line would one day be completed, to facilitate shipment of their goods to Los Angeles (Sauder, 1994).

The Owens Valley had developed into an established agricultural area by the early twentieth century (Babb, 1992:266). Crops included wheat, corn, barley, fruits, and vegetables; however, most of the irrigable land was used for growing hay and grazing cattle and sheep (Vorster, 1992:268, Newcomb, 1917). In 1920, irrigation was at its peak and watered 53,500 acres of pastureland and 23,000 acres of cropland (Babb, 1992:226).

4.4.6.4 Owens Valley Indian War (1861-1867)

According to Captain John W. Davidson, approximately 1,200 (or more) Native Americans lived near Owens Lake and the Owens River in 1859. Davidson's early account of Native American subsistence practices indicates that the peoples he encountered hunted deer, antelope and rabbit, collected piñon and acorn seeds and insect larva, irrigated fields of a "nutritious grass of which our horses were fond," and caught large quantities of the abundant small fish available in Owens River.

However, Davidson's report of plentiful resources contributed to the influx of Euro-American peoples that began arriving in the 1850s-1860s. This increase in non-native inhabitants severely affected the local plant and animal resources. "Cattle grazing on the valley's natural meadows resulted in the destruction of native plants, whose seeds and roots were the staples of the Paiute diet. The influx of livestock into the irrigated meadows subsequently depleted the Indians' winter food supply. Faced with no other choice for survival, the Paiute were forced to prey on the ranchers' cattle" (Sauder, 1990:82).

Isolated skirmishes occurred as early as the winter of 1849-1850 when the Jay-Hawker, Bennett-Manly party's oxen were impaled with arrows, and the Von Schmidt party reported fighting Indians one day during an 1855-1856 survey (Halford and Carpenter, 2005:14). Further violence between ranchers and Native Americans was recorded in 1861-1862 (Chalfant, 1933). In January, 1862, a treaty was signed by Chief George, Chief Dick, Little Captain Jim, and eleven whites, including Samuel Bishop, for whom the city of Bishop was named, but the treaty was short-lived and confrontations continued (Chalfant, 1933; Halford and Carpenter, 2005:14).

Other violent incidents occurred and various treaties were signed and broken during the later part of 1862. Hostilities broke out again in the spring of 1863 following a string of broken promises; most of these hostilities occurred in the southern portion of the valley. After the army destroyed all the native food resources, 400 Paiutes surrendered on June 4, 1863, and more shortly thereafter. On July 11, 1863, more than 900 Owens Valley Paiutes were moved to the San Sebastian Reservation near Fort Tejon (Lawton et al., 1976:31; Sauder, 1994:86).

Conflicts continued after July 1863 when the military left Camp Independence because of the presumption that the majority of the Native Americans had been taken to the reservation. However, it is likely that about two-thirds of the Native Americans avoided being taken to the reservation and remained in the Owens Lake area. The military returned to Camp Independence in December 1864 (Halford and Carpenter, 2005:16).

Although many of the Owens Valley Paiute returned to Owens Valley subsequent to their transfer to the reservation, the bulk of the Native American resistance had been halted and the Euro-American settlement of the area resumed by late 1865 (Halford and Carpenter, 2005:13). The last major recorded battle in the vicinity of the Project areas occurred in 1865 (Chalfant, 1933). The repercussions of the "Indian War" were the deaths of 60 white settlers and soldiers and about 200 Paiutes (Bateman et al., 1995: Chalfant, 1933:228).

4.4.6.5 Transportation (1872-1960)

In the 1870s, two steamboats, *Bessie Brady* and *Mollie Stevens*, operated on Owens Lake. The *Bessie Brady,* christened on July 4, 1872, was the first vessel on any inland lake west of the Mississippi that was used solely for commercial purposes. The *Bessie Brady* was named after the eldest daughter of James Brady, one of the principal owners of the boat. Construction of the ship was commissioned by James Brady and D. H. Ferguson with financial assistance from the Owens Lake Silver-Lead Company, where James Brady was employed as superintendent (Lingenfelter 1962:151-154). Although many speculated that the ship was intended to be Brady's private yacht, the ship did provide an economical way for the Owens Lake Silver-Lead Company to transport bullion from the wharf at Swansea (on the northeastern end of the lake north of Keeler) to ground freight lines that continued on to the northern and southern markets.

Prior to the completion of the ship, several land speculators had purchased land around the lake and began building wharfs and other transportation- associated structures in anticipation of its completion; in total, five wharves were constructed around the lake. D.H. Ferguson built a wharf on land at the northwest corner of the lake and named it Ferguson's Landing before the wharf was finished. In June 1872, John Baptiste Daneri, a local merchant began construction of "a large warehouse and store at the southwest shore of the lake at the head of the road to Los Angeles" (Lingenfelter, 1962:154). This development went unnamed for at least six months. Eventually, it became known as Cartago (also known as Danerisburg or Daneri's landing, and Lakeville) and was the major port on the lake because its strategic location enabled the control of all bullion shipments out of the area and almost all freight shipments into the area. A third wharf was constructed at Cottonwood, near the mouth of Cottonwood Creek on the west side of the lake, between Ferguson's Landing and Cartago, to assist in the transport of lumber and charcoal to be used to fuel the local mines. By early August 1872, the *Bessie Brady* made daily roundtrips from Swansea to Daneri's Landing near Cartago, transporting bullion southward and supplies northward, and had put their ground freight competition out of business (Lingenfelter, 1962:154-156).

In October 1872, Brady sold his interest in the steamer to John Daneri, who along with Ferguson, incorporated the company into the existing Owens Lake Steam Navigation Company. However, the *Bessie Brady's* transportation efficiency became a detriment when the ground freighters could not keep up in hauling the bullion away, resulting in a backlog of bullion at the wharf at Cartago.

> By the first of January, 1873, a crisis was reached when 181,000 bars of bullion were being held up awaiting shipment south. Of these 12,000 bars were stacked on the wharf and in the street at Cartago. Since this bullion represented a total of $600,000 lying idle, the mining companies were forced to cut back their production until the bullion could be hauled away to be sold. By, March 15, however, the situation had not improved, and there were still 17,000 bars awaiting shipment—nearly all at Cartago where some had been stacked to make shelters by unemployed miners. Even before this time the smelting furnaces had been forced to close down altogether and bullion shipment from lack of business had stopped. Since freighting too had dwindled from lack of business the *Bessie Brady* could

> no longer afford to cross the lake and she was taken up river to mooring. Within weeks the Owens Lake Steam Navigation Company had folded (Lingenfelter, 1962:157).

To fill the void left by the closure of the Owens Lake Steam Navigation Company, a new venture called the Cerro Gordo Freighting Company, headed by M.W. Belshaw, an owner of the Cerro Gordo Mine, and Remi Nadeau, a Los Angeles teamster, purchased all of the old freighting contractor's interests and placed 56 freight teams on the road that year. At this time, "Belshaw purchased Daneri's interest in the Bessie Brady and in September [1873] he built a new wharf on the southeastern side of Owens Lake, six miles south of Swansea, at the foot of the 'yellow grade' leading up to Cerro Gordo" (Lingenfelter, 1962:157). Soon thereafter, the Bessie Brady began regular trips from Cerro Gordo Landing near Keeler to Daneri's Landing at Cartago. In 1875, Ferguson sold his interest in the Bessie Brady to Casper Titchworth, a steam boater from Michigan who piloted the boat until ca. 1877 when he may have sold his interest to Remi Nadeau (Lingenfelter, 1962:157-158).

In May 1877, the smaller *Mollie Stevens*, built by the Inyo Lumber and Coal Company which was incorporated in 1876 by Sherman Stevens who owned the sawmill on Cottonwood Creek, was launched at Cottonwood Landing, also known as Stevens Wharf. However, only a couple of days after its launch, heavy winds caused the undecked boat to sink and the *Bessie Brady* came to the rescue and raised the *Mollie Stevens*. In early June 1877, the *Mollie Stevens* began transporting supplies including lumber, wood, and charcoal from Cottonwood Landing to Cerro Gordo Landing (at Keeler). The *Mollie Stevens'* life was short-lived because of a slowdown in mining activities and the boat was virtually docked by the end of 1878, spending most of its time at Cottonwood (Lingenfelter, 1962:159).

Captain Julius M. Keeler arrived in the area during the winter of 1879 and purchased a number of mining properties near Cerro Gordo with the plan of constructing a stamp mill on the eastern shore of the lake, now known as Keeler. To facilitate construction of the mill, the *Mollie Stevens* was put into service again in October 1880 to haul lumber from Cottonwood Landing to Keeler. The mill was completed ca. March 1881 and the *Mollie Stevens* continued to make trips across the lake hauling wood to fuel the mill's steam-driven stamps (Lingenfelter, 1962:159-160).

The *Bessie Brady* continued service until 1879 when she was moved to Ferguson's Landing where her machinery was removed (Lingenfelter, 1962:159). In the spring of 1882, the hull of the *Bessie Brady* was towed to Keeler to be refitted. The *Bessie Brady's* hull was reconditioned and the engine from the dismantled *Mollie Stevens* was transferred into *Bessie Brady*. Unfortunately, the *Bessie Brady* was destroyed by fire on May 11, 1882 before the rehabilitation was completed and all steamship operations on the lake ceased (Chalfant, 1933; Jones & Stokes, 2007:13-14; Likes, 2010; Lingenfelter, 1962:160).

To service the mining communities on the east side of the Owens Valley, the Carson & Colorado (C&C) Railroad Company was established in 1880. Known locally as the Slim Princess, the narrow three-foot gauge railroad began in Mound House, Nevada, and by July 1883 had reached Keeler, California. The line was originally intended to run from the Carson River to the Colorado River, but construction was halted when the mining industry declined. In March 1900, the C&C Railroad was receptive to the Southern Pacific (S.P.) Railway's offer to purchase the failing railway. The S.P. retained the C&C as a wholly owned subsidiary between 1900 and 1905, and then converted the C&C into the Nevada & California Railroad Company, also wholly owned by the S.P. (Turner, 1965).

The 31-mile Benton to Laws segment of the narrow-gauge railroad was abandoned in 1943, which left a 70-mile line between Laws and Keeler. This line "was increasingly dependent on moving talc from on-line mines to the gravity transfer trestle at Owenyo" (Turner, 1963:440). On April 29th, 1960, the Keeler to Laws line train orders officially abandoned the remaining track, and work began to remove the track and lay asphalt in Keeler that very morning for the impending truck service (Turner, n.d.; Turner, 1963:440).

With the impending construction of the Los Angeles Aqueduct (see Section 4.4.7.7), a standard gauge branch, the S.P.'s Jawbone Branch from Mojave to Owenyo running through the Mojave Desert, was added in 1910 for transporting equipment and supplies to the work site. Following completion of the Los Angeles Aqueduct in 1913, the Jawbone Branch of the Mojave-Owenyo Line declined. Dismantling of the railroads began in the mid-1930s after mining operations slowed, and railroad usage was virtually halted by the 1960s after U.S. Highway 395 and State Route 14 improved truck and automobile transportation through the area (Jones & Stokes, 2007:14; Turner, 1965). The Mojave-Owenyo Line was finally abandoned in 1982 and evaluated for historical significance in 1993. The line was recommended ineligible for listing in the NHRP (Jones & Stokes, 2007:15).

4.4.6.6 Soda Ash Manufacturing Industry (1885-1956)

L.F.J. Wrinkle began reclaiming soda and other salts from the lake in early 1885 by constructing a series of vats along the lakeshore from which the water would evaporate, leaving the minerals behind. The original notice includes the names of 839 persons, indicating that a large area was claimed. Noah Wrinkle, son of L.F.J., developed a chemical process that allowed for the recovery of a wider range of products and that was less dependent on the density of the water used. This became the foundation of the Natural Soda Products Company (NSPC) (Chalfant 1933:300). In 1887, the Inyo Development Company (IDC), formed by Nevada capitalists continued to collect residue from the original vats, and began production of trona (sodium carbonate) along the eastern shore of Owens Lake, north of Keeler (Chalfant 1933:300; Margerum, 2003; VerPlank, 1959). The process entailed pouring Owens Lake water in large vats; trona then formed at the bottom through solar evaporation. After draining the vats in the fall months, the trona was harvested and transported to market by train.

In 1908, the former superintendent Noah Wrinkle, and other prior employees of IDC established NSPC approximately 2 miles south of Keeler (Margerum, 2003; Sapphos, 2007; VerPlank, 1959). It was sited at Jiggerville, just south of a series of soda vats resulting from an expansion by IDC. Jiggerville was the previous locality of a boat landing at Owens Lake and it was a stop on the Carson and Colorado Railroad (Leadabrand, 1967). Financiers Wilfred and Mark Watterson from Bishop became involved with the business in 1912, and with their oversight, production increased and NSPC became profitable.

4.4.6.7 The Los Angeles Aqueduct (1904-present)

The population of Los Angeles rapidly increased around the turn of the twentieth century. By 1904, city managers identified the need for an additional source of water supply. At least five different alternatives were being studied when the City, and specifically William Mulholland, decided to pursue water from the Owens River. The federal government approved an aqueduct project in 1906. The following year, citizens of Los Angeles approved a bond to purchase more than 135,000 acres of land for water rights, reservoirs, and rights of way (City of Los Angeles, 1916). Approximately 24.5 million dollars in bonds were authorized to pay for the project (Hundley, 2001).

Aqueduct construction began in 1908, and by 1913, Owens River water was available in the San Fernando Valley. Originally, four reservoirs, including Haiwee, Fairmont, Dry Canyon, and San Fernando, were completed as part of the first Los Angeles Aqueduct (LAA1) to help regulate the flow of water, as well as store, aerate, and control sediment. Not only did the aqueduct bring water to Los Angeles, but it also provided opportunities to generate hydroelectric power. Four principal areas were identified, and in 1910 another bond was passed to raise money for hydroelectric plants: San Francisquito 1 (1914) and 2 (1920, rebuilt in 1928), Haiwee (1927), and San Fernando. Hydroelectric power plants were also installed at Cottonwood Creek and Division Creeks 1 & 2 (1908-1909) to generate electricity for aqueduct construction.

Owens Lake is not static and has historically fluctuated and undergone dramatic change over the last millennia, primarily in response to climate and geomorphic conditions. In the early 1920s, several years of drought reduced the flow of the Owens River and decreased available water supply to Los Angeles. The City also purchased a majority of the water-bearing parcels in the valley (see Chalfant (1933), Nadeau (1997), and Sauder (1994)) and leased these properties to the original owners for continued agricultural and ranching operations in order to stabilize and support the economy (Jones and Stokes, 2007). As a result, water levels of the lake dropped markedly in the decades following the construction of the aqueduct, leading to the situation today where large expanses of lake bed that were previously submerged are now exposed. This has led to dramatic changes in the traditional landscape of local Native American communities.

In 1912, multiple Executive Orders established reservations for the Paiute and Shoshone populations in Owens Valley. Executive Order 5843 removed these lands from trust status in 1932. The U.S. Congress approved an exchange of 3,126 acres owned by the federal government for 1,511 acres of land owned by the City on April 20, 1937. In 1939, formation of the current 237-acre federally recognized Lone Pine Paiute-Shoshone Reservation occurred through another cooperative land swap between the City and the U.S. Department of the Interior. The Lone Pine Paiute-Shoshone Reservation has a current population of about 350 residents (LPPSR, 2014).

4.4.7 Phase 9/10 Project Records Search and Field Work

4.4.7.1 Records Search

A records search completed at the Eastern Information Center (EIC) at the University of California Riverside for the entire Owens Lake, conducted in 2009 for the OLDMP, was reviewed for this Project. Additionally, supplemental records searches were performed on May

12, 2011, and May 28-29, 2013 at the EIC to obtain site records not provided in the earlier records searches. The following sources were consulted:

- EIC base maps: USGS series topographic quadrangles.
- Pertinent survey reports and archaeological site records were examined to identify recorded archaeological sites and historic-period built-environment resources (such as buildings, structures, and objects) within or immediately adjacent to the Phase 9/10 Project areas.
- The California Department of Parks and Recreation's California Inventory of Historic Resources (1976) and the Office of Historic Preservation's Historic Properties Directory (2007), which combines cultural resources listed on the California Historical Landmarks, California Points of Historic Interest, and those listed in or determined eligible for listing in the National Register of Historic Places (NRHP) or the CRHR.
- Historic USGS topographic maps, including Lone Pine, CA 15-minute (1958) and Keeler, CA 15 Minute (1951) series maps for information about prior land use in and near the Phase 9/10 Project areas.

Background research for the Phase 9/10 Project areas consisted of a literature and map review and a fossil locality search (GANDA, 2013). A paleontological fossil locality search for Owens Lake was conducted on June 3, 2013, using the Berkeley Natural History Museum (BNHM) online database, which includes data from the University of California, Museum of Paleontology. The database search identified 733 fossil localities within Inyo County. They include 19 specimens from the Precambrian, 281 from the Cambrian, 146 from the Ordovician, 35 from the Silurian, 106 from the Carboniferous, 80 from the Permian, 35 from the Tertiary, 7 from the Quaternary, 14 of unknown age and 10 disputed fossils. The 2008 SIP SEIR (GBUAPCD, 2008b) summarized records searches conducted with the San Bernardino County Museum, the Natural History Museum of Los Angeles County, and the Eastern California Museum in Independence. Surveys in 2003 identified seven fossil localities on the Owens Lake playa between Swansea and Keeler along SR 136. In addition to these findings, several hundred fossil localities, consisting predominantly of fish fossils, were documented and curated during previous phases of the OLDMP (Oberle, 2010).

The research concludes that both the Phase 9/10 Project areas contain deposits sensitive for macrovertebrate, microvertebrate, and invertebrate paleontological resources, as has been determined for other areas of the lake.

Previously Recorded Cultural Resources. The records searches indicate that at least 32 prior cultural resource studies have been conducted within a 0.25-mile radius of the Phase 9/10 Project areas, and a total of 90 resources have been recorded within a 0.25-mile radius; 24 are sites, and 66 are prehistoric or historical isolated artifacts. Twenty-eight of the resources occur within the Phase 9/10 Project boundaries, including one historic district, 12 archaeological sites, and 15 isolated artifacts (**Table 4.4-3**, **Figure 4.4-1**). The records searches reveal Sapphos Environmental in 2007 surveyed portions of the Phase 9/10 Project areas (Sapphos, 2008), including prehistoric sites, a historic district, and numerous isolated artifacts. Additional work by Gallegos and Associates (2000), Jones and Stokes (2002, 2005), ICF Jones & Stokes (2008), Ancient Enterprises (2003), and GANDA (2012) rerecorded and performed evaluation studies on

10 archaeological resources in th e Project area, as outlined in **Table 4.4-3**. Five of these resources were found not eligible for the CRHR, but five were found eligible. All of these evaluated resources occur in the Phase 9 Project area.

Table 4.4-3
Previously Recorded Archaeological Resources in the Phase 9/10 Project Areas

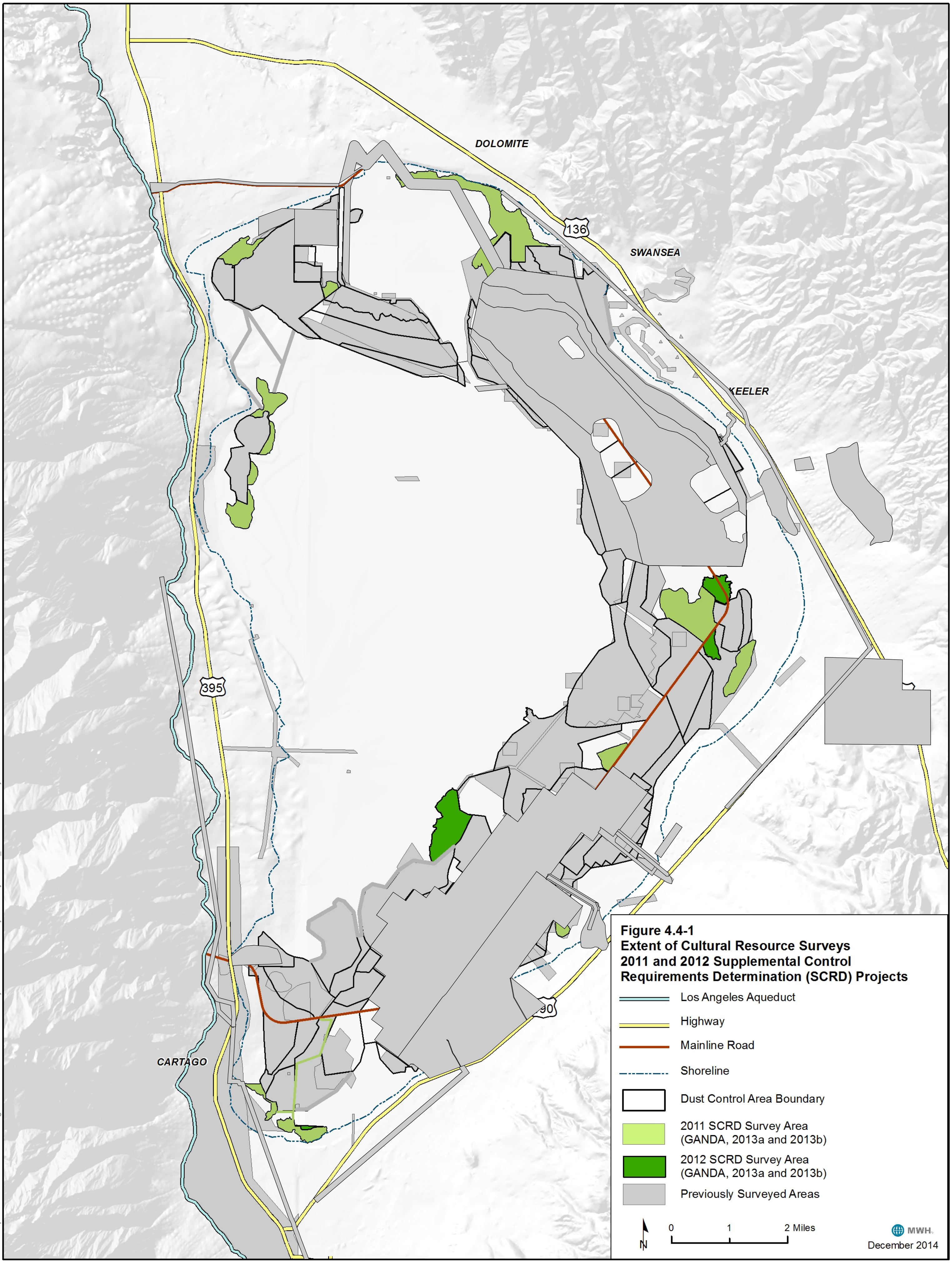
Study/ Year	Resources	Evaluation Status
Sapphos 2008; ICF Jones & Stokes 2008	1 historic district	Evaluated as not eligible for the CRHR by ICF Jones & Stokes in 2008
Sapphos 2008	4 prehistoric isolates	Isolates are not eligible for the CRHR
Sapphos 2008, ICF Jones & Stokes 2008, Garcia and Associates 2012	Prehistoric site	Evaluated as not eligible for the CRHR by ICF Jones & Stokes 2008; reevaluated by GANDA in 2012 and recommended eligible for the CRHR
Gallegos 2000	Prehistoric site	Evaluated as not eligible for the CRHR by Gallegos in 2000
Ancient Enterprises 2003; Jones & Stokes 2005	Prehistoric site	Evaluated as not eligible for the CRHR by Jones & Stokes in 2005
ICF Jones & Stokes 2008	Prehistoric site	Evaluated as not eligible for the CRHR by Jones & Stokes in 2008
ICF Jones & Stokes 2008	6 prehistoric isolates 1 historic isolate	Isolates are not eligible for the CRHR
Jones & Stokes 2002	Prehistoric site	Evaluated as eligible for the CRHR by Jones & Stokes 2002
Garcia and Associates 2012	Prehistoric site	Evaluated as not eligible for the CRHR by Garcia and Associates 2012
Sapphos 2008, ICF Jones & Stokes 2008	Prehistoric site	Evaluated as not eligible for the CRHR by ICF Jones & Stokes 2008
	Multicomponent site	Evaluated as not eligible for the CRHR by ICF Jones & Stokes 2008
	Prehistoric site	Evaluated as not eligible for the CRHR by ICF Jones & Stokes 2008
	Prehistoric site	Evaluated as not eligible for the CRHR by ICF Jones & Stokes 2008
Sapphos 2008	4 prehistoric isolates	Isolates are not eligible for the CRHR
Garcia and Associates 2012	Prehistoric site	Evaluated as eligible for the CRHR by Garcia and Associates 2012
	Prehistoric site	Evaluated as eligible for the CRHR by Garcia and Associates 2012

4.4.7.2 Previously Recorded Paleontological Resources

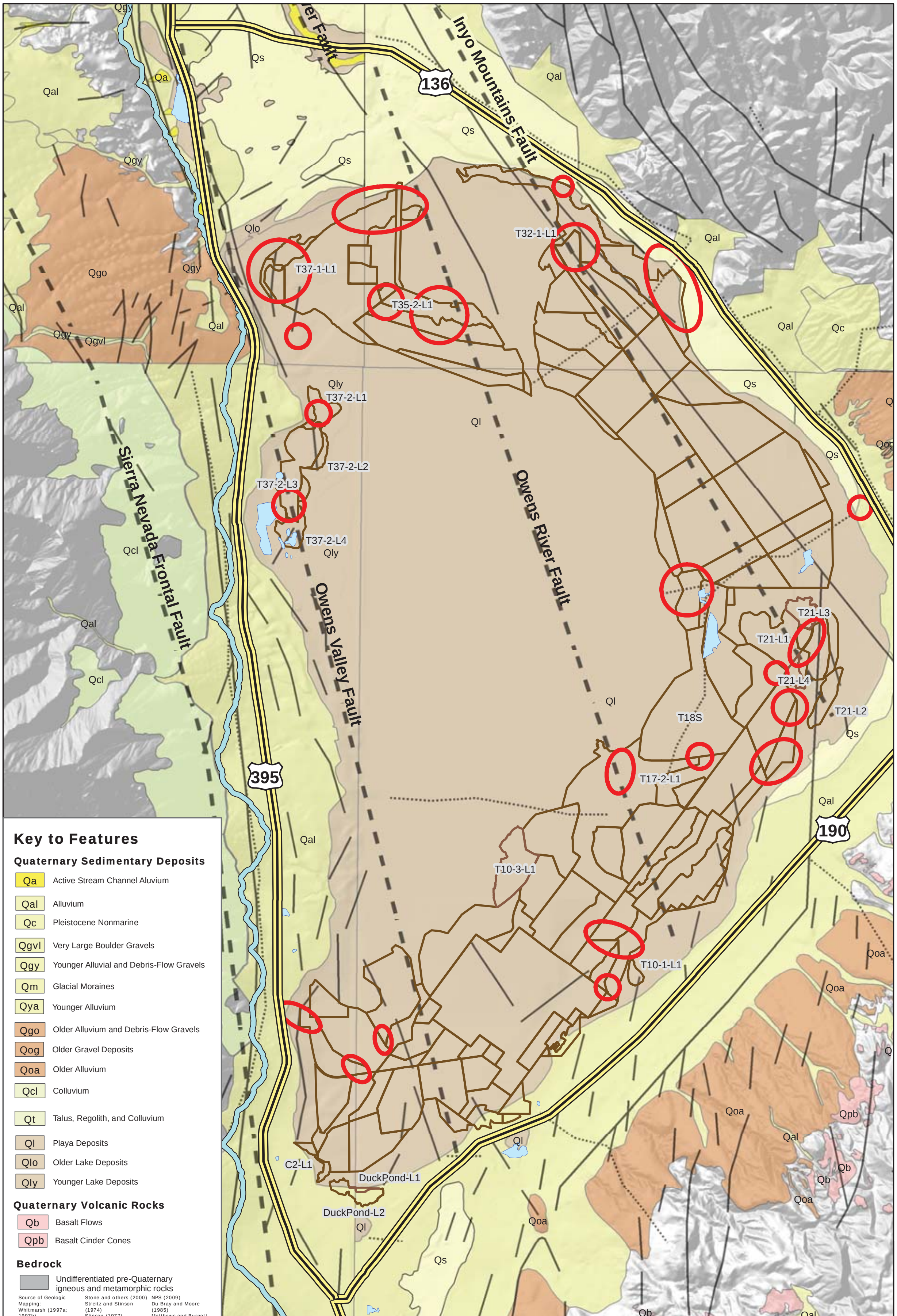
As noted above, the results of the literature review and the online fossil locality search revealed 733 fossil localities within Inyo County. Paleontological construction monitoring during the Phase 5, 7, 7a, and 8 Projects, resulted in the identification of numerous fossil localities, predominately on the east side of Owens Lake (Figure 4.4.2). During the Phase 5 Project, previously identified paleontological sensitive locations comprise DCAs T36-1-b and T30-1 (Jones & Stokes, 2008). At that time, grading at a depth of 2 feet in T30-1 yielded a fossilized Pronghorn antelope partial skull and horn found in context with archaeological artifacts (Jones & Stokes, 2008). During the Phase 7 Project, T21, T17-1, T17-2, T16, T9, T5-1, T1A-1, and T1A-2-a were determined to be paleontologically sensitive areas. During the Phase 8 Project, fossils were recovered from the northern portion of T37-1 and Phase 8 Areas A and B, including a pelvis bone from a grey wolf (Garcia and Associates, 2012c). The paleontologists obtained samples of the fossils, which comprise fish, birds, mammals, mollusks, plants, and stromatolites found in both playa and subsurface contexts (Pratt and Steinkamp, 2011).

Unique fossil resources have been identified in Owens Lake DCAs, such as species of fish that diverge from other similar species. Unique fish fossil resources have been identified in the southern DCAs referred to as “Keeler South”. Two facies produce fish remains; the lower (el. 3,564 feet) is referred to as “Keeler South: Owens Lake Clay,” and the second facies is located 20 feet higher (el. 3,580-3,590 feet) and is referred to as “Keeler South: Owens Lake Sand”. These species include the Owens sucker, and the Owens tui chub, but what is unique is that these species represent an intermediate transition from other similar species (Smith, et. al, 2009).

Paleontological remains are considered to be limited, nonrenewable, scientific, and educational resources. Some fossils recovered at Owens Lake qualify as unique resources because they represent the best examples of specific species found in the region, particularly if they are discovered in an undisturbed context. Other fossils in this collection qualify as unique paleontological resources because they provide evolutionary, paleoclimatic, or paleontological data important to our understanding of geologic history (SVP, 1996). **Figure 4.4-2** indicates paleontologically sensitive areas based on prior studies performed at Owens Lake, including prior studies in the vicinity of the Phase 9/10 Project areas.



DOLOMITE
136
SWANSEA
KEELER
395
190
CARTAGO
Figure 4.4-1
Extent of Cultural Resource Surveys
2011 and 2012 Supplemental Control
Requirements Determination (SCRD) Projects
Los Angeles Aqueduct
Highway
Mainline Road
Shoreline
Dust Control Area Boundary
2011 SCRD Survey Area
(GANDA, 2013a and 2013b)
2012 SCRD Survey Area
(GANDA, 2013a and 2013b)
Previously Surveyed Areas
N
0
1
2 Miles
MWH
December 2014
Path: \\Uspas1s01\muni\Clients\Los Angeles Water&Power\Owens Valley Data\Owens Valley GIS\Projects\TO_003\CulturalSurveyPh910.mxd



Highways
Los Angeles Aqueduct
Fault
Source: USGS; State of California
Fault Approximately Located
Source: USGS; State of California
Fault Concealed
Source: USGS; State of California

Paleontologically Sensitive Areas
Dust Control Measure
Other Water Bodies

0 0.5 1 Miles

Document: \\Uspas1s01\muni\Clients\Los Angeles Water&Power LADWP\Owens Valley Data\Owens Valley GIS\Projects\TO_003\GeologyDCMs.mxd

Paleontologically Sensitive Areas

Figure 4.4-2

This map has been designed to print size 11'' x 17''.

4.4.7.3 Native American Consultation

As part of the ongoing consultation with Native American organizations and individuals, on July 2, 2013, the NAHC was contacted with a request for information about sacred lands that may be located within the Phase 9/10 Project areas. The search of the Sacred Lands File housed at the NAHC did not identify any Native American cultural resources within a 0.5 mile radius of the Phase 9/10 Project areas, but Native American cultural resources are reported on adjacent USGS topographic quadrangle maps (**Appendix B**).

In response to the letter dated July 2, 2013, the NAHC identified eight Native American groups and individuals relevant for the Phase 9/10 Project (**Appendix B**). Via letters sent on July 9, 2013, each group or individual was asked to provide pertinent information or to express any concerns they may have about the proposed Project. Telephone calls were placed on August 2, 2013 as a follow-up to the letters.

As required in a permit issued by the CSLC for Phase II excavation in the Phase 10 Project area, the NAHC was again contacted on October 4, 2014, as part of the Phase II excavation work for the Phase 10 Project areas. As before, a search of the Sacred Lands File on October 14, 2014 did not identify any Native American cultural resources within the immediate Project area. In response to the letter dated October 4, 2014, the NAHC identified 15 Native American groups and individuals relevant for the Phase 10 Project areas (**Appendix B**). Via letters sent on November 14, 2014, each group or individual was asked to provide pertinent information or to express any concerns they may have about the proposed Project. The list of contacts from the two NAHC letters are provided below (**Table 4.4-4**). The total count of 16 contacts results from differences in contacts identified by the NAHC in the July 2, 2013 and October 4, 2014 response letters. These differences include the inclusion of additional tribal representatives in the second letter from the NAHC, and changes in tribal personnel. Pertinent results are discussed below.

Mr. Bill Helmer, Tribal Historic Preservation Officer (THPO) with the Big Pine Band of Owens Valley Paiute did not have questions, but asked to be kept informed as the Project progresses. Mr. Raymond Andrews, THPO with the Bishop Paiute Tribe, read the materials provided to him and said he will contact GANDA with any questions or concerns.

Ms. Kathy Bancroft, THPO with the Lone Pine Paiute-Shoshone Reservation, expressed concerns about cultural resources within the Phase 9 Project area, and particularly DCAs T32-1-L1 and T37-1-L1. In response to the Tribe's concerns, LADWP staff and Project archaeologists have had numerous discussions with Ms. Bancroft, who has been kept appraised throughout the survey, excavations, and geotechnical investigation phases of the Project.

Table 4.4-4
Native American Consultation Summary

Contact	Tribe/Group
Virgil Moose	Chairperson, Big Pine Band of Owens Valley
Bill Helmer	THPO, Big Pine Band of Owens Valley
Chad Delgado	Chairperson, Bishop Paiute Tribe
Raymond Andrews	THPO, Bishop Paiute Tribe
Brian Adkins	Environmental Manager, Bishop Paiute Tribe
Kathy Bancroft	THPO, Lone Pine Paiute-Shoshone Reservation
Mary Wuester	Chairperson, Lone Pine Paiute-Shoshone Reservation
Tribal Administrator	Lone Pine Paiute-Shoshone Reservation
Environmental Coordinator	Lone Pine Paiute-Shoshone Reservation
Israel Naylor	Chairperson, Fort Independence Community of Paiute
Robert Robinson	Chairperson, Kern Valley Indian Council
Julie Turner	Secretary, Kern Valley Indian Council
Melanie McFalls	Chairperson, Walker River Reservation
George Gholoson	Chairperson, Timbisha Shoshone Tribe
Barbara Durham	THPO, Timbisha Shoshone Tribe
Genevieve Jones	Chairperson, Big Pine Paiute Tribe of Owens Valley

In addition to consultation initiated through the NAHC, additional scoping and cultural resources task force meetings have been held. The NOP was distributed to 10 tribal representatives and included an invitation to the public scoping meeting which was held on July 29, 2014. A separate scoping meeting focused on cultural resources issues was held on December 16, 2014 at the LADWP office in Keeler. Eight tribal representatives representing five tribes (Bishop Paiute, Lone Pine Paiute-Shoshone, Timbisha Shoshone, Big Pine Paiute, and Fort Independence) and the BLM Bishop Field Manager were present at the meeting, which detailed the results of archaeological surveys and excavations in the Phase 9/10 Project areas that have been completed to date. Prior to conducting the archaeological excavations, LADWP notified the THPO of the Lone Pine Paiute-Shoshone Reservation by phone and email. Tribal monitors have been present during archaeological excavations conducted for the Phase 9/10 Project.

Additionally, as part of the CRTF, LADWP and GBUAPCD have been conducting a series of meetings focused on cultural resources issues for the Phase 7a Project. As of December 2014, the CRTF has prepared recommendations to the GBUAPCD Governing Board and LADWP as to the best course of action and timing for the treatment of the areas of the Phase 7a Project with significant cultural resources (known as Phase 7b parcels). Recommendations focus on re-watering an area of the lake via flow from a natural spring, avoidance of Phase 7b parcels and prohibiting construction activity, and long-term monitoring of dust emissions from Phase 7b parcels once dust controls are installed on adjacent areas. The CRTF has identified contingency measures and recommended reconvening in the event dust standards are exceeded in the future related to emissions from Phase 7b parcels.

4.4.7.4 Phase I Cultural Resources Pedestrian Surveys

The pedestrian surveys for the Phase 9/10 Project areas were conducted concurrently. Prior to initiating surveys, letters of non-objection and appropriate permits were received from the CSLC. Survey for the Phase 9 DCAs began on June 5, 2013 and ended on July 19, 2013, while surveys for the Phase 10 DCAs began on July 10, 2013 and ended on July 19, 2013. The DCAs and two access roads were surveyed for archaeological, historical, and paleontological resources. A 25 foot buffer around each DCA was also surveyed. The only exceptions were privately owned property within DCAs C2-L1, Duck Pond-L1, Duck Pond-L2, and T32-1-L1, where permission could not be obtained at that time. The private land in Duck Pond-L2 was subsequently (December 2014) removed from the proposed Project; the other private parcels were surveyed on October 23, 2014; December 30, 2014; January 2, 2015; and January 5, 2015. All areas were surveyed using 5 meter transects, largely dependent on ground visibility. In most areas, the ground was dotted with only sparse desert shrub or devoid of vegetation and covered by salt crust, so visibility was generally good to excellent. Archaeologists surveyed approximately 1,828 acres for the 13 DCAs (1,934 acres including buffers) of the Phase 9 Project areas, and 571 acres for the four DCAs of the Phase 10 Project areas (599 acres including buffers). This includes 86 acres (90 acres with buffer) in the Cottonwood Watch Area that is not included in the Project).

During the Phase I surveys, 41 archaeological sites were recorded (30 new and 11 previously recorded). One additional previously recorded site (CA-INY-7429) was not relocated. Thirty-six of the sites occur in the Phase 9 Project areas and five (all newly recorded) occur in the Phase 10 Project areas. In addition, 82 isolated prehistoric and historic era artifacts were recorded. Sites identified include prehistoric lithic scatters, temporary camps, rock alignments, and village sites, as well as historic telecommunications and water conveyance systems, historic refuse scatters (including scatters of industrial machinery), and multicomponent artifact scatters consisting of both historic debris and prehistoric lithic artifacts.

4.4.7.5 Phase II Cultural Resources Evaluations

Of the 42 archaeological sites identified and recorded during the Phase I surveys of the Phase 9/10 Project areas, 11 had been previously evaluated (**Table 4.4-5**). However, four of the sites were re-evaluated because the Phase I survey expanded site boundaries or identified additional features. Also, four of the newly discovered sites were not evaluated through excavation, but they were recommended as eligible based on a visual examination during the Phase 9 survey. As a result, 32 archaeological resources were formally evaluated through Phase II investigation, including 27 in the Phase 9 Project areas and five in the Phase 10 Project areas.

Phase II evaluation involved a combination of archaeological test excavation and historical research, as appropriate, and the goals were to reconstruct site histories and explore how they compare with our understanding of prehistoric and historic human behavior and adaptive strategies within the region. Only archaeological sites identified within areas that would be directly impacted by construction were evaluated for CRHR significance. Further, resources characterized as historic era isolates or prehistoric isolates were not evaluated further since they do not meet the definition of unique archaeological resources or historical resources under CEQA, and do not require avoidance or mitigation.

To evaluate the 32 resources, research designs and testing plans for Phase II cultural resources studies (one for the Phase 9 Project [GANDA 2013] and one for the Phase 10 Project [GANDA 2014e]) were prepared and provided to the CSLC for approval. Archaeological testing occurred between September 25 and October 23, 2013 for the 27 resources in the Phase 9 Project areas, and between October 1 and 4, 2014 for the two resources in the Phase 10 Project areas that required test excavation. The remaining three resources in the Phase 10 Project area were evaluated through historical research during the first two weeks of October 2014. Prior to the start of fieldwork, appropriate permits were obtained from the CSLC. The purpose of the Phase II study was to test and evaluate the significance of the sites and determine their eligibility for the CRHR.

In total, archaeologists excavated eight Test Excavation Units (TEUs), 20 Shovel Test Units (STUs), 118 Shovel Test Pits (STPs), and two Shovel Scrape Units (SSUs). Artifacts were collected from 22 Controlled Surface Collection Units (CSCUs) and eight Metal Detector Collection Units (MDCUs). Significant artifacts collected during the field work for the Phase 9/10 Project would be curated at the Archaeological Curation Unit the University of California, Riverside; remaining artifacts would be delivered to the CSLC and subsequently transmitted to the Lone Pine Paiute-Shoshone. It is noted that written approval of the CSLC is required for the permanent curation of archaeological and paleontological artifacts from lands under the jurisdiction of CSLC. Surface and subsurface data, coupled with geomorphic, sedimentary and stratigraphic analysis, indicate that most of the sites consist of primary cultural deposits emplaced on natural lacustrine beach strandline deposits subjected to climate-forced lake transgressions and regressions that have sealed and re-exposed various components and sequences of these deposits. Moreover, portions of the sites are in dynamic equilibrium in which the site surfaces are subject to migrating sand sheet deposits that seasonally wax and wane. Two of the sites, however, represent re-deposited cultural materials brought into the Project area with road gravels.

Table 4.4-5
Summary of Status of Phase 9/10 Project Archaeological Sites

	Sites previously recorded and evaluated			New sites identified during Phase I survey
	Sites not re-evaluated	**Sites not re-located**	**Sites re-evaluated**	**Sites evaluated**
Phase 9	CA-INY-6065 CA-INY-7414 CA-INY-7415/H CA-INY-7442 CA-INY-8918 CA-INY-8964	CA-INY-7429	CA-INY-5790 CA-INY-6360 CA-INY-8917 P-14-008141	CA-INY-9207 CA-INY-9208 CA-INY-9209 CA-INY-9210 CA-INY-9211 CA-INY-9212 CA-INY-9213 CA-INY-9214 CA-INY-9215 CA-INY-9216 CA-INY-9217 CA-INY-9218 CA-INY-9219 CA-INY-9220 CA-INY-9221 CA-INY-9222 CA-INY-9223

	Sites previously recorded and evaluated			New sites identified during Phase I survey
	Sites not re-evaluated	Sites not re-located	Sites re-evaluated	Sites evaluated
				CA-INY-9224 CA-INY-9225 CA-INY-9199 CA-INY-9337 CA-INY-9338 P-14-011955 CA-INY-9227 CA-INY-9229
Phase 10	N/A	N/A	N/A	CA-INY-9626 CA-INY-9627 CA-INY-9628 CA-INY-9629 CA-INY-9630

CRHR Eligibility. CEQA defines significant historical resources as "resources listed or eligible for listing in the California Register of Historical Resources (CRHR)" (Public Resources Code Section 5024.1).

A historical resource may be eligible for inclusion in the CRHR if it meets the following criteria:

1. It is associated with events or patterns of events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States [Criterion 1]; or
2. It is associated with the lives of persons important to local, California, or national history [Criterion 2]; or
3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values [Criterion 3]; or
4. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation [Criterion 4].

Evaluative testing, archival research, and review of existing cultural resources records revealed that 12 sites in the Phase 9/10 Project areas contain dense, intact, primary cultural deposits that have yielded information important to the prehistory of the local area and California (Criterion 4), and are therefore eligible for listing under the CRHR (**Table 4.4-6**). The criteria for eligibility for the CRHR are based upon NRHP criteria, and they are nearly identical. An evaluation of each of the Phase 9 resources recommended eligible for listing under the CRHR indicates that each is recommended as significant as a historic property under the NRHP. One of the DCAs contains eight of the significant resources and should be considered exceptionally sensitive both for archaeological values and for traditional cultural values.

Most, if not all of the prehistoric/ethnographic archaeological resources at Owens Lake that meet the CRHR/NRHP's criteria can be considered contributors to a multiple property historic district. However, the appropriate state/federal agency with jurisdiction would need to certify the recommendation. The associated property types include *village, long-term residence, short-term* *residence, ideological*, *ethnographic*, *historic,* and *unknown*. Each of the sites is recommended significant under Criterion 4/D for their potential to yield important information about the prehistory of Owens Lake. Some sites are also recommended eligible for the CRHR/NRHP under Criterion 1/A for their association with the Indian War era of 1861-1867 at Owens Lake, considered an important period in California history. The chronological context includes sites within one or more of the following periods: Paleo-Indian Complex (10,000 to 8,000 cal BC); Lake Mojave Period (9,000 to 6,000 BP) and Little Lake Period (6,000 to 3,150 BP); Newberry Period (3,150 to 1,350 BP); Haiwee Period (1,350 to 650 BP); Marana Period (650 BP to Contact ~1782); and Historic (Post-Contact~1782). Geographic parameters include related historic properties with direct geographical context within and surrounding Owens Lake flanked by the foothills of the Inyo-White and Sierra Nevada mountain ranges.

In addition, some of the archaeological sites represent components of ethnographic Cultural Landscapes, which include geographic areas containing physical features, wildlife, plants, and cultural resources viewed by local Native Americans as heritage resources worthy of preservation.

Similarly, one DCA with two CRHR-eligible sites in the Phase 9 Project area, which is adjacent to the Phase 7a Project area, is regarded as a Traditional Cultural Property by Lone Pine Paiute-Shoshone tribal members. Although only a portion of the DCA contains the CRHR-eligible archaeological sites, the viewshed of the entire DCA landform represented by a natural landscape is significant to the tribe because they view it as sacred because of its association with the Indian War of 1861-1867. In 2014, under special consideration, the GBUAPCD removed the Phase 7a DCA in this area from the Phase 7a Project and placed it in Phase 7b for further review, which was supported by the SHPO, CSLC, BLM, and NAHC.

Table 4.4-6
Summary of Significant Cultural Resources
Located within the Phase 9/10 Project Areas

Site	Site Type and Constituents	Period	Reason for CRHR Eligibility/ NRHP Eligibility
CA-INY-5790	Seasonal and/or long-term prehistoric habitation site exhibiting tool production and food processing activities, and 1860s ethnohistoric ammunition	Lake Mojave Period (9000 B.P. to 6000 B.P.) - Marana Period (650 B.P. to Contact)	The site is eligible under Criterion 4/D because it represents a primary deposit with sufficient density, diversity, and integrity of its archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.
CA-INY-6065	Sparse lithic scatter with a diversity of artifact types representing tool manufacture and habitation debris	Unknown	The site is eligible under Criterion 4/D because it represents a primary deposit with sufficient density, diversity, and integrity of its archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.
CA-INY-7414	Large, seasonal and/or long-term prehistoric habitation site indicating lithic tool production and/or maintenance, and groundstone stations	Little Lake (6000 B.P. to 3150 B.P.) - Marana (650 B.P. to Contact)	The site is eligible under Criterion 1/A for its association with the Indian War era of 1861-1867 at Owens Lake, considered an important period in California history. The site is also eligible under Criterion 4/D because it represents a primary deposit with sufficient density, diversity, and integrity of its archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.
CA-INY-7415/H	Large, seasonal and/or long-term prehistoric habitation site reflecting tool production and food processing activities	Lake Mojave Period (9000 B.P. to 6000 B.P.) - Marana Period (650 B.P. to Contact)	The site is eligible under Criterion 1/A for its association with the Indian War era of 1861-1867 at Owens Lake, considered an important period in California history. The site is also eligible under Criterion 4/D because it represents a primary deposit with sufficient density, diversity, and integrity of its archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.
CA-INY-7442	Large, seasonal and/or long-term occupation reflecting tool production and food processing activities	Little Lake Period (6000 B.P. to 3150 B.P.)- Marana (650 B.P. to Contact)	The site is eligible under Criterion 4/D because it represents a primary deposit with sufficient density, diversity, and integrity of its archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.

Site	Site Type and Constituents	Period	Reason for CRHR Eligibility/ NRHP Eligibility
CA-INY-8918	Large, moderately dense chipping station reflecting tool manufacture / maintenance and hunting activities	Newberry Period (3150 B.P. to 1350 B.P.) - Marana Period (650 B.P. to Contact).	The site is eligible under Criterion 4/D because it represents a primary deposit with sufficient density, diversity, and integrity of its archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.
CA-INY-8964	Large lithic chipping station exhibiting a moderately dense prehistoric tabular tool scatter reflecting plant harvesting and/or food processing and lithic tool reduction	Late Newberry Period (3150 B.P. to 1350 B.P.) through the Haiwee Period (1350 B.P. to 650 B.P.)	The site is eligible under Criterion 4/D because it contains two intact deposits with sufficient density, diversity, and integrity of their archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.
CA-INY-9211	Prehistoric lithic scatter of habitation debris with multiple intact and buried components	Little Lake Period (6000-3150 BP) to Newberry Period (3150-BP)	The site is eligible under Criterion 4/D because it represents a primary deposit with sufficient density, diversity, and integrity of its archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.
CA-INY-9223	Large, moderately dense prehistoric lithic scatter with two discrete components	Haiwee Period (1350-650 BP) through Marana Period (650 BP-Contact).	The site is eligible under Criterion 4/D because it represents a primary deposit with sufficient density, diversity, and integrity of its archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.
CA-INY-9224	Large multicomponent site with prehistoric habitation debris and historic era debris. Context indicates spatial integrity and artifacts reflect tool sharpening, ornamentation, and food production indicative of long term habitation	Newberry Period (3150-1350 BP) through Marana Period (650 BP-Contact).	The site is eligible under Criterion 4/D because it represents a primary deposit with sufficient density, diversity, and integrity of its archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.
CA-INY-9227	Large, moderately dense scatter of prehistoric lithic materials with historic debris. Context indicates undisturbed habitation site with a high potential for buried archaeological	Haiwee Period (ca 1350-650 BP) through the Marana Period (ca 650 BP to Contact).	Evaluated through visual examination only. The site is eligible under Criterion 4/D because it represents a primary deposit with sufficient density, diversity, and integrity of its archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.

Site	Site Type and Constituents	Period	Reason for CRHR Eligibility/ NRHP Eligibility
	deposits.		
CA-INY-9229	Large, moderately dense scatter of prehistoric lithic materials consistent with activities such as tool sharpening and food-processing. Context indicates undisturbed habitation site with a high potential for buried archaeological deposits	Unknown	Evaluated through visual examination only. The site is eligible under Criterion 4/D because it represents a primary deposit with sufficient density, diversity, and integrity of its archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.

4.4.7.6 Summary of Cultural Resources Review Process

Table 4.4-7 below summarizes the Phase 9/10 Project review process from the initial request for a letter of non-objection from the CSLC to submittal of the Final OLDMP – Phase 9/10 Project Phase II Archaeological Testing and Evaluation Reports to the SHPO for review and concurrence.

Table 4.4-7
Summary of Phase 9/10 Project Cultural Resources Review Process

Agency/Reviewer	Date	Description
CSLC	September 1, 2011	Submittal of LADWP's Application for Lease of State Lands to CSLC
CSLC	March 2012	LADWP submitted a request for a letter of non-objection for archaeological survey in the Phase 9/10 Project areas
CSLC	May 22, 2013	Letter of Non-objection provided for archaeological survey in the Phase 9/10 Project areas
BLM	July 3, 2013	Archaeological Fieldwork Authorization 13-38a received for Phase 10
NAHC	July 3, 2013	Sacred Lands search and list of 8 tribal contacts received
Tribal consultation	July 9, 2013	Consultation letters submitted to the 8 tribal contacts regarding Phase 9/10 Project areas survey and Phase II Testing and Evaluation
Public and Agencies	July 29, 2013	Public Scoping Meeting to receive comments on the scope and content of the Draft EIR for the Phase 9/10 Project
CSLC	July 31, 2013	Submittal of Archaeological Permit Application by Garcia and Associates with supplemental information, including a research design, testing plan, and proof of curation agreements for Phase II excavation in the Phase 9
CSLC	July 31, 2013	Submittal of Archaeological Permit Application by Garcia and Associates with supplemental information, including a research design, testing plan, and proof of curation agreements for Phase II excavation in the Phase 10
CSLC	July 31, 2013	Submittal of Phase 9 Interim Archaeological Survey Summary Report

Agency/Reviewer	Date	Description
Tribal consultation	August 2, 2013	Contacted by phone 8 separate Native American tribal representatives about Phase II excavations for the Phase 9/10 Project areas
CSLC	September 4, 2013	Submittal of the Phase 9 Archaeological Survey Report for review; to date, no comments received
BLM	September 9, 2013	Submittal of the Phase 9 Archaeological Survey Report for review
BLM	September 25, 2013	Comments received from BLM
Lone Pine Paiute-Shoshone Tribe	September 19, 2013	Submittal of Phase 9 Archaeological Survey summary report
Tribal consultation	September 19, 2013	Called and/or emailed all 8 tribes about a consultation meeting in Keeler scheduled for September 24, 2013
CSLC	November 12, 2013	Submittal of the Phase 9 Archaeological Phase II Testing and Evaluation Fieldwork Summary Report; to date, no comments received
BLM	December 20, 2013	Responded to comments, then submittal of Final Phase 9 Archaeological Survey Report
CSLC	July 10, 2014	Submittal of Archaeological Phase II Testing and Evaluation Permit Application or the Phase 10 Project areas
CSLC	July 14, 2014	Submittal of the Phase 10 Archaeological Survey Report for review; to date, no comments received
CSLC	July 15, 2014	Submittal of Draft Phase 9 Archaeological Phase II Testing and Evaluation Report for review; to date, no comments received
BLM	September 12, 2014	Submittal of Phase 10 Archaeological Survey Report for review
BLM	October 30, 2014	Submittal of Draft Phase 9 Archaeological Phase II Testing and Evaluation Report for review and submittal of the Final Phase 9 Archaeological Survey Report
CSLC	November 14, 2014	Submittal of Final Phase 9/10 Project Archaeological Survey Reports. Submittal of Draft Phase 9/10 Project Archaeological Phase II Testing and Evaluation Reports
BLM	November 14, 2014	Submittal of Draft Phase 10 Archaeological Phase II Testing and Evaluation Report for review
GBUAPCD	December 11, 2014	CRTF Meeting at LADWP office in Keeler including discussion of cultural resources issues for the Phase 9/10 Project
BLM	December 15, 2014	Received comments on both the Phase 9/10 Project Phase II testing and evaluation reports; revisions in progress
Tribal consultation	December 16, 2014	Information meeting regarding cultural resources concerns for the Phase 9/10 Project
SHPO	anticipated February 2015	Submittal of Final Archaeological Phase II Testing and Evaluation Reports for the Phase 9/10 Project areas
Lone Pine Paiute-Shoshone Tribe	anticipated February 2015	Submittal of Draft Archaeological Phase II Testing and Evaluation Reports for the Phase 9/10 Project areas

4.4.8 Significance Criteria

In accordance with Public Resources Code Sections 21083.2 and 21084.1 and Section 15064.5 and Appendix G of the State CEQA Guidelines, the proposed Phase 9/10 Project would have a significant impact on cultural resources if it would:

- Cause a substantial change in the significance of an historical resource as defined in Public Resources Code Sections 21083.2 and State CEQA Guidelines section 15064.5;
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to Public Resources Code Sections 21083.2 and State CEQA Guidelines section 15064.5
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

The CEQA Statute and Guidelines include procedures for identifying, analyzing, and disclosing potential adverse impacts to historical resources, which include all resources listed in or formally determined eligible for the NRHP, the CRHR, or local registers. CEQA further defines a "historical resource" as a resource that meets any of the following criteria:

- A resource listed in, or determined to be eligible for listing in, the NRHP or CRHR.
- A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code, unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- A resource identified as significant (e.g., rated 1-5) in a historical resource survey meeting the requirements of Public Resource Code Section 5024.1(g) (Department of Parks and Recreation Form 523), unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the determination is supported by substantial evidence in light of the whole record. Generally, a resource is considered "historically significant" if it meets the criteria for listing on the CRHR (CEQA Guidelines Section 15064.5).

Section 15064.5(b1) of the CEQA Guidelines defines a "substantial adverse change" as "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired."

4.4.9 Impacts

The following analysis considers impacts from installation of dust control on 3.61 square miles of the Phase 9/10 Project (Phase 9/10 Project). However, as noted previously, LADWP has identified an environmentally superior alternative (Avoidance Alternative, see **Section 5**) that would reduce impacts on significant cultural resources to less than significant levels, and reduce dust to the maximum extent feasible. Under the Avoidance Alternative, BACM would not be installed on approximately 0.43 square miles (210 acres of significant archaeological sites plus 68 acres of buffer, plus any acreage of significant archaeological sites on BLM or private land, and any significant sites newly identified during construction) of the 3.61 square miles of the DCAs identified for dust mitigation. BLM and the private lands have been surveyed for cultural resources; BLM review of the cultural resources reports is on-going. As described further in **Section 5**, the Avoidance Alternative includes participation by LADWP in a continuation of a CRTF. Site-by-site review of the avoided areas would be conducted by the stakeholders. Since the Avoidance Alternative would construct and operate DCMs on a smaller area than the Project and thereby cause less impacts than the Phase 9/10 Project, the following analysis of the cultural resources impacts of the Project presents a worst-case impact assessment.

Construction activities for the Phase 9/10 Project would include land leveling, berm creation, gravel application, seeding and planting, installation of surface and/or subsurface irrigation pipelines, excavation for pond creation, as well as heavy equipment travel. These actions have the potential to dislodge, relocate, crush, and otherwise cause substantial adverse changes to unique cultural resources recommended as eligible under the CRHR, and therefore significant under CEQA.

4.4.9.1 Historic Era Buildings or Structures

Known Historic Era Buildings or Structures Determined to be CRHR-eligible. No known significant historic era buildings and/or structures are present in the Phase 9/10 Project areas. No historic buildings and/or structures were recorded during the 2013 pedestrian surveys of the DCAs or access roads. Therefore, the proposed Project would have no impact on known historic era buildings or structures.

Presently Unidentified Historic Era Buildings or Structures Found During Construction. Although the potential for identifying new historic era buildings or structures is low, if previously unidentified historic era buildings and/or structures are exposed during construction, they would require evaluation to determine if they are CRHR-eligible historical resources.

Any construction-related ground disturbances to historic era buildings or structures determined to be CRHR-eligible resources would be a substantial adverse change, and therefore, a significant impact. Further, construction activities and heavy vehicle transportation could inadvertently damage intact portions of historic resources adjacent to the various Phase 9/10 Project areas. Therefore, the impact of the proposed Project on presently unidentified historic era buildings or structures is significant. Mitigation Measure CR-3 has been defined to reduce impacts on presently unidentified historic era resources to below a level of significance.

4.4.9.2 Archaeological Resources

Known Archaeological Sites Determined to be CRHR-eligible. The 12 CRHR-eligible resources identified in the Project areas (**Table 4.4-6**) are located on DCAs that would be subject to grading, land leveling, and heavy equipment travel. Construction-related ground disturbances are likely to fracture, crush, demolish, and/or relocate cultural materials present in these sites.

This would adversely alter archaeological resources determined to be CRHR-eligible, and adversely alter their immediate surroundings, such that the significance of the historical resource would be materially impaired. One of the DCAs in particular contains eight of the recommended CRHR-eligible resources and is considered exceptionally sensitive and exceptionally prone to adverse impacts. The impact of the Phase 9/10 Project on known CRHR-eligible sites is significant.

Presently Unidentified Archaeological Resources Found During Construction. High winds and shifting sands are responsible for both exposing and concealing archaeological resources at Owens Lake, so previously unidentified archaeological resources would likely be impacted during construction. Any destruction of previously unidentified and significant archaeological resources resulting from the Phase 9/10 Project construction would be a substantial adverse change. Mitigation Measure CR-3, which outlines a construction monitoring program, has been defined to reduce impacts on presently unidentified archaeological resources.

Impacts from Project construction on presently unidentified archaeological resources that are later evaluated as CRHR-eligible would be significant. If these archaeological sites are avoided along with the 12 known sites under the Avoidance Alternative, and they are included for review under a CRTF, the impact on these resources would be less than significant. If avoidance is not adopted, a data recovery program for the known significant archaeological sites would be expanded to include significant sites newly discovered during construction. The impact on these resources would then be significant with mitigation.

Potentially Present Archaeological Sites on Private Parcels. Survey of one private parcel was completed and no resources were found. As of January 2015, survey of the other private parcels has been completed and results are pending. Any destruction of significant archaeological resources resulting from Phase 9/10 Project construction on private parcels would be a substantial adverse change. Mitigation Measure CR-2 has been defined to require evaluation of cultural resources prior to Project construction on these private parcels.

Impacts from Project construction on presently unidentified archaeological resources that are later evaluated as CRHR-eligible would be significant. If these archaeological sites are avoided along with the 12 known sites under the Avoidance Alternative, and they are included for review under a CRTF, the impact on these resources would be less than significant. If avoidance is not adopted, a data recovery program for the known significant archaeological sites would be expanded to include significant sites discovered on private parcels. The impact on these resources would then be significant with mitigation.

Mitigation Measures CR-1, CR-2, and CR-3 would reduce impacts on known cultural resources sites in the Phase 9/10 Project areas, as well as resources that are presently unknown and might be identified during evaluative testing of private parcels or discovered during construction. However, mitigation to reduce impacts to CRHR-eligible resources located in the Phase 9/10 Project DCAs below a level of significance has not been identified. Therefore, the overall impact of the proposed Project on archaeological resources is significant after incorporation of feasible mitigation.

4.4.9.3 Paleontological Resources

During the Phase 9 field survey, two unknown mammal fossil bone fragments and one coprolite, which is possibly turtle, were recorded in DCA T32-1-L1 in the upper northeastern portion of the lake. The fossils appear to be *ex-situ*; eroded from nearby Pleistocene sediments located outside the Project area. Also during the Phase 9 Phase II investigation, a fossilized bird bone was identified in DCA C2-L1 and stromatolites were identified in DCA T21-L2. Further, six of the 13 DCAs (T32-1-L1, T37-1-L1, T21-L1, T21-L 2, T21-L3, and T21-L4) were previously determined to be paleontological sensitive areas. Due to the close proximity of the Phase 9/10 Project DCAs to the shoreline, each parcel may contain the following geologic units: Valley fill and Younger alluvial fan deposits of Holocene and Pleistocene age, as described by Paul Bateman (1964) and Donald Ross (1964) and Stone et al. (2009).

As such, all sediments within the Phase 9/10 Project areas have the potential to contain significant fossil materials. Near-surface sediments of paleontological significance within the DCAs are mainly Quaternary, but they may also include significant fossils of post Pliocene-Pleistocene age (Smith et al., 2009). Several lake-level cycles have been recorded where deposits are present throughout the Project area that reflect on-shore, near-shore, and potentially off-shore lacustrine environments during past highstands, and as eolian deposits during intervening lowstands. Given the sensitivity of the Project area, the Phase 9/10 Project has the potential to directly destroy unevaluated, but potentially unique, paleontological resources or sites. Therefore, the impact of the proposed Project on paleontological resources is significant. Since data recovery for paleontological resources can mitigate the impact to a less than significant level, Mitigation Measure CR-5 has been defined to reduce impacts on paleontological resources to below a level of significance.

4.4.9.4 Human Remains

Presently, no known recorded cemeteries or Native American burial sites have been identified in the Phase 9/10 Project areas, but they may be present in certain portions. In addition, human remains are known from other areas on Owens Lake (Halford and Carpenter, 2005). Tribal representatives have emphasized their concerns about the potential for burials in the Phase 9/10 Project areas (K. Bancroft, pers. comm., December 14, 2012). Therefore, the potential exists for the unanticipated discovery and disturbance of human remains during construction of the Phase 9/10 Project. Therefore, the impact of the proposed Project on human remains is significant. Mitigation Measure CR-4 has been defined to reduce impacts on human remains to below a level of significance. Avoidance of human remains shall be considered to the extent feasible.

4.4.10 Mitigation Measures

As noted in CEQA Guidelines Appendix K, "in-situ preservation of a site is the preferred manner of avoiding damage to archaeological resources. Preserving the site is more important than preserving the artifacts alone because the relationship of the artifacts to each other in the site provides valuable information that can be lost when the artifacts are removed. Further, preserving the site keeps it available for more sophisticated future research methods. Preservation may also avoid conflict with religious or cultural values of groups associated with the site." Avoidance of the cultural resources known for the Phase 9/10 Project areas by redefining Project boundaries is evaluated in **Section 5**, Alternatives. Site avoidance and in-situ preservation is supported by local tribes. Lone Pine Paiute-Shoshone tribal representatives have been very vocal with regard to the prior destruction of numerous archaeological sites at and near Owens Lake, which they feel diminishes the material aspects of their culture and heritage. They are particularly concerned about the cumulative effects resulting from the continuing destruction of their traditional hunting and gathering areas, and settlements. They are worried that history is being erased before their eyes and without the natural features and landmarks that mark events and locations important to them as a people, their stories will be lost. Tribal members view the entire Owens Lake as a Traditional Cultural Property and they advocate nomination of all CRHR-eligible sites at Owens Lake to be included as contributors to a historical district.

4.4.10.1 Mitigation Measures Reviewed and Considered

Site Capping. Site capping is a mitigation measure used to protect archaeological sites through burial below culturally-sterile sand or soil. This method can be used to protect small-to-medium-sized archaeological sites, which generally encompass between 1 and 50 square meters, prior to building on the sites. Prior to site capping, the significance of a site would be evaluated and the site boundaries adequately mapped. Site capping entails placing a layer of soil (with a color which contrasts with the native soil) between the archaeological site and fill material. In some cases, a layer of filter fabric or textile cloth is used to prevent soil mixing. Compacted clays or clay-gravels are not recommended as a protective matrix. Installation of the soil cap would be monitored by an archaeologist and permanent benchmarks would mark the boundaries of the buried site. Soil capping is a beneficial mitigation technique since it protects a site from looting and vandalism, construction and development projects, and from natural processes, such as wind, rain, and erosion (Thorne, 1991). For the Phase 9/10 Project, capping with a geotextile and either soil or Gravel Cover was considered.

The size of the known significant cultural resources sites in the Phase 9/10 Project areas ranges from 7.5 to 146 acres. Soil caps are installed using heavy construction equipment including dump trucks. Soils can also be placed with hand tools from a central stockpile, but delivery of the soils to the stockpile requires truck travel. Gravel Cover installation would be as described for the proposed Project (**Section 3**). A feasible method to install a soil (or gravel) cap over a large site without driving over the site repeatedly has not been identified. Truck trips through a cultural site would be anticipated to crush, destroy and dislodge cultural materials. Additionally, land leveling was required during installation of the geotextile fabric in the Phase 8 area to maintain the integrity of the geotextile fabric over large areas. It is therefore assumed that some leveling would be required for Phase 9/10 Project cultural resources areas, which would result in additional soil disruption and artifact destruction. Site capping with Gravel Cover would therefore preserve some of the resources contained at the site, but would destroy others.

An alternative form of Gravel Cover, flexible concrete mat, is included in the proposed Project for berm armoring. This method was also considered by the CRTF for use as a cap on the significant cultural sites. Under this method, individual concrete blocks are tied together with a high strength polypropylene geogrid or cable systems with 1.5-inch spacing between the blocks to give the mat flexibility and to allow contouring to the land. The bottom layer is permeable non-woven fabric. The concrete block mat can be fabricated on or near the site of use, rolled, and installed in widths up to 16 feet. Since the mat is flexible, little or no ground leveling or clearing would be required in un-vegetated playa areas. However, the surface would be prepared by clearing debris, protrusions, rocks, sticks roots or other hindrances. The vehicles required to prepare the site and install the mat would drive over the site repeatedly and would be anticipated to crush, destroy and dislodge cultural materials.

Overall, construction activity necessary to install a soil, Gravel Cover, or flexible concrete mat cap would cause a substantial adverse change in the significance of CRHR-eligible resources. Therefore, soil capping for protection of cultural resources in the Phase 9/10 Project areas is not considered further.

Sprinkler and/or Drip Irrigation. The CRTF reviewed potential irrigation methods for environmentally sensitive sites that would minimize ground disturbance. Sprinkler and drip irrigation with above ground pipelines were reviewed since these methods could be used with a minimum of land leveling, earthwork and use of heavy equipment. However, even with installation by hand and use of light vehicles such as all-terrain vehicles (ATVs), the placement of water supply pipelines would be anticipated to impact cultural materials. In the environment of Owens Lake, both sprinklers and drip irrigation systems would require continual maintenance. Workers repeatedly walking over the sites for initial installation, and then for on-going maintenance, would be anticipated to have fewer impacts to the cultural sites than the traditional subsurface irrigation, however, they may potentially crush, destroy and dislodge cultural materials.

Overall, since construction and maintenance activity necessary to install a surface sprinkler or drip irrigation system would still have the potential to cause a substantial adverse change in the significance of CRHR-eligible resources, it is not identified as a mitigation measure which would reduce potential impacts on cultural resources to less than significant levels. Presently, tribal representatives of the CRTF feel installation of piping and other equipment would be too invasive. However, it is anticipated that use of this method would be considered further as part of the continued CRTF review of environmentally sensitive areas under the Avoidance Alternative (see **Section 5**).

Phase III Data Recovery Investigations. CEQA Section 21083.2(d) limits excavation as mitigation to those parts of a unique archaeological resource that would be damaged or destroyed by a project. Since Phase II evaluation of the cultural resources in the Phase 9/10 Project areas did not adequately recover the scientifically consequential information from and about the resources, a Phase III data recovery investigation for the portions of the 12 CRHR-eligible sites that would be disturbed by Project construction was considered.

A Phase III data recovery program would include:

- Development of a comprehensive research design and testing plan to answer questions addressed during the Phase II survey on a broader regional level and to provide a procedural framework for the collection of data at sites determined to be significant.
- Mapping and systematic collection of surface artifacts, possibly complete data recovery depending on site size.

- Subsurface investigation through methods, such as controlled hand-excavation units, deep testing, or a combination of such methods. When applicable, other techniques, such as geophysical testing methods may also be used.
- Samples that might include charcoal, flotation, phytolith, pollen, and soil or other types, would be gathered, as applicable, and processed and analyzed by specialists.
- Analysis of recovered material through visual inspection, lithic micro-wear analysis, obsidian hydration, and other chemical analyses when applicable.
- Preparation of a report.
- Transmittal of report to involved parties and the Eastern Information Center at the University of California, Riverside.
- Curation of artifact collection (subject to approval by CSLC).

Mitigation of CRHR-eligible sites through Phase III data recovery excavations is not recommended for the Phase 9/10 Project areas because of the tremendous importance of these sites to both the archaeological and local Native American communities for their prehistoric and historic value as unique historical resources. Site conditions and previous construction projects at Owens Lake have cumulatively impacted other archaeological sites and thereby reduced the available cultural resources information on the lake as a whole. Owens Lake was the ancestral home of Paiute-Shoshone Native Americans currently living on the Lone Pine Reservation, and construction impacts to the 12 CRHR-eligible sites in the Phase 9/10 Project areas would eradicate some of the final physical vestiges of their heritage. In accordance with cultural resources laws and regulations, data recovery is generally a suitable form of mitigation; however, Lone Pine Paiute-Shoshone tribal representatives have a different perception. They feel that impacts to cultural properties cannot be mitigated and the only appropriate treatment is preservation in place without impacts to the physical and sacred integrity of the landscape. Further, during the Tribal Informational Meeting on December 16, 2014, attendees voiced their dismay that a segmented approach was used by the Project archaeologist to describe individual archaeological sites. In their opinion, in addition to the former human settlements, the entire lake, including natural features and landmarks, are important elements of their culture that cannot be divided and should be considered a Traditional Cultural Property because Owens Lake reflects aspects of their ancestry, history, traditional practices, and beliefs.

Concerns regarding the destructive nature of data recovery excavation were expressed by the SHPO in a response letter to the NOP. Therefore, a Phase III data recovery program is not considered feasible mitigation to reduce impacts to significant cultural resources located on approximately 278 acres (plus any additional acreage with significant cultural sites on BLM or private parcels, or any significant sites newly identified during construction) of the original Phase 9/10 Project areas to below a level of significance.

4.4.10.2 Mitigation Measures to be Incorporated as part of the Phase 9/10 Project

The following mitigation measures shall be implemented to protect cultural resources from disturbance:

CR-1. Avoidance of resources immediately adjacent to the Phase 9/10 Project Areas to the extent feasible – using a 100-foot buffer around archaeological sites

Construction activities and heavy vehicle travel could inadvertently damage intact portions of cultural resources adjacent to the various Phase 9/10 Project areas. A qualified archaeologist shall prepare maps depicting archaeological sites with a 100-foot buffer as environmentally sensitive areas. The location of the buffer will be noted in the field through survey and a marking system. To avoid identifying the locations of significant cultural resources to the public, no physical barriers will be erected. These maps shall be available for cultural resources monitors and construction crews to use for avoidance during all construction activities and vehicle transportation through the Phase 9/10 Project areas.

CR-2. Cultural Resources on Private Parcels

As of January 2015, all of the private parcels included in the Phase 9/10 Project have been surveyed for cultural resources. Due to the time delay resulting from securing permissions to survey the sites, evaluations of the significance of observed cultural resources are pending. Prior to construction on private lands, a qualified archaeologist shall conduct evaluative testing (Phase II investigation), if recommended by the Project archaeologist.

Under the Avoidance Alternative to the proposed Project, the treatment plan for significant archaeological resources identified on private parcels shall describe avoidance/preservation in place. If the Avoidance Alternative is not adopted, and the proposed Project for the entire 3.61 square miles of dust control is adopted by LADWP, and if avoidance of significant archaeological resources on private parcels is deemed infeasible, a data recovery plan shall be implemented for the resources and the impact on archaeological resources would be significant with mitigation.

CR-3. Cultural Resources Construction Monitoring Program

Impacts to surface and subsurface cultural resources not previously identified shall be mitigated through preparation of a cultural resources monitoring program and its implementation during construction or other ground-disturbing activities. The Cultural Resources Construction Monitoring Program shall include:

- The retention of a qualified archaeologist to implement a monitoring and recovery program. The “qualified archaeologist” shall meet the U. S. Secretary of the Interior’s Historic Preservation Professional Qualification Standards for Archaeology. The qualifications of the archaeologist shall be submitted to the responsible agency (CSLC) for approval.

- The Lone Pine Paiute-Shoshone tribe shall be contacted prior to the start of Project construction. Qualified Lone Pine Paiute-Shoshone cultural resources monitors shall be afforded an opportunity to be present during earthwork and excavation activities associated with construction of the Phase 9/10 Project.

- The qualified archaeologist shall be required to secure a written agreement with a recognized museum repository, such as the University of California, Riverside, regarding the final disposition and permanent storage and maintenance of any unique archaeological resources or historical resources recovered as a result of the archaeological monitoring, as well as corresponding geographic site data that might be recovered as a result of the specified monitoring program. The written agreement shall specify the level of treatment (i.e., preparation, identification, curation, cataloging, etc.) required before the collection would be accepted for storage.

- The qualified archaeologist shall provide cultural resources awareness training prior to the start of construction for all construction personnel. Construction personnel shall be briefed on procedures to be followed in the event that a unique archaeological resource, historical era building or structure, or human remains are encountered during construction. A training log shall be kept on-site throughout the construction period. The qualified archaeologist will also prepare and distribute informative Fact Sheets regarding archaeological and Native American sensitivities that provide samples of possible finds and procedures to be followed in the event of a discovery. The Fact Sheet will also have relevant contact information for the archaeologist, including a telephone number where they can be reached by the construction contractor, as necessary.

- The qualified archaeologist shall monitor ground-disturbing activities, including trenching, grading, and other earth-moving activities in each of the Phase 9/10 Project DCAs, including C2-L1, Duck Pond-L1 (including an access road), T10-1-L1 (including an access road), T17-2-L1, T21-L1, T21-L2, T32-1-L1, T35-2-L1, T37-1-L1, T37-2-L1, T37-2-L2, T37-2-L3, T37-2-L4, Duck Pond-L2, T10-3-L1, T21-L3, and T21-L4. In T18S DCA, which was previously disturbed by shallow flooding, the qualified archaeologist will determine monitoring locations and frequency. Monitors will move among construction locations as directed by LADWP in consultation with the cultural resources manager and the construction contractor. Backfilling and removal of previously constructed berms composed of previously disturbed soils generally will not require monitoring. In those areas, it will be up to the discretion of the archaeological monitor to determine which areas will require monitoring and how frequently. The archaeologist will consult with LADWP and LADWP will halt work briefly in a single location as necessary to examine soils and possible archaeological features. The archaeologist shall coordinate with the construction manager to divert work around the discovery of any potentially significant archaeological resource, if any are encountered. In the event of a cultural resources discovery, avoidance measures such as staking a 100-foot buffer (or in case of human remains, steel plating) will be used to prohibit or otherwise restrict access to sensitive areas until a qualified archaeologist can assess the significance of the find according to CRHR criteria. If the resource is determined to be significant, the qualified archaeologist shall prepare and implement a treatment plan in consultation with LADWP. Construction will not recommence in the area until authorized to do so by LADWP.

  If significant historic era buildings or structures are newly identified during construction activities, then Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) documentation would be prepared to reduce impacts below a level of significance.

Under the Avoidance Alternative to the proposed Project, the treatment plan for newly discovered significant archaeological resources will describe avoidance/preservation in place. If the Avoidance Alternative is not adopted, and the proposed Project for the entire 3.61 square miles of dust control is adopted by LADWP, and if avoidance of newly discovered significant archaeological resources is deemed infeasible, a data recovery plan shall be implemented for the resources and the impact on archaeological resources would be significant with mitigation.

- If construction personnel discover a cultural resource in the absence of an archaeological monitor, construction shall be halted within 100 feet of the find, and a qualified archaeologist shall be contacted to perform Phase II excavations to evaluate the resource and recommend the appropriate treatment. If the resource is determined to be significant, the qualified archaeologist shall prepare and implement a treatment plan in consultation with LADWP. Construction will not recommence in the area until authorized by LADWP.

- The qualified archaeologist shall ensure that all construction personnel are informed of the requirements to notify the Inyo County coroner within 24 hours of the discovery of human remains on state lands (as required by Public Resources Code 5097).

- The coordinates of artifacts, features, and sites will be obtained by the archaeologist, and artifacts from ineligible sites and isolated artifacts discovered during construction will be collected, cataloged, and placed in a dry and secure temporary storage area until the end of the Project, when they will be given to the CSLC for dissemination to the Lone Pine Paiute-Shoshone Reservation. Any artifacts that may be collected from CRHR-eligible sites will be curated at the repository at University of California, Riverside.

- The qualified archaeologist shall maintain daily monitoring logs during ground-disturbing activities that shall be submitted weekly to LADWP. A complete set of the daily monitoring logs shall be kept on site throughout the ground-disturbing activities and be available for inspection. The daily monitoring log shall indicate the area monitored, the date, assigned personnel including tribal representatives, and the results of monitoring, including the recovery of archaeological resources, sketches of recovered materials, photographic record, and associated geographic site data. In addition, progress reports that describe new discoveries and issues in the field shall be submitted weekly to LADWP. Within 120 days of the completion of the archaeological monitoring, a monitoring report shall be submitted to LADWP, CSLC, and to the EIC at the University of California, Riverside. The report, when submitted to LADWP, shall signify the completion of the program to mitigate impacts to unique archaeological resources or historical resources.

CR-4. Unanticipated Discovery of Human Remains

Upon the discovery of human remains, there shall be no further excavation or disturbance of the site or any areas that are reasonably suspected to overlie adjacent human remains until the following conditions are met:

- The Inyo County Coroner has been informed and has determined that no investigation of the cause of death is required.
- If the remains are of Native American origin, the Native American Heritage Commission (NAHC) will be contacted. In consultation with the Most Likely Descendant, the NAHC and qualified archaeologist shall determine the treatment and disposition of the human remains and any associated grave goods, with appropriate dignity, as provided in Public Resources Code Section 5097.98. Avoidance of human remains shall be considered to the extent feasible.
- If the remains are not of Native American origin, the Inyo County Coroner will make a determination as to the disposition of the remains.

Ground-disturbing activities may continue once compliance with all relevant sections of the California Health and Safety Code have been addressed and authorization to proceed issued by the Inyo County Coroner and LADWP.

CR-5. Paleontological Resources Construction Monitoring Program

Impacts to surface and subsurface paleontological resources not previously identified shall be mitigated through preparation of a written paleontological monitoring plan to be implemented during construction ground-disturbances, including trenching, grading, and other earth-moving activities. Backfilling and removal of previously constructed berms composed of previously disturbed soils would not require monitoring. LADWP shall require that construction monitoring, salvage, and recovery of unique paleontological resources is consistent with standards for such recovery established by the Society of Vertebrate Paleontology (SVP). The Paleontological Resources Construction Monitoring Program shall include:

- LADWP shall retain a qualified paleontologist to implement the mitigation plan and maintain professional standards of work. A "qualified paleontologist" is defined as a practicing scientist who meets the qualifications established by the SVP. The qualifications of the paleontologist shall be submitted to the responsible agency (CSLC) for approval.

- The qualified paleontologist shall be required to secure a written agreement with a recognized repository, regarding the final disposition, permanent storage, and maintenance of any significant fossil remains and associated specimen data and corresponding geologic and geographic site data that might be recovered as a result of the specified monitoring program. The written agreement shall specify the level of treatment (i.e., preparation, identification, curation, cataloging, etc.) required before the collection would be accepted for storage. In addition, a technical report shall be completed. The final disposition of paleontological resources recovered on State lands must be approved by the CSLC.

- The paleontological monitor may be a qualified paleontologist or a cross-trained archaeologist or geologist working under the supervision of a qualified principal paleontologist. The function of the monitor is to identify potential resources and recover them with appropriate scientific data.

- LADWP shall require the qualified paleontologist to provide a paleontological resources briefing prior to the start of construction for all construction personnel. Construction personnel shall be briefed on procedures to be followed in the event that a unique paleontological resource is encountered during construction. A training log shall be kept on-site throughout the construction period. The qualified paleontologist will also prepare and distribute informative Fact Sheets regarding paleontological sensitivities that provide samples of possible finds and procedures to be followed in the event of a discovery. The Fact Sheet will also have relevant contact information for the paleontologist, including a telephone number where they can be reached by the construction contractor, as necessary.

- The paleontological monitor shall monitor ground-disturbing activities, including trenching, grading, and other earth-moving activities, in each of the Phase 9/10 Project areas, including C2-L1, Duck Pond-L1 (including an access road), T10-1-L1 (including an access road), T17-2-L1, T21-L1, T21-L2, T32-1-L1, T35-2-L1, T37-1-L1, T37-2-L1, T37-2-L2, T37-2-L3, T37-2-L4, Duck Pond-L 2, T10-3-L1, T21-L3, T21-L4, and T18S DCAs. Monitors will move among construction locations as directed by LADWP in consultation with the Project cultural resources manager. Backfilling and removal of previously constructed berms composed of previously disturbed soils would not require monitoring. The monitor shall coordinate with the construction manager to divert work around potentially significant paleontological resources, if any are encountered.

- Discovery of fossil-producing localities shall require that stratigraphic columns be measured and that geologic samples be taken for analysis.

- If fossil localities are discovered, the paleontologist shall collect controlled samples for processing. All fossils recovered shall be prepared, identified, and cataloged before submission to the accredited repository designated by the lead agency.

- In conjunction with the subsurface work, the paleontological monitor shall inspect exposed sediments, including microscopic examination of matrix, to determine if fossils are present. In addition, the qualified paleontologist shall be available on call to respond to unanticipated discoveries.

- If construction personnel discover a paleontological resource in the absence of a paleontological monitor, construction shall be halted as directed by LADWP and in accordance with SVP guidelines, a qualified paleontologist shall be contacted to evaluate the resource and make recommendations regarding its treatment. If the fossil material is determined to be significant, the qualified paleontologist shall prepare and implement a treatment plan in consultation with LADWP. Construction activity shall not resume until authorization has been provided by LADWP.

- The qualified paleontologist or paleontological monitor shall maintain daily monitoring logs during ground-disturbing activities that shall be submitted weekly to LADWP. A complete set of the daily monitoring logs shall be kept on site throughout the ground-disturbing activities and be available for inspection. The daily monitoring log shall indicate the area monitored, the date, assigned personnel including the tribal representative, and the results of monitoring, including the recovery of paleontological resources, sketches of recovered materials, photographic record, and associated geographic site data. In addition, progress reports that describe new discoveries and issues in the field shall be submitted weekly to LADWP. Within 120 days of the completion of the paleontological monitoring, a final mitigation report shall be submitted to LADWP, and CSLC with an appended, itemized inventory of the specimens observed and collected. The report should include a list of specimens recovered, documentation of each locality, interpretation of fossils recovered and any technical or specialist's reports as appendices. The report and inventory, when submitted to LADWP, shall signify the completion of the program to mitigate impacts to paleontological resources.

4.4.11 Impact Significance After Implementation of Mitigation Measures

Construction of the Phase 9/10 Project would significantly impact CRHR-eligible archaeological resources located in the Project areas. As described above, implementation of a Phase III data recovery program for the significant archaeological sites located in the Phase 9/10 Project DCAs is not identified as feasible mitigation for the Project to reduce impacts on archaeological resources to below a level of significance. Implementation of mitigation measures CR-1 to CR-5 would ensure adequate evaluation of cultural materials found during construction, and reduce impacts to below a level of significance for historic era structures or buildings, human remains, and paleontological resources. However, the portions of the 12 CRHR-eligible sites, and any significant archaeological sites on BLM or private property or any significant archaeological sites discovered during construction, that overlap with Project construction areas would still be significantly adversely impacted. Therefore, the impact on archaeological resources after incorporation of feasible mitigation is significant.

As a result of the cultural resource analysis, LADWP has identified an environmentally superior alternative (Avoidance Alternative, **Section 5**) that excludes approximately 278 acres (plus the acreage of significant sites on BLM and private lands, and any significant archaeological sites identified during construction) of the original 3.61 square mile Phase 9/10 Project in order to reduce impacts to significant archaeological resources to a less than significant level.

However, if the Phase 9/10 Project is adopted by LADWP as proposed for all 3.61 square miles of new DCAs, then a Phase III data recovery program (as described above) would be implemented as a mitigation measure for known significant archaeological sites and the impact of the proposed Project on archaeological resources would be significant with incorporation of mitigation.

Section 4.5
Land Use and Planning

4.5 LAND USE AND PLANNING

Based on the information presented in the Initial Study for the Phase 9/10 Project (**Appendix A**), LADWP determined that the consistency of the Project with CSLC land use policies, including the Public Trust Doctrine, should be reviewed. A comment letter received from the CSLC (**Appendix B**) re-stated CSLC's position that placement of Gravel Cover does not protect or promote the Public Trust uses and values of Owens Lake. Therefore, land use and planning (in regard to conflicts with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project) has been carried forward for analysis in this EIR. As described in the Initial Study, the Project would not physically divide an established community or conflict with an applicable habitat conservation plan or natural community conservation plan. Therefore, these topics are not discussed further in this EIR.

Land ownership for the Phase 9/10 Project areas is shown on **Figures 4.5-1** through **4.5-3**. Ownership is based on land use data obtained from Inyo County. Data are for planning only and are not confirmed by survey or for engineering purposes.

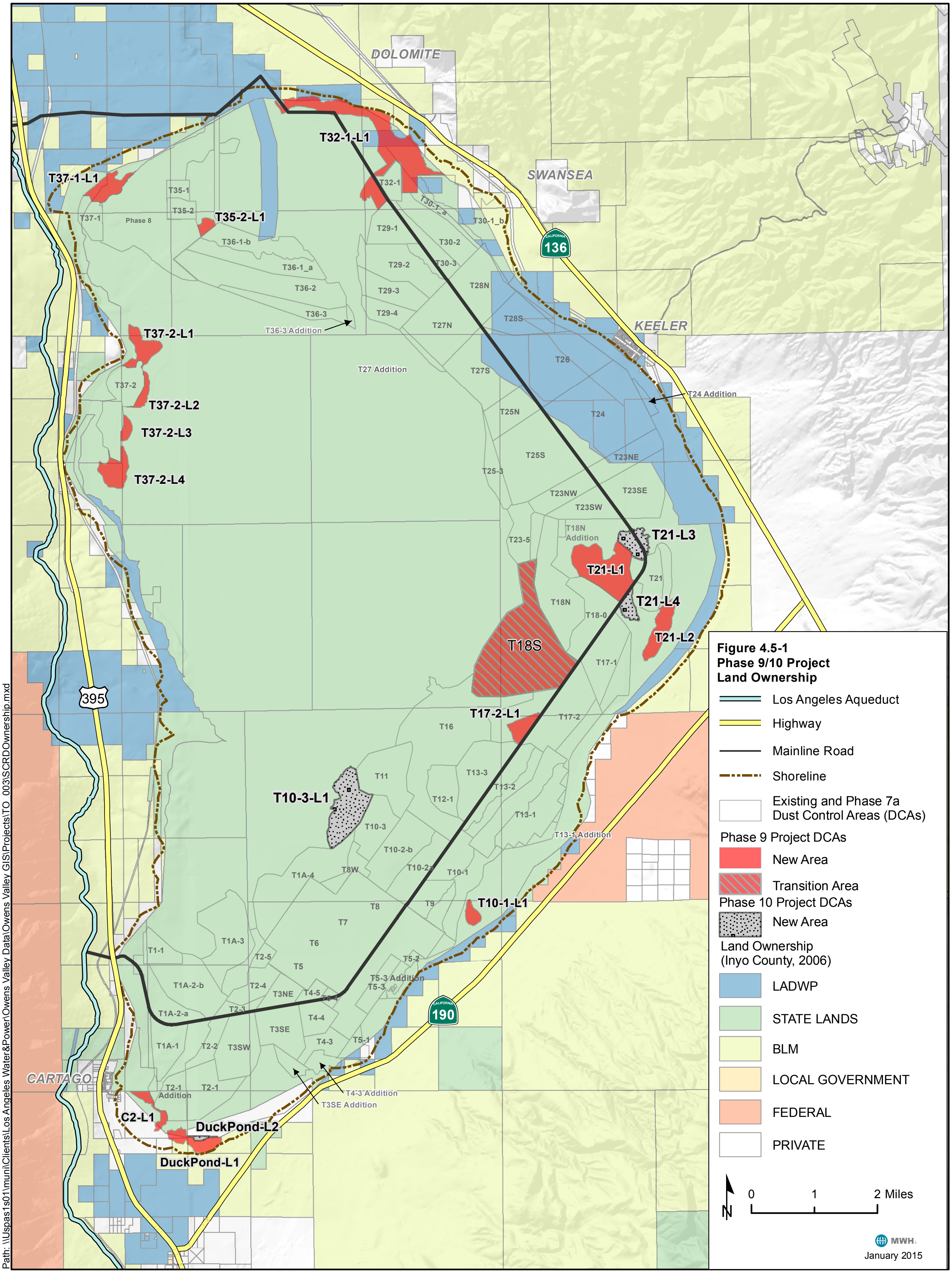
4.5.1 Regulatory Framework

4.5.1.1 California State Lands Commission

The majority of the Phase 9/10 Project areas are located on land owned and operated in trust for the people of the State of California by the CSLC. Public Resources Code section 6301 and 6216 authorize CSLC authority and responsibility as trustee of the State's Public Trust lands. A lease from CSLC would be required in order to install DCMs on the Phase 9/10 Project properties. In granting the lease, CSLC would consider the Public Trust Doctrine. Public Trust Doctrine embraces the right of the public to use the navigable waters of the State for bathing, swimming, boating, and general water-related recreational purposes (CSLC, 2007). Additionally, the Public Trust Doctrine is sufficiently flexible to encompass changing public needs, such as to include the preservation of the lands in their natural state for scientific study, as open space and as wildlife habitat (CSLC, 2007).

4.5.1.2 Inyo County General Plan

The Land Use Element of the Inyo County General Plan (2001) includes Policy LU-5.6 State and Federal Lands Designation (SFL). This designation applies to those State- and Federally-owned parks, forests, recreation, and/or management areas that have adopted management plans. The Conservation/Open Space Element of the Inyo County General Plan (2001) includes Policy REC-1.2 Recreational Opportunities on Federal, State, and LADWP Lands: Encourage the continued management of existing recreational areas and open space, and appropriate expansion of new recreational opportunities on federal, state, and LADWP lands.



Path: \\Uspas1s01\muni\Clients\Los Angeles Water&Power\Owens Valley Data\Owens Valley GIS\Projects\TO_003\SCRDOwnership.mxd

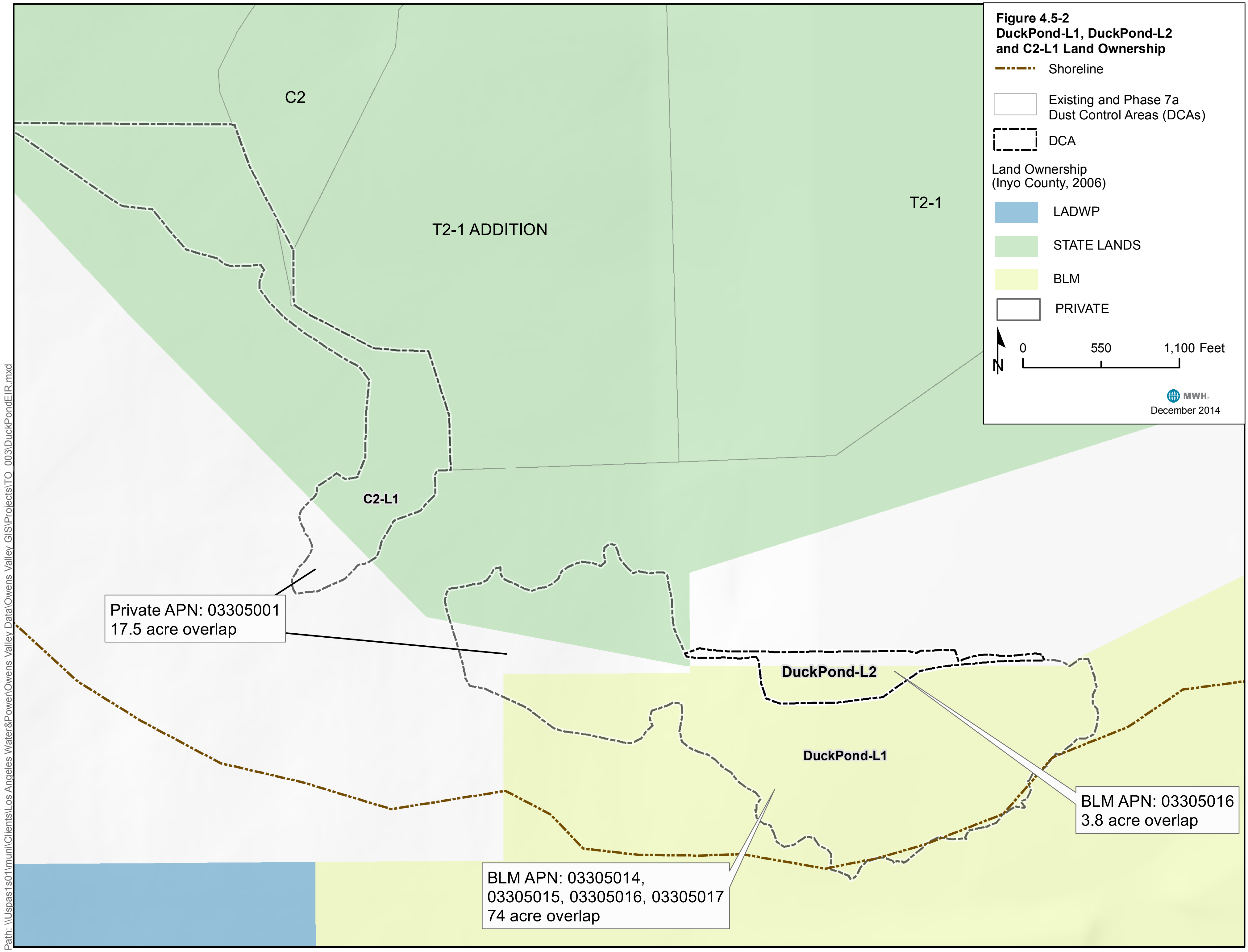


Figure 4.5-2
DuckPond-L1, DuckPond-L2
and C2-L1 Land Ownership
Shoreline
Existing and Phase 7a
Dust Control Areas (DCAs)
DCA
Land Ownership
(Inyo County, 2006)
LADWP
STATE LANDS
BLM
PRIVATE
N
0
550
1,100 Feet
MWH
December 2014
C2
T2-1 ADDITION
T2-1
C2-L1
Private APN: 03305001
17.5 acre overlap
DuckPond-L2
DuckPond-L1
BLM APN: 03305016
3.8 acre overlap
BLM APN: 03305014,
03305015, 03305016, 03305017
74 acre overlap
Path: \\Uspas1s01\muni\Clients\Los Angeles Water&Power\Owens Valley Owens Valley Data\Owens Valley GIS\Projects\TO_003\DuckPondEIR.mxd

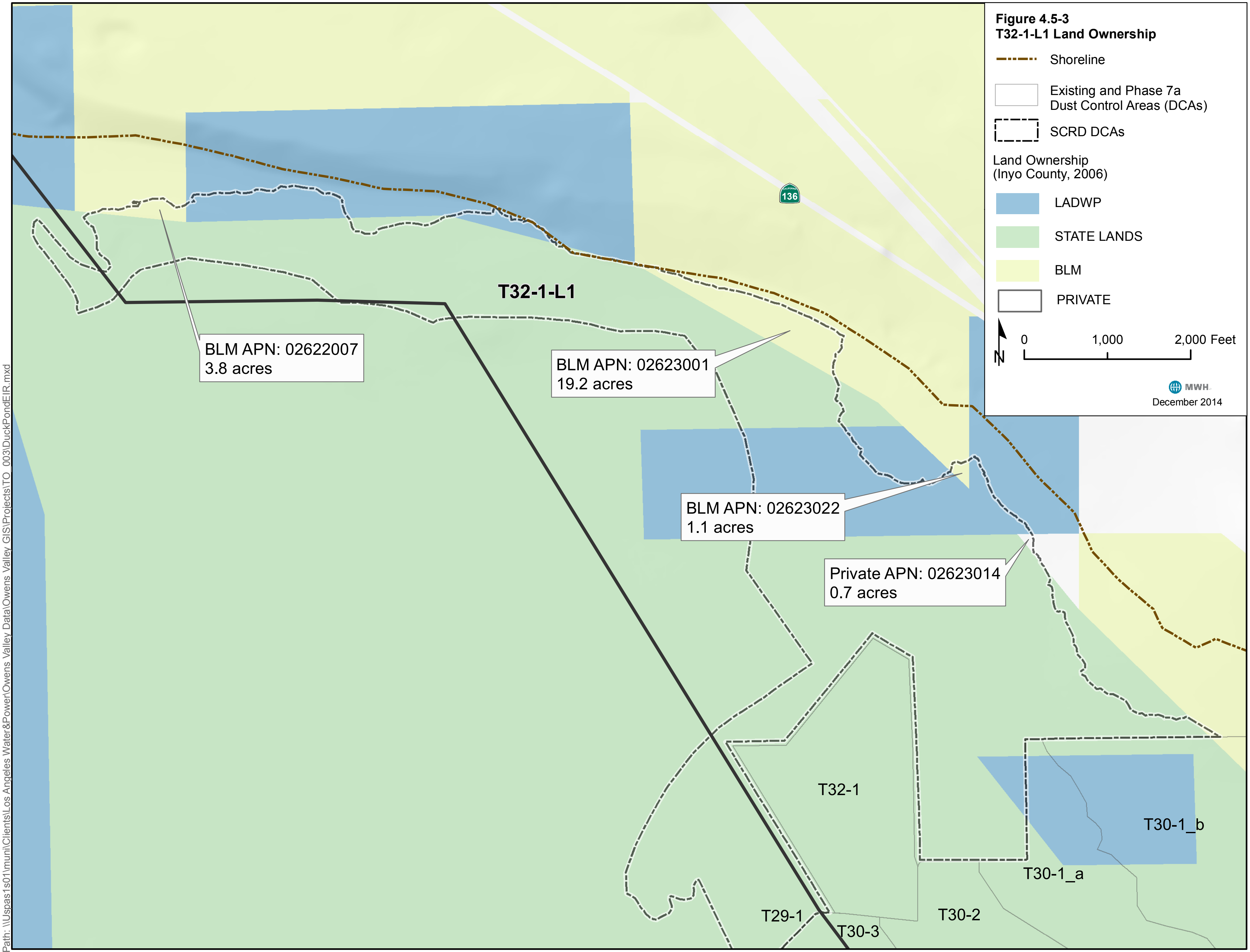


Figure 4.5-3
T32-1-L1 Land Ownership

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4.5.1.3 U.S. Bureau of Land Management

Approximately 100 acres of the Project area in three DCAs (T32-1-L1, Duck Pond L-1 and Duck Pond L-2) are lands owned and managed by the BLM. These Project areas overlap with the 15,790-acre Bishop Resource Management Plan (BRMP), approved by BLM on March 25, 1993 which describes general policies for land management consistent with the Federal Land Policy and Management Act (FLPMA). In 1976 Congress passed the FLPMA which specifies:

- that goals and objectives be established as guidelines for public land use planning, and that management be on the basis of multiple use and sustained yield unless otherwise specified by law;
- and that the public lands be managed in a manner:
    - that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources, and archaeological values
    - that where appropriate, will preserve and protect certain lands in their natural condition
    - that will provide food and habitat for fish and wildlife and domestic animals
    - and that will provide for outdoor recreation and human occupancy and use

Implementation of the Project on the federal portions of T32-1- L1 and Duck Pond-L1 and –L2 DCAs would require a Right-of-Way (ROW) from BLM for construction, operation and maintenance of dust control measures.

4.5.1.4 Private Lands

A total of three parcels in three DCAs (T32-1-L1, Duck Pond L-1, and C2-L1) contain lands owned privately. The approximate acreage of the private parcels is summarized in **Table 4.5-1**. None of the private parcels contain any buildings or infrastructure.

Table 4.5-1
Phase 9/10 Project Summary of Private Parcels within the Project Area

Owner	DCA	Assessor Parcel Number	Approximate Size of Private Parcel (acres)
John R. Connolly	T32-1-L1	02623014	0.7 acres
CG Roxane LLC	C2-L1 & DuckPond-L1	03305001 and 0330504	17.5 acres

Prior to installation of dust control on private parcels, LADWP would:

- Obtain approval from the land owners for the installation of dust control,
- Purchase the private properties, or
- Pursue condemnation of the parcels through the process of eminent domain. If successful, the ownership of the parcels would then transfer to LADWP.

The process of eminent domain would be used as a last resort to acquire necessary land rights for the construction of dust control for public benefit. The landowners would be compensated for their property as part of this process. However, based on previous experience for earlier phases of the OLDMP, it is anticipated that negotiations with private owners would result in permission to install dust control or an offer of sale of the properties to LADWP.

4.5.2 Environmental Setting

The Project sites are located on primarily on CSLC-administered lands within Inyo County (**Figure 4.5-1**). The Inyo County General Plan designates the land use of the Project area as SFL (State and Federal Lands). The zoning overlay is OS-40 (Open Space, 40-acre lot minimum) (Inyo County, 2011). As a condition of its lease with CSLC, LADWP allows public access to Owens Lake and members of the public are able to birdwatch, hike, hunt, and utilize the roads constructed by LADWP to access areas of the lake bed that would be inaccessible without them (LADWP, 2010c).

The approximately 100 acres of federal land that overlap with the Project boundaries are managed by BLM as per the policies contained in the BRMP. The federal parcels, private parcels and the new DCAs on lands administered by CSLC do not contain habitable structures, other buildings, or infrastructure. Vegetation conditions on the Project sites are described in **Section 4.3**; the areas are predominantly barren playa and Aeolian with limited areas of alkali meadow. The Transition Area for the proposed Project, T18S, is an existing Shallow Flood DCA. T18S DCA is bermed and has piping installed for the distribution and drainage of water for dust control.

4.5.3 Significance Criteria

The proposed Project would have a significant impact on land use and planning if it (State CEQA Guidelines, Appendix G):

- Conflicted with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

4.5.4 Impacts

The following analysis considers impacts from installation of dust control on 3.61 square miles of Owens Lake and transition of 1.82 square miles of existing Shallow Flooding to a mix of Shallow Flood and Gravel Cover to conserve water. However, LADWP has identified an environmentally superior alternative (Avoidance Alternative, see **Section 5**) which would reduce impacts on significant cultural resources to less than significant levels, and reduce dust to the maximum extent feasible. Under the Avoidance Alternative, BACM would not be installed on approximately 0.43 square miles (210 acres of environmentally sensitive sites plus 68 acres of buffer, plus any acreage of environmentally sensitive sites on BLM or private land, or discovered during construction) of the 3.61 square miles of DCAs identified for dust control. Since the Avoidance Alternative would construct and operate DCMs on a smaller area than the Project and thereby cause less impacts than the Phase 9/10 Project, the following analysis of the land use impacts of the Project presents a worst-case impact assessment.

4.5.4.1 CSLC Policies

In their comment letter on the NOP (**Appendix B**), CSLC notes that the Project appears to involve State sovereign land under their jurisdiction. The State holds the beds of navigable lakes for the benefit of all people of the State for statewide Public Trust purposes, which include waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. CSLC further states in its NOP letter that placement of Gravel Cover does not protect or promote the Public Trust uses and values of Owens Lake. Notwithstanding this finding, CSLC has indicated its willingness to allow some areas of Gravel Cover to be implemented by the issuance of amendments to Lease No. PRC 8079.9 for the Phase 8 Project (2.03 square miles of Gravel Cover) and the Phase 7a Project (1.5 square miles of Gravel Cover), as well as approval of the proposed gravel color (C. Fossum, pers. comm., 2011). LADWP understands that another lease amendment would be required for the Phase 9/10 Projects, and would require additional CSLC review, including review of the proposed Gravel Cover elements.

While LADWP acknowledges that CSLC is the agency that will determine consistency with the Public Trust Doctrine, the following summarizes LADWP's analysis of the Project's impacts on land use and planning related to CSLC's policies. The reduction in air pollutant emissions from implementation of Gravel Cover dust controls would result in an improvement to public health and safety, a public trust benefit. The 20-year lease approved by CSLC for the OLDMP is granted free of rent or other payment because the consideration is in "the public health and safety," with the State reserving the right at any time to set a monetary rent if the Commission finds such action to be in the State's best interest. Gravel Cover installation is intended to improve the air quality in the Owens Valley; a use that should be considered consistent with the public trust doctrine as an activity which would improve the environment at Owens Lake.

Other components of the proposed Project that would enhance Public Trust uses and values are water conservation, recreational amenities, and habitat enhancements. The CSLC, charged with managing and protecting lands subject to the public trust, has authority to balance public trust values. California courts have recognized that each legal scheme cannot exist to the logical exclusion of the other. Feasibility also plays a role in consideration of what public trust values should be protected. To determine what may be feasible, competing interests and demands on water should be balanced, including municipal, industrial, and agricultural uses of water. Additionally, other legal schemes, including rights to water and the state's Constitutional prohibition against the waste of water, should be balanced against and coexist with the obligation to protect other public trust values.

The proposed Project is predicted to maintain or enhance habitat value for all of the six bird guilds reviewed (see **Section 4.3.5**). Placement of Gravel Cover adjacent to water in T18S DCA would provide potential nesting and loafing habitat for shorebirds and loafing habitat for waterfowl, and habitat islands would provide roosting and nesting sites with increased protection from predators (see **Section 4.3.5**). The proposed Project would increase the overall vegetated area on the lake, as well as increase plant species diversity and habitat values of Duck Pond-L1 and C2-L1 DCAs. Further, Gravel Cover BACM under the proposed Project would reduce water use for dust control and therefore allow the continued transport of water to population centers. Such water conservation is consistent with the state of emergency declared by Governor Brown on January 17, 2014 and April 25, 2014 based on the record dry conditions throughout the State.

Once construction activities are complete, public access via the additional berm roads would be enhanced under the proposed Project. The Project also includes a visitor overlook area in T18S DCA which would increase public access for recreation. The proposed Project would accomplish air pollution mitigation, protect and enhance biological resources, maintain public access, and protect the state's scare water resources. Therefore, based on LADWP's analysis, the impact of the Phase 9/10 Project on land use and planning related to CSLC's policies is less than significant.

4.5.4.2 Bureau of Land Management Policies

Construction and operation of the Project on BLM-owned property would require issuance of a ROW agreement from BLM; LADWP filed an application for this ROW in June, 2014. BLM has indicated (**Appendix B**) that the proposed action is subject to land use conformance and other requirements under the FLPMA, to environmental review requirements under the NEPA, and to federal regulations and requirements related to the protection of cultural resources pursuant to Section 106 of the NHPA. BLM has indicated that the appropriate federal lead under NEPA for the Project may be the USEPA. It is anticipated by BLM that they and EPA would both be involved in government to government consultation with the tribes concerning the Project.

The portions of T32-1-L1 and Duck Pond L-2 DCAs that are federally owned are proposed for Gravel Cover BACM. Duck Pond L-1 DCA, more than half of which is under federal ownership, is proposed for Managed Vegetation. As of January 2015, BLM has not made a determination as to the ROW request from LADWP for construction and operation of the proposed Project. Therefore, BLM's analysis of the Project's consistency with federal policies is not known.

The BRMP Area-Wide Decisions call for BLM to, "Protect and enhance unique or important vegetation communities and wildlife habitats…" As described in **Section 4.3**, the proposed Project would increase the overall vegetated area on the lake, as well as increase plant species diversity and habitat values of Duck Pond-L1 and C2-L1. With incorporation of mitigation measures, significant impacts to unique or important vegetation communities and wildlife habitats are not anticipated. Therefore, based on LADWP analysis, the Project would be consistent with BRMP biological resources policies. BLM's analysis of Project impacts on biological resources is pending.

BLM policies also call for management of lands for outdoor recreation and human occupancy. The increased vegetated area in Duck Pond L-1 and C2-L1 DCAs could potentially increase recreation opportunities on the lake related to bird watching. Public access would be increased under the Project by the increase in the mileage of berm roads. The Project also includes berm roads for access and a visitor overlook area in T18S DCA which would increase public recreation amenities. Therefore, based on LADWP analysis, the Project would be consistent with BRMP outdoor recreation policies. BLM's analysis of Project impacts on recreation is pending.

The consistency of the proposed Project with BLM policies concerning cultural resources is described in **Section 4.4**, Cultural Resources. BLM's analysis of Project impacts on cultural resources is pending. However, LADWP has identified an environmentally superior alternative (Avoidance Alternative, see **Section 5**) which would not install BACM on the portions of federal parcels with significant cultural resources, and would thereby reduce impacts on federal land use policies. Under the Avoidance Alternative, impacts on land use would be less than significant.

4.5.5 Mitigation Measures

Mitigation measures have not been identified for Project-related impacts to land use and planning. Potentially significant impacts on federal land use policies related to cultural resources would be reduced to less than significant levels with adoption of the Avoidance Alternative (see **Section 5**).

Section 5
Project Alternatives

5.1 Project Alternatives

Under CEQA Guidelines Section 15126.6(a), an EIR must "describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." The objective of the Phase 9/10 Project is to implement DCMs on Owens Lake to reduce emissions in accordance with applicable laws without increasing water commitments while, to the extent feasible, maintaining existing habitat values, maintaining aesthetic values, providing safe public access, preserving cultural resources, and utilizing existing infrastructure. The potentially significant environmental impacts of the proposed Project are impacts on biological resources, cultural resources, traffic hazards, and dust emissions. Mitigation measures have been identified to reduce impacts on biological resources, traffic hazards, and air quality to less than significant levels. However, there are no feasible mitigation measures that would reduce impacts on cultural resources to less than significant levels for the Project as originally proposed. Therefore, alternatives analysis is focused on alternatives to the Phase 9/10 Project that would avoid or substantially lessen impacts to cultural resources. Additionally, to address the cumulative water use for dust control on Owens Lake, alternatives are identified which further reduce water commitments. A summary of the Phase 9/10 Project planning process is also provided.

5.2 Summary of the Phase 9/10 Planning Process

As part of the planning process for the Phase 9/10 Project, a range of Project alternatives were considered. As detailed below, several alternatives were found to be infeasible and are therefore not considered further in this EIR.

5.2.1 Identification of BACM for Phase 9/10 Project DCAs

Managed Vegetation is identified for Duck Pond-L1 and C2-L1 DCAs since these areas is currently partially vegetated and soils are anticipated to be suitable for sprinkler-supported Managed Vegetation. Shallow Flooding is identified for T10-1-L1 since this DCA is adjacent to existing Shallow Flooding and associated infrastructure for water supply. Shallow Flooding is identified for T37 DCAs since soil conditions in this area would not support Gravel Cover or Managed Vegetation. The remaining Phase 9 DCAs, and the four Phase 10 DCAs, are proposed to be controlled by Gravel Cover in order to reduce overall water commitments for the Project.

5.2.2 Identification of a Transition Area

BACM identified for the Phase 9 DCAs would generate an estimated water demand of 1,569 acre-feet per year. To offset this demand, transition of 1 to 2 square miles of existing Shallow Flooding DCAs was examined. The Transition Area selected, T18S DCA, is of the necessary size and was redesigned to include Gravel Cover and pond areas of various depths with habitat islands providing more varied habitat conditions while saving water.

5.2.3 Consideration of an All Shallow Flooding Alternative

Shallow Flooding BACM was used on Owens Lake since it was implementable within the time frame developed for the initial OLDMP phases. However, development of an all Shallow Flooding project is not proposed for Phase 9/10 Project since additional use of Los Angeles Aqueduct water on the lake is deemed infeasible. LADWP Resolution 010-063, the Owens Lake Water Use Policy, sets conservation criteria for the OLDMP. The Resolution states that water conservations measures shall be implemented on Owens Lake to reduce Los Angeles Aqueduct diversion for existing and future dust control projects. Conservation measures include, but are not limited to, development of more efficient operating methods, exploration of opportunities for transition of Shallow Flooding DCMs to less water- intensive DCMs, and exploration of the use of groundwater underlying Owens Lake for dust control purposes. LADWP Resolution 013 252 states that the Master Project stakeholders have generally concurred that it is feasible to maintain or improve existing lake-wide habitat value over broad areas of Owens Lakebed while reducing water demand by 50 percent.

As of January 2015, LADWP has installed and is operating approximately 42.5 square miles of DCMs on Owens Lake; an additional 2.6 square miles are in construction. Aside from Gravel Cover, operation of these DCMs uses water from the Los Angeles Aqueduct. LADWP determined that the projected water demand for additional Shallow Flooding was not accounted for in its 2010 Urban Water Management Plan (UWMP, LADWP, 2010b). Furthermore, the dust control phases can be considered “projects” pursuant to California State Water Code Section 10912 based on the assumption that the water demand associated with the operation of the Shallow Flooding BACM is greater than the amount of water required by a 500 dwelling unit project. As part of the assessment for the Phase 8 Project (and in accordance with Section 10910 of the Water Code), LADWP determined that there is insufficient surplus water supply available for LADWP to continue to implement Shallow Flooding as a DCM on Owens Lake (LADWP, 2010d). This finding is also applicable to the Phase 9/10 Project. Therefore, a Phase 9/10 Project that increased overall water demand for dust control on the lake would not attain most of the basic Project objectives (e.g., implementation of dust control in a manner that does not increase water commitments) and is deemed economically, socially, and environmentally infeasible by LADWP.

5.2.4 All Gravel Cover Alternative

Under an All Gravel Cover alternative, Gravel Cover BACM would be installed on the 17 Project DCAs identified as requiring dust control. The T18S Transition Area would remain as Shallow Flooding; habitat and recreation improvements would not be implemented in this DCA. Construction of a 2-inch gravel layer on 3.61 square miles would require approximately 930,000 tons of gravel. The method of gravel installation, including use of a geotextile, would be the same as described for the proposed Project. Construction equipment and personnel needed for construction and maintenance would be the same as the Gravel Cover elements of the proposed Project.

Installation of Gravel Cover requires land leveling and travel by heavy equipment over the entire surface area of the DCA for installation of geo textile and application of the gravel. Therefore, this alternative would not avoid significant impacts to cultural resources present in the Project DCAs. Further, this alternative would not include construction of Shallow Flooding or Managed Vegetation as included in the proposed Project; therefore, existing habitat values found on the Project DCAs would not be enhanced or maintained. Therefore, this alternative is not considered further in this EIR.

5.2.5 Consideration of an Alternative Project Location

The Project has been proposed to meet GBUAP CD SCRDs which call for the reduction of dust emissions on specific areas of Owens Lake. Other locations would not comply with GBUAPCD requirements. Therefore, alternative Project locations on or off Owens Lake have not been considered. An alternative Project location is considered environmentally infeasible.

Therefore, the alternatives identified for the proposed Project are No Project, Alternative BACM Scenarios, and the Avoidance Alternative.

5.3 NO PROJECT

5.3.1 Description

Under the No Project alternative, the existing system of DCMs would continue to be operated on the lake. The thirteen Phase 9 DCAs and the four Phase 10 DCAs would remain primarily barren playa. The T18S Transition Area would remain as Shallow Flooding; habitat and recreation improvements in this DCA would not be implemented. Under No Project, water supply pipelines to Duck Pond L-1 and T10-1-L1 DCAs would not be installed.

5.3.2 Impacts

Aesthetics – Under No Project, the 17 Project DCAs would remain primarily barren playa, consistent with the aesthetics of other undeveloped areas of the lake. The Transition Area would remain as Shallow Flooding, and aesthetic improvements associated with islands and ponds with variable edges would not occur. Enhanced aesthetics of increased vegetated area in Duck Pond L-1 and C2-L1 DCAs would not occur. Overall, the aesthetic impact of No Project would be less than the impact of the proposed Project.

Air Quality and Greenhouse Gases – Under No Project, temporary construction air pollutant emissions (and greenhouse gas emissions) associated with worker travel, construction equipment, and gravel haul trucks would not occur. However, dust suppression on the 17 Project DCAs would not occur. Under No Project, LADWP would not reduce dust emissions in accordance with applicable laws, and would be inconsistent with the applicable air quality plan, a greater impact on consistency with the relevant air quality plan as compared with the proposed Project. No Project would have less impact than the proposed Project related to air pollutant emissions during Project construction.

Biological Resources – Under No Project, temporary construction disturbance to approximately 5.4 square miles of Owens Lake would not occur, and therefore existing biological resources found in these areas would not be disturbed by Project construction. Similarly, temporary noise, vehicle traffic and foot traffic impacts to Snowy Plover or other nesting birds would not occur. Under No Project, the Transition Area would remain as Shallow Flooding. The increased vegetated area in Duck Pond L-1 and C2-L1 DCAs would not occur, and the overall enhancement in habitat values predicted for the Project would not occur. No Project would have less impact than the proposed Project on construction-related impacts to biological resources. However, depending on the magnitude of habitat value enhancement observed under the proposed Project, the proposed Project could have an overall greater benefit operationally on biological resources than No Project.

Cultural Resources – Under No Project, known significant cultural resources sites located in the Phase 9/10 Project areas would not be damaged or destroyed by construction activity or by inadvertent disturbance during operation of the DCAs. No Project would have less impact on cultural resources than the proposed Project.

Land Use - Under No Project, the existing land use and recreational opportunities on the lake would not be altered. No Project would have less impact on land use than the proposed Project.

Summary - Overall, No Project would prevent unmitigable significant impacts on cultural resources that would result with the proposed Project. However, No Project would not achieve dust control in the areas identified in the Phase 9/10 Project as required by GBUAPCD, and in compliance with the SIP. Under No Project, the habitat enhancements anticipated with the Project would not occur. Since No Project would not implement dust control measures on Owens Lake to reduce emissions in accordance with applicable laws without increasing water commitments, it would not meet the objective of the proposed Project. Although it avoids the significant impact of the proposed Project on cultural resources, the No Project Alternative is not environmentally superior to the proposed Project since it would not be consistent with the SIP or result in benefits to air quality.

5.4 ALTERNATIVE PHASE 9 BACM SCENARIOS

Based on balancing water conservation with dust control, LADWP developed several alternative BACM scenarios for the Phase 9 DCAs. These include: Maximum Brine Shallow Flooding; Tillage and Brine Shallow Flooding; and Engineered Roughness, Brine and Gravel Cover. Each of these alternatives assumes Gravel Cover in the Phase 10 DCAs as under the proposed Project.

5.5 MAXIMUM BRINE SHALLOW FLOODING ALTERNATIVE

5.5.1 Description

Under the Maximum Brine Shallow Flooding Alternative, T18S would be transitioned as under the proposed Project and the Phase 9 DCAs would be controlled as detailed in **Table 5-1**. This alternative varies from the proposed Project in that Duck Pond-L1 and C2-L1 DCAs would be Gravel Cover areas (instead of Managed Vegetation as under the proposed Project), and the four T37-2 DCAs would be Brine Shallow Flooding (instead of freshwater Shallow Flooding as under the proposed Project). The other Phase 9 DCAs would have the same BACM installed as under the proposed Project.

The GBUAPCD Governing Board approved Brine Shallow Flood as BACM in Board Order 130916-01 (September 16, 2013). When applied to the lakebed, liquid brine controls dust emissions through surface wetting, and then concentrates into a stable crust that would be expected to prevent dust emissions. While development of a salt crust is anticipated to provide adequate dust control, the Board Order requires Brine Shallow Flood areas to meet the requirements for saturated soils as described above for Shallow Flood. The Order notes that the Air Pollution Control Officer will develop a Brine Shallow Flood BACM compliance methodology with input from LADWP. LADWP will continue to work with GBUAPCD to develop a BACM standard for salt crust deposit development using Brine Shallow Flood.

Under this alternative, brine would be conveyed to the DCAs from the Owens Lake brine pool, from existing DCAs (redirection of brackish water), or generated and produced through dissolving salt minerals in water prior to application on the DCA. Coordination with U.S. Borax would be conducted if brine was generated on-site. Pipeline construction for brine conveyance would be required. Site preparation would include site leveling and berming of flat areas, similar to agricultural terraces. Maintenance of Brine Shallow Flood areas would include addressing areas where salts have been dissolved or displaced by rainfall. Tilling the area may also be conducted. Surrounding and interior berms would require periodic maintenance including earthwork to restore profile, and placement of riprap.

Table 5-1
Phase 9 BACM under the Maximum Brine Shallow Flooding Alternative

DCA	Area (square miles)	Area (acres)	Total Estimated Area of Construction Disturbance (acres)	BACM
Duck Pond-L1	0.16	101	109	Gravel Cover
C2-L1	0.08	50	57	Gravel Cover
T10-1-L1	0.06	41	44	Shallow Flood
T17-2-L1	0.12	76	81	Gravel Cover
T21-L2	0.22	138	146	Gravel Cover
T21-L1	0.58	368	379	Gravel Cover
T37-2-L4	0.19	120	127	Brine Shallow Flood
T37-2-L3	0.05	31	34	Brine Shallow Flood
T37-2-L2	0.06	42	47	Brine Shallow Flood
T37-2-L1	0.18	116	124	Brine Shallow Flood
T35-2-L1	0.05	30	33	Gravel Cover
T37-1-L1	0.18	113	120	Gravel Cover
T32-1-L1	0.94	600	632	Gravel Cover
Phase 9 Totals	**2.86**	**1,828**	**1,934**	

5.5.2 Impacts

Aesthetics – Under the Maximum Brine Shallow Flooding Alternative, T37-2-L1, -L2, -L3 and –L4 DCAs would be saturated with higher saline water than under the proposed Project and a salt crust may develop. Since berm creation and earthwork for construction would be similar, views of these DCAs would be similar to anticipated views under the proposed Project. Views of the saline water and salt crust would be similar to existing areas of Owens Lake. The aesthetic improvement in Duck Pond L-1 and C2-L1 DCAs from increased vegetated area would not occur, and the overall acreage of Gravel Cover on the lake would increase. In the context of existing dust control on the lake, the impact on aesthetics from this alternative would be less than significant, but greater than the aesthetic impact of the proposed Project.

Air Quality and Greenhouse Gases – Under the Maximum Brine Shallow Flooding Alternative, temporary construction air pollutant emissions (and greenhouse gas emissions) associated with worker travel, construction equipment, and gravel haul trucks would be similar, but slightly higher than the proposed Project. Emissions from construction of Managed Vegetation in 152 acres of Duck Pond L-1 and C2-L1 DCAs would not occur, but the greater air emissions related to Gravel Cover installation in these DCAs would occur. With implementation of dust controls during construction (as under the proposed Project), air pollutant emissions from this alternative would not exceed established thresholds for nonattainment pollutants. The impact would be less than significant, but greater than the air quality impact of the proposed Project.

The total area of construction would be the same, and the dust control efficiency of the BACM installed would be approximately 99 percent in all Phase 9 DCAs. Therefore, operation of the proposed alternative would be consistent with the applicable air quality plan and have the same beneficial impact on air quality as the proposed Project.

Biological Resources – Under the Maximum Brine Shallow Flooding Alternative, 3.61 square miles of the lake would be disturbed for the construction of new DCAs, the same as under the proposed Project. Based on the HSM, and assuming no habitat value in the Phase 10 DCAs, this alternative would maintain or enhance habitat value for four of the six species guilds (**Table 5-2**). Since Managed Vegetation is absent from this alternative, habitat for guilds that depend on vegetation (breeding waterfowl and alkali meadow) is predicted to decline. The impact on biological resources would be significant for the alkali meadow guild due to loss of habitat and the overall impact on biological resources would be greater than the impact of the proposed Project.

Cultural Resources – Under the Maximum Brine Shallow Flooding Alternative, 12 known significant archaeological sites (approximately 210 acres plus 68 acres of buffer) located in five DCAs (and any significant sites on federal or private parcels) would be damaged or destroyed by construction of the Project. The substitution of BACM in Duck Pond L-1 and C2-L1 DCAs, and the use of saline water in the T37-2-L1 to –L4 DCAs would require similar amounts of earthwork as the proposed Project and therefore this alternative would result in the same significant cultural resources impact as described for the proposed Project. Similar to the proposed Project, the impact on cultural resources could be reduced by implementation of a data recovery program as a mitigation measure; however, the impact on cultural resources would still be significant with mitigation.

Land Use - Under the Maximum Brine Shallow Flooding Alternative, 3.61 square miles of the lake would be disturbed for the construction of new DCAs, the same as under the proposed Project. Since the sites and total acreage would be the same as the proposed Project, land use impacts would be similar as described for the proposed Project.

Summary – The Maximum Brine Shallow Flooding Alternative would require construction in the same areas as the proposed Project and therefore would have similar impacts on aesthetics and land use, and a slightly greater impact on air quality during construction. With freshwater Shallow Flooding in only T10-1-L1 DCA, no Managed Vegetation, and transition of T18S DCA, the Maximum Brine Shallow Flooding Alternative would conserve an estimated 1,896 acre-feet per year of water (as compared with 283 acre-feet per year of conservation under the proposed Project). Therefore, this alternative would meet the dust control objective as under the proposed Project and have a greater beneficial impact regarding water conservation. However, this alternative would cause reductions in habitat for two of the bird guilds modeled, and a significant impact for the alkali meadow guild due to loss of habitat. The overall impact on biological resources would be greater than the impact of the proposed Project. This alternative would have similar opportunities for public access as under the proposed Project. This alternative would have significant, unmitigable impacts on cultural resources, as would occur with the Phase 9/10 Project.

Table 5-2
Projected vs. Existing Habitat Value (value-acres) of Phase 9/10 Project areas for the Maximum Brine Shallow Flooding Alternative

Area Name	DCM Type	Projected Habitat Values					
		Diving Waterbird	Breeding Waterfowl	Migrating Waterfowl	Breeding Shorebird	Migrating Shorebird	Alkali Meadow
C2-L1	Gravel	0	0	0	0	0	0
DuckPond-L1	Gravel	0	0	0	0	0	0
T10-1-L1	SF	0	0	0	1	0	0
T17-2-L1	Gravel	0	0	0	0	0	0
T18S	Hybrid	1166	0	445	731	534	0
T21-L1	Gravel	0	0	0	0	0	0
T21-L2	Gravel	0	0	0	0	0	0
T32-1-L1	Gravel	0	0	0	0	0	0
T35-2-L1	Gravel	0	0	0	0	0	0
T37-1-L1	Gravel	0	0	0	0	0	0
T37-2-L1	SF-brine	0	0	0	29	0	0
T37-2-L2	SF-brine	0	0	0	10	0	0
T37-2-L3	SF-brine	0	0	0	8	0	0
T37-2-L4	SF-brine	0	0	0	30	0	0
DuckPond-L2	Gravel	0	0	0	0	0	0
T10-3-L1	Gravel	0	0	0	0	0	0
T21-L3	Gravel	0	0	0	0	0	0
T21-L4	Gravel	0	0	0	0	0	0
Post-Project Sum		**1166**	**0**	**445**	**809**	**534**	**0**
Area Name	**DCM Type**	**Existing Conditions (2013)**					
		Diving Waterbird	**Breeding Waterfowl**	**Migrating Waterfowl**	**Breeding Shorebird**	**Migrating Shorebird**	**Alkali Meadow**
C2-L1	None	0	4	2	11	4	5
DuckPond-L1	None	0	0	0	3	0	3
T10-1-L1	None	0	0	0	1	0	0
T17-2-L1	None	0	0	0	1	0	0
T18S	SF	903	0	393	415	466	0
T21-L1	None	0	0	18	68	47	0
T21-L2	None	0	0	0	3	0	0
T32-1-L1	None	0	0	0	9	0	50
T35-2-L1	None	0	0	1	3	4	0
T37-1-L1	None	0	0	0	2	0	18
T37-2-L1	None	0	0	0	2	0	2
T37-2-L2	None	0	0	0	1	0	0
T37-2-L3	None	0	0	0	0	0	0
T37-2-L4	None	0	0	1	11	2	0
DuckPond-L2	None	0	0	0	1	0	0
T10-3-L1	None	0	0	0	5	0	0
T21-L3	None	0	0	1	9	2	0
T21-L4	None	0	0	0	1	0	0
Pre-Project Sum		**903**	**4**	**416**	**546**	**525**	**78**
Percent Change		29%	-100%	7%	48%	2%	-100%
Net Change		**263**	**-4**	**29**	**263**	**9**	**-78**

5.6 TILLAGE WITH BACM BACKUP AND BRINE SHALLOW FLOODING ALTERNATIVE

5.6.1 Description

Under the Tillage with Shallow Flooding BACM Backup (TwB2) and Brine Shallow Flooding Alternative, T18S DCA would not be transitioned as under the proposed Project and the Phase 9 DCAs would be controlled as detailed in **Table 5-3**. This alternative varies from the proposed Project in that Duck Pond-L1 and C2-L1 DCAs would be Gravel Cover areas (instead of Managed Vegetation as under the proposed Project), and the T37-2-L1,-L2, -L3 and –L4 DCAs would be Brine Shallow Flooding (instead of freshwater Shallow Flooding as under the proposed Project). Four other Phase 9 DCAs, where soils are suitable, would be tilled to reduce dust emissions. The TwB2 and Brine Shallow Flooding Alternative would have less fresh water demand than the proposed Project. Freshwater may be required for initial production of brine and for re-wetting of tilled areas (Shallow Flood BACM backup).

Tillage is commonly used to control wind erosion in agricultural and arid regions around the world. It works by roughening the soil surface, rendering it more resistant to wind erosion. Surface roughness reduces the wind velocity at the surface and provides traps to catch windblown soil particles.

Tillage may be accomplished using conventionally agricultural implements such as plows and disks, but also by other means such as excavators. Wet soils at Owens Lake would be tilled with low-ground-pressure bulldozers, as well as excavators working on mats. Drier soils can be tilled with a wider variety of tools and tractors. Tractors pulling plows or harrows would roughen the surface creating swaths of tilled ridges, usually dug in up to 2 feet deep and mounded up to 4 feet high. To the extent practicable, tillage would be installed in a serpentine pattern to provide greater control for all wind directions, and to avoid a gridded, regimented appearance. Spacing between the tilled ridges would be up to 3 feet in sandy soils and up to 14 feet for clay soils. Tillage swath directions would generally be perpendicular to the prevailing wind. Earthwork in each area would be balanced onsite.

Construction required for Tillage would include: riprap reinforcement of existing berms and tillage. Equipment would include: tractors, dozers, pickup trucks/ATVs, and fuel trucks.

Over time, the surface roughness achieved by Tillage would begin to be altered by weathering and dust control efficiency may decline. The amount of fine material (sand and smaller particles) on the surface may change due to 1) disaggregation of soil, 2) crusting and re-aggregation of fine material, 3) deposition of transported fine material, and 4) erosion and export of material. When monitoring indicates that these processes have reduced the dust control efficiency achieved by Tillage, the area may be leveled, compacted and re-tilled. The goal of re-tilling would be to restore erosion-resistant levels of roughness and aggregation. When control efficiency can no longer be restored by Tillage alone, the area could be irrigated to restore soil moisture, and then re-tilled. Since subsurface irrigation systems are not proposed for the Tillage DCAs included in this alternative, areas could be irrigated with a temporary above ground sprinkler system, or other portable means.

Although being studied on the lake, Tillage without Shallow Flood BACM backup is not currently an approved BACM method. GBUAPCD approval of the method as BACM would be required prior to widespread implementation on Owens Lake.

Table 5-3
Phase 9 BACM under the TwB2 and Brine Shallow Flooding Alternative

DCA	Area (square miles)	Area (acres)	Total Estimated Area of Construction Disturbance (acres)	BACM
Phase 9				
Duck Pond-L1	0.16	101	109	Gravel Cover
C2-L1	0.08	50	57	Gravel Cover
T10-1-L1	0.06	41	44	TwB2
T17-2-L1	0.12	76	81	TwB2
T21-L2	0.22	138	146	TwB2
T21-L1	0.58	368	379	TwB2
T37-2-L4	0.19	120	127	Brine Shallow Flood
T37-2-L3	0.05	31	34	Brine Shallow Flood
T37-2-L2	0.06	42	47	Brine Shallow Flood
T37-2-L1	0.18	116	124	Brine Shallow Flood
T35-2-L1	0.05	30	33	Gravel Cover
T37-1-L1	0.18	113	120	Gravel Cover
T32-1-L1	0.94	600	632	Gravel Cover
Phase 9 Totals	**2.86**	**1,828**	**1,934**	

5.6.2 Impacts

Aesthetics – Under this alternative, views of the Project DCAs would be of Gravel Cover, Tillage and Brine Shallow Flooding. The T37-2-L1, -L2, -L3 and –L4 DCAs would be saturated with higher saline water than under the proposed Project and a salt crust may develop. Since berm creation and earthwork for construction would be similar, views of these DCAs would be similar to anticipated views under the proposed Project. The aesthetic improvement in Duck Pond L-1 and C2-L1 DCAs from increased vegetated area would not occur. The acreage of Gravel Cover would be less than under the proposed Project and views of TwB2 would be of serpentine swaths of tilled ridges. For the distance of adjacent roadways, Tilled DCAs would not substantially degrade the visual character of the site. In the context of existing dust control on the lake, the impact on aesthetics from this alternative would be less than significant, but since no vegetation would be enhanced, the aesthetic impact would be greater than under the proposed Project.

Air Quality and Greenhouse Gases – Since the TwB2 and Brine Shallow Flooding Alternative would include approximately 1,379 acres of Gravel Cover (as compared with approximately 2,326 acres for the proposed Project), temporary construction air pollutant emissions (and greenhouse gas emissions) associated with worker travel, construction equipment, and gravel haul trucks would be reduced. Tractors used for tilling would have tailpipe emissions but these would be less than the emissions required for earthwork and gravel transport necessary for Gravel Cover. With implementation of dust controls during construction (as under the proposed Project), air pollutant emissions during construction of this alternative would not exceed established thresholds for nonattainment pollutants. The impact would be less than significant, and less than the air quality impact of the proposed Project.

The total area of construction for new DCAs would be the same, and the dust control efficiency of the Gravel Cover, TwB2 and Brine Shallow Flooding BACM would be approximately 99 percent. Operation of this alternative would have a beneficial impact on air quality and be consistent with the applicable air quality plan.

Biological Resources – Under the TwB2 and Brine Shallow Flooding Alternative, 3.61 square miles of the lake would be disturbed for the construction of new DCAs, the same as under the proposed Project. T18S DCA would not be transitioned. This alternative removes most habitat value in the Project area. While some gravel may be used by nesting shorebirds (mainly Snowy Plover), no water would be available for foraging in DCAs with only gravel. Based on existing test areas on the lake, the Brine Shallow Flood areas would have some water, but the majority of those areas would be hypersaline and often covered in salt crust. With the exception of breeding shorebird habitat, no habitat values are predicted in Brine Shallow Flood areas. Based on the HSM, this alternative would not maintain habitat value as compared with existing conditions for the six species guilds (**Table 5-4**). The impact on biological resources would be significant for the alkali meadow guild due to loss of habitat and the overall impact on biological resources would be greater than the impact of the proposed Project.

Table 5-4
Projected vs. Existing Habitat Value (value-acres) of Phase 9/10 Project areas for the TwB2 and Brine Shallow Flooding Alternative

Area Name	DCM Type	Projected Habitat Value					
		Diving Waterbird	Breeding Waterfowl	Migrating Waterfowl	Breeding Shorerbird	Migrating Shorebird	Alkali Meadow
C2-L1	GC	0	0	0	0	0	0
DuckPond-L1	GC	0	0	0	0	0	0
T10-1-L1	Tillage	0	0	0	1	0	0
T17-2-L1	Tillage	0	0	0	0	0	0
T21-L1	Tillage	0	0	0	0	0	0
T21-L2	Tillage	0	0	0	0	0	0
T32-1-L1	GC	0	0	0	0	0	0
T35-2-L1	GC	0	0	0	0	0	0
T37-1-L1	GC	0	0	0	0	0	0
T37-2-L1	SF-Brine	0	0	0	29	0	0
T37-2-L2	SF-Brine	0	0	0	10	0	0
T37-2-L3	SF-Brine	0	0	0	8	0	0
T37-2-L4	SF-Brine	0	0	0	30	0	0
DuckPond-L2	GC	0	0	0	0	0	0
T10-3-L1	GC	0	0	0	0	0	0
T21-L3	GC	0	0	0	0	0	0
T21-L4	GC	0	0	0	0	0	0
Post-Project Sum		**0**	**0**	**0**	**78**	**0**	**0**
		Existing Conditions (2013)					
Area Name	**DCM Type**	**Diving Waterbird**	**Breeding Waterfowl**	**Migrating Waterfowl**	**Breeding Shorerbird**	**Migrating Shorebird**	**Alkali Meadow**
C2-L1	None	0	4	2	11	4	5
DuckPond-L1	None	0	0	0	3	0	3
T10-1-L1	None	0	0	0	1	0	0
T17-2-L1	None	0	0	0	1	0	0
T21-L1	None	0	0	18	68	47	0
T21-L2	None	0	0	0	3	0	0
T32-1-L1	None	0	0	0	9	0	50
T35-2-L1	None	0	0	1	3	4	0
T37-1-L1	None	0	0	0	2	0	18
T37-2-L1	None	0	0	0	2	0	2
T37-2-L2	None	0	0	0	1	0	0
T37-2-L3	None	0	0	0	0	0	0
T37-2-L4	None	0	0	1	11	2	0
DuckPond-L2	None	0	0	0	1	0	0
T10-3-L1	None	0	0	0	5	0	0
T21-L3	None	0	0	1	9	2	0
T21-L4	None	0	0	0	1	0	0
Pre-Project Sum		**0**	**4**	**23**	**131**	**59**	**78**
Percent Change		0%	-100%	-100%	-41%	-100%	-100%
Net Change		**0**	**-4**	**-23**	**-53**	**-59**	**-78**

Cultural Resources – Under the TwB2 and Brine Shallow Flooding Alternative, 12 known significant archaeological sites (approximately 210 acres plus 68 acres of buffer) located in five DCAs (and any significant sites on federal or private parcels) would be damaged or destroyed by construction of the Project. The substitution of Gravel Cover or TwB2 in several DCAs, and the use of saline water in the T37-2 DCAs would require similar amounts of earth work as the proposed Project and therefore this alternative would result in the same significant cultural resources impact as described for the proposed Project. Similar to the proposed Project, the impact on cultural resources could be reduced by implementation of a data recovery program as a mitigation measure; however, the impact on cultural resources would still be significant with mitigation.

Land Use - Under the TwB2 and Brine Shallow Flooding Alternative, 3.61 square miles of the lake would be disturbed for the construction of new DCAs, the same as under the proposed Project. Since the sites and total acreage would be the same as the proposed Project, land use impacts would be similar to those described for the proposed Project. However, this alternative would have less Gravel Cover, and since temporary above ground irrigation systems would be used and the tillage could be halted at any time, TwB2 could be considered a less permanent alteration to the land than Gravel Cover.

Summary – With BACM dust control efficiencies of 99 percent, the TwB2 and Brine Shallow Flooding alternative would have a beneficial impact on air quality and be consistent with the applicable air quality plan. The TwB2 and Brine Shallow Flooding Alternative would require construction in the same areas as the proposed Project and therefore would have similar impacts on land use. With over 900 acres less of Gravel Cover, construction-related air pollutant emissions would be less than the proposed Project. Implementation of BACM on the DCAs would alter views of the site, but in the context of the existing dust control system on the lake, the impact would be less than significant. This alternative is predicted to cause reductions in habitat for all six of the bird guilds modeled, and a significant impact for the alkali meadow guild due to loss of habitat. The overall impact on biological resources would be greater than the impact of the proposed Project. This alternative would have less fresh water demand than the proposed Project, water would be used to re-wet tilled areas as necessary. However, since T18S DCA would not be transitioned, water conservation would not be achieved as under the proposed Project, and the visitor overlook area for public recreation would not be installed. Finally, this alternative would have significant, unmitigable impacts on cultural resources, as would occur with the proposed Project.

5.7 ENGINEERED ROUGHNESS, BRINE SHALLOW FLOODING AND GRAVEL COVER ALTERNATIVE

5.7.1 Description

Under the Engineered Roughness, Brine Shallow Flooding and Gravel Cover Alternative, T18S DCA would not be transitioned as under the proposed Project and the Phase 9 DCAs would be controlled as detailed in **Table 5-5**. Under this Alternative, Brine Shallow Flooding and Gravel Cover DCAs would be the same as the TwB2 and Brine Shallow Flooding Alternative, but the four DCAs proposed for TwB2 would instead have Engineered Roughness features installed.

Engineered roughness involves placing straw bales, plastic bins or other objects on emissive playa areas to roughen the soil surface, reducing wind velocity and rendering the area more resistant to wind erosion. The dust control method aims to alter air flow and trap moving particles. Increasing the surface roughness reduces the wind velocity at the surface, so that windblown soil particles like sand are trapped. Roughness elements also provide direct coverage of the surface, which shelters particles susceptible to entrainment and transport from the wind, and extracts momentum from the boundary layer winds, thereby reducing wind shear stress at the surface (Gillies and Etyemezian, undated). A test of roughness elements by GBUAPCD (1.17 m long × 0.4 m high × 0.6 m wide) with spacing of 4.9 m apart is currently being planned for Owens Lake. Equipment required to install Engineered Roughness elements would include: trucks and/or tractors or quads.

Table 5-5
Phase 9 BACM under the
Engineered Roughness, Brine Shallow Flooding and Gravel Cover Alternative

DCA	Area (square miles)	Area (acres)	Total Estimated Area of Construction Disturbance (acres)	BACM
Phase 9				
Duck Pond-L1	0.16	101	109	Gravel Cover
C2-L1	0.08	50	57	Gravel Cover
T10-1-L1	0.06	41	44	Engineered Roughness
T17-2-L1	0.12	76	81	Engineered Roughness
T21-L2	0.22	138	146	Engineered Roughness
T21-L1	0.58	368	379	Engineered Roughness
T37-2-L4	0.19	120	127	Brine Shallow Flood
T37-2-L3	0.05	31	34	Brine Shallow Flood
T37-2-L2	0.06	42	47	Brine Shallow Flood
T37-2-L1	0.18	116	124	Brine Shallow Flood
T35-2-L1	0.05	30	33	Gravel Cover
T37-1-L1	0.18	113	120	Gravel Cover
T32-1-L1	0.94	600	632	Gravel Cover
Phase 9 Totals	**2.86**	**1,828**	**1,934**	

Although being studied on the lake, Engineered Roughness is not currently an approved BACM method. GBUAPCD approval of the method as BACM would be required prior to widespread implementation on Owens Lake.

5.7.2 Impacts

Aesthetics – Under this alternative, views of the Project DCAs would be of Engineered Roughness elements, Gravel Cover and Brine Shallow Flooding. The T37-2-L1, -L2, -L3 and –L4 DCAs would be saturated with higher saline water than under the proposed Project and a salt crust may develop. Since berm creation and earthwork for construction would be similar, views of these DCAs would be similar to anticipated views under the proposed Project. The aesthetic improvement in Duck Pond L-1 and C2-L1 DCAs from increased vegetated area would not occur. The acreage of Gravel Cover would be less than under the proposed Project and views of roughness elements would be of hay bales or plastic bins dispersed across the playa in a randomized pattern. For the distance of adjacent roadways, installation of BACM would not substantially degrade the visual character of the site. Since no vegetation would be enhanced, the aesthetic impact of this alternative would be greater than under the proposed Project.

Air Quality and Greenhouse Gases – Since the Engineered Roughness, Brine Shallow Flooding and Gravel Cover Alternative would include approximately 1,379 acres of Gravel Cover (as compared with approximately 2,326 acres for the proposed Project), temporary construction air pollutant emissions (and greenhouse gas emissions) associated with worker travel, construction equipment, and gravel haul trucks would be reduced. Equipment used for installation of the Engineered Roughness features (ATVs, small trucks) would have tailpipe emissions but these would be less than the emissions required for earthwork and gravel transport necessary for Gravel Cover. With implementation of dust controls during construction (as under the proposed Project), air pollutant emissions from construction of this alternative would not exceed established thresholds for nonattainment pollutants. The impact would be less than significant, and less than the air quality impact of the proposed Project.

The total area of construction for new DCAs would be the same, and the dust control efficiency of the Gravel Cover and Brine Shallow Flooding BACM would be approximately 99 percent. The dust control efficiency of Engineered Roughness is currently being investigated by GBUAPCD and has not yet been confirmed. Under this alternative, it is unknown if dust control would be sufficient to meet the requirements of the SIP. Therefore it is unknown if operation of this alternative would be consistent with the applicable air quality plan. The beneficial impact on air quality from operation of the alternative could be less than the proposed Project.

Biological Resources – Under the Engineered Roughness, Brine Shallow Flooding and Gravel Cover Alternative, 3.61 square miles of the lake would be disturbed for the construction of new DCAs, the same as under the proposed Project. T18S DCA would not be transitioned. Compared to the proposed Project, this alternative replaces Managed Vegetation areas with Gravel Cover and has Engineered Roughness in areas with suitable soils instead of Shallow Flood or Gravel Cover. Because Engineered Roughness involves placing the objects directly on the playa, no change in habitat value is expected in the four Engineered Roughness DCAs. Increased topography may occur as these structures accumulate sand. However, due to the salinity of these soils, no vegetation is expected to develop. This alternative does not change diving waterbird habitat value and maintains or enhances breeding shorebird habitat value (**Table 5-6**). The guilds that depend on vegetation (breeding waterfowl and alkali meadow) are predicted to have reduced habitat value and the guilds that depend largely on productive foraging areas (migrating waterfowl and migrating shorebirds) would see a small reduction in habitat value due to gravel placement.

Based on the HSM, this alternative would not maintain habitat value as compared with existing conditions for four of the species guilds modeled (**Table 5-6**). The impact on biological resources would be significant for the alkali meadow guild due to loss of habitat. The overall impact on biological resources would be greater than the impact of the proposed Project.

Cultural Resources – Under the Engineered Roughness, Brine Shallow Flooding and Gravel Cover Alternative, known significant cultural resources sites would be damaged or destroyed by construction of the Project. The substitution of Brine Shallow Flooding for freshwater and Gravel Cover for Managed Vegetation would require similar amounts of earthwork as the proposed Project and therefore this alternative would result in the same significant cultural resources impact as described for the proposed Project. Similar to the proposed Project, the impact on cultural resources could be reduced by implementation of a data recovery program as a mitigation measure; however, the impact on cultural resources would still be significant with mitigation.

Of the BACM reviewed, placement of Engineered Roughness elements would be expected to have the least impact on cultural resources, since mass grading, creation of berms, and use of heavy construction equipment would not be required. However, these elements are only proposed in four DCAs where soil conditions are potentially suitable. Addition of these elements would not reduce significant impacts to cultural resources found in other DCAs. Additionally, the installation of roughness elements could still impact surface, and potentially subsurface, cultural resources, if present. Driving by pickup truck, use of ATVs or quads, dragging of hay bales or other elements, and foot traffic needed for their installation would alter the surface of the resource sites. Sand movement in the immediately vicinity of roughness elements could potentially expose resources in a pattern different than wind erosion under existing conditions. Overall, this alternative would have a significant impact on cultural resources.

Land Use - Under the Engineered Roughness, Brine Shallow Flooding and Gravel Cover Alternative, 3.61 square miles of the lake would be disturbed for the construction of new DCAs, the same as under the proposed Project. Since the sites and total acreage would be the same as the proposed Project, land use impacts would be similar to those described for the proposed Project. However, this alternative would have less Gravel Cover, and since the elements could be removed, Engineered Roughness could be considered a less permanent alteration to the land than Gravel Cover.

Table 5-6
Projected vs. Existing Habitat Value (value-acres) of Phase 9/10 Project areas for the Engineered Roughness, Brine Shallow Flooding and Gravel Cover Alternative

Area Name	DCM Type	Projected Habitat Value					
		Diving Waterbird	Breeding Waterfowl	Migrating Waterfowl	Breeding Shorerbird	Migrating Shorebird	Alkali Meadow
C2-L1	GC	0	0	0	0	0	0
DuckPond-L1	GC	0	0	0	0	0	0
T10-1-L1	ER	0	0	0	1	0	0
T17-2-L1	ER	0	0	0	1	0	0
T21-L1	ER	0	0	18	88	47	0
T21-L2	ER	0	0	0	4	0	0
T32-1-L1	GC	0	0	0	0	0	0
T35-2-L1	GC	0	0	0	0	0	0
T37-1-L1	GC	0	0	0	0	0	0
T37-2-L1	SF-brine	0	0	0	29	0	0
T37-2-L2	SF-brine	0	0	0	10	0	0
T37-2-L3	SF-brine	0	0	0	8	0	0
T37-2-L4	SF-brine	0	0	0	30	0	0
DuckPond-L2	GC	0	0	0	0	0	0
T10-3-L1	GC	0	0	0	0	0	0
T21-L3	GC	0	0	0	0	0	0
T21-L4	GC	0	0	0	0	0	0
Post-Project Sum		**0**	**0**	**18**	**171**	**47**	**0**
Area Name	**DCM Type**	**Existing Conditions (2013)**					
		Diving Waterbird	**Breeding Waterfowl**	**Migrating Waterfowl**	**Breeding Shorerbird**	**Migrating Shorebird**	**Alkali Meadow**
C2-L1	None	0	4	2	11	4	5
DuckPond-L1	None	0	0	0	3	0	3
T10-1-L1	None	0	0	0	1	0	0
T17-2-L1	None	0	0	0	1	0	0
T21-L1	None	0	0	18	68	47	0
T21-L2	None	0	0	0	3	0	0
T32-1-L1	None	0	0	0	9	0	50
T35-2-L1	None	0	0	1	3	4	0
T37-1-L1	None	0	0	0	2	0	18
T37-2-L1	None	0	0	0	2	0	2
T37-2-L2	None	0	0	0	1	0	0
T37-2-L3	None	0	0	0	0	0	0
T37-2-L4	None	0	0	1	11	2	0
DuckPond-L2	None	0	0	0	1	0	0
T10-3-L1	None	0	0	0	5	0	0
T21-L3	None	0	0	1	9	2	0
T21-L4	None	0	0	0	1	0	0
Pre-Project Sum		**0**	**4**	**23**	**131**	**59**	**78**
Percent Change		0%	-100%	-22%	31%	-20%	-100%
Net Change		**0**	**-4**	**-5**	**40**	**-12**	**-78**

Summary – Demonstration of the efficacy of Engineered Roughness to meet the required dust control efficiencies for T10-1-L1, T17-2-L1, T21-L2, and T21-L1 DCAs is pending and cannot be assumed to meet the dust control objective of the Project. The Engineered Roughness, Brine Shallow Flooding and Gravel Cover Alternative would require construction in the same areas as the proposed Project and therefore would have similar impacts on land use. With over 900 acres less of Gravel Cover, air pollutant emissions from construction would be less than the proposed Project. Installation of BACM would alter views of the site, but in the context of the existing system of dust control on the lake, the impact would be less than significant. This alternative is predicted to cause reductions in habitat for four of the wildlife guilds modeled, and a significant impact for the alkali meadow guild due to loss of habitat. The overall impact on biological resources would be greater than the impact of the proposed Project. With little or no fresh water demand, the Engineered Roughness, Brine Shallow Flooding and Gravel Cover Alternative would not substantially alter the use of fresh water on Owens Lake over existing conditions. Limited amounts of freshwater may be required for brine creation. Since transition of T18S DCA is not included in this alternative, the water conservation of approximately 283 acre-feet per year under the proposed Project would not be achieved. Finally, this alternative would have significant, unmitigable impacts on cultural resources, as would occur with the Phase 9/10 Project.

5.8 PHASE 10 ALTERNATIVES

Under the proposed Project the Phase 10 DCAs would be controlled for dust by installation of Gravel Cover. Two alternatives have been identified with a focus on TwB2 or Engineered Roughness in T21-L3 and T21-L4 DCAs. Under both alternatives, Duck Pond L-2 DCA would be controlled with Gravel Cover (as under the proposed Project) and T10-3-L1 DCA would be controlled with Brine Shallow Flooding. Each of these alternatives assumes installation of BACM in the Phase 9 DCAs as described for the proposed Project.

5.8.1 Impacts

Aesthetics – Under the Phase 10 DCA alternatives, views of four DCAs would be of Gravel Cover, Brine Shallow Flooding and either Engineered Roughness or TwB2. Roughness elements in the approximately 160 acres of T21-L3 and T21-L4 DCAs would not require earthwork or berm construction, and if the features ever degraded or were removed in the future, views of these DCAs would return to existing conditions. Views of Brine Shallow Flooding would be comparable to areas of freshwater Shallow Flooding, although a brine crust may form, similar to other areas of lake playa. Tillage would be implemented in a serpentine pattern to avoid a gridded, regimented appearance. Installation of BACM in the four Phase 10 DCAs would alter views of the sites, but from the distance of adjacent roadways, and within the context of existing dust control system on the lake, the visual impact would be less than significant. With the inclusion of Engineered Roughness elements in T21-L3 and T21-L4 DCAs, the impact of this alternative on aesthetics would be less than the proposed Project.

Air Quality and Greenhouse Gases – Since the proposed Project has the greatest area of Gravel Cover for the Phase 10 DCAs, it would have greater temporary air pollutant emissions during construction than the Brine Shallow Flooding, Engineered Roughness or Tillage included in the alternatives. With implementation of dust controls during construction (as under the proposed

Project), air pollutant emissions from construction of these alternative would not exceed established thresholds for nonattainment pollutants. The impact would be less than significant, and less than the air quality impact of the proposed Project.

The total area of construction for new DCAs would be the same, and the dust control efficiency of the Gravel Cover, TwB2 and Brine Shallow Flooding BACM would be approximately 99 percent. With TwB2 in T21-L3 and T21-L4 DCAs, the alternative would be consistent with the applicable air quality plan and have the same benefit to air quality as the proposed Project. The dust control efficiency of Engineered Roughness is currently being investigated, and has not yet been confirmed. Therefore it is unknown if operation of the Engineered Roughness alternative would be consistent with the applicable air quality plan. The beneficial impact on air quality from operation of the Engineered Roughness alternative could be less than the proposed Project.

Biological Resources – As noted in the tables above, under existing conditions, the Phase 10 DCAs have some limited habitat value for migrating waterfowl, breeding shorebirds, and migrating shorebirds. Habitat suitability modeling conducted for the proposed Project assumed Gravel Cover, and therefore no post-project habitat value for any of the six guilds, in any of the Phase 10 DCAs. However, under either of the Phase 10 alternatives, Brine Shallow Flooding would be installed in T10-3-L1 DCA; this would be anticipated to have some breeding shorebird habitat. Engineered roughness would be assumed to retain the existing habitat values of T21-L3 and T21-L4 DCAs for migrating waterfowl, breeding shorebirds, and migrating shorebirds. Overall, the alternatives would provide limited habitat value in the four Phase 10 DCAs, but more than under the proposed Project.

Cultural Resources – Significant cultural resources are not known in the Phase 10 DCAs. Therefore, with implementation of the mitigation measures for the protection of unknown but potentially present cultural resources (as identified for the proposed Project), the alternatives would have a less than significant impact on cultural resources in the Phase 10 DCAs, the same as the proposed Project.

Land Use - Under the Phase 10 DCA alternatives, 0.76 square miles of the lake would be disturbed for the installation of BACM in the Phase 10 areas, the same as under the proposed Project. Since the sites and total acreage would be the same as the proposed Project, land use impacts would be similar to those described for the proposed Project. However, the alternatives would have less Gravel Cover and since they could be halted or removed, both TwB2 (with temporary above ground sprinkler system) and Engineered Roughness could be considered as less permanent alterations to the land than Gravel Cover.

Summary – Under the Phase 10 DCA alternatives, less Gravel Cover would be installed on the lake and therefore these alternatives would have fewer temporary air pollutant emissions during construction than the proposed Project. However, the efficacy of Engineered Roughness to meet the dust control goals for T21-L3 and T21-L4 DCAs is not currently known. Installation of alternative BACM would alter views of the site, but in the context of the existing system of dust control on the lake, the impact would be less than significant. Both alternatives would provide some limited breeding shorebird habitat in the Brine Shallow Flooding DCA (T10-3-L1), and the Engineered Roughness alternative would not alter existing habitat values in T21-L3 and T21-L4

DCAs. However the Gravel Cover in Duck Pond-L2 DCA would eliminate the existing (limited) habitat value for breeding shorebirds. With no fresh water demand, the alternatives identified for the Phase 10 DCAs of Engineered Roughness, Brine Shallow Flooding and Tillage would not alter the use of fresh water on Owens Lake over existing conditions, unless supplemental water for re-wetting the tilled area was required. The alternatives would have the same level of water conservation as the proposed Project in the Phase 10 areas. Since none are known for the Phase 10 DCAs, these alternatives would have a less than significant impact on cultural resources in the Phase 10 DCAs; the same as under the proposed Project.

5.9 AVOIDANCE ALTERNATIVE

Based on analysis conducted for the Project (described in **Section 4.4**), LADWP has identified an Avoidance Alternative in order to reduce impacts on significant archaeological resources to less than significant levels, and to reduce dust to the maximum extent feasible. The Avoidance Alternative is identified as environmentally superior to the original Phase 9/10 Project.

5.9.1 Description

Under the Avoidance Alternative, boundaries of select DCAs would be redefined to avoid significant cultural resources. As noted in CEQA Guidelines Appendix K, "in-situ preservation of a site is the preferred manner of avoiding damage to archaeological resources. Preserving the site is more important than preserving the artifacts alone because the relationship of the artifacts to each other in the site provides valuable information that can be lost when the artifacts are removed. Further, preserving the site keeps it available for more sophisticated future research methods. Preservation may also avoid conflict with religious or cultural values of groups associated with the site." Specifically, five of the Phase 9 DCAs would be reduced in size by approximately 278 acres (210 acres of cultural sites plus 68 acres of buffer) to avoid 12 known significant archaeological sites recommended as eligible under the CRHR. Additional significant archaeological sites identified on private or BLM parcels, and significant sites newly discovered during construction, would be in addition to these 12 sites. Information on the significance of cultural resources sites on federal lands is not provided pending BLM review. There are no known significant cultural resources on private lands, however, evaluations of resources on these parcels is incomplete. Maps of the Avoidance Alternative DCA boundaries are not provided in order to protect the confidentiality of the cultural resources sites.

Under the Avoidance Alternative, the T18S Transition Area would be modified as described for the proposed Project. Construction methodology in the DCAs would be as described for the proposed Project but the length of the construction period may be slightly reduced. Overall, the Avoidance Alternative reflects an approximate 6 percent reduction in the scale of the project.

The Avoidance Alternative would also include participation in the CRTF and consideration of recommendations for alternative dust control methodologies on the avoided cultural resources sites. Per the terms of the Stipulated Judgment, cultural resources protection and mitigation shall be incorporated to the extent feasible as required by law into the design of dust control areas. LADWP may submit an application to the APCO to approve modifications to the City's proposed Project or measures on certain areas that are determined to contain significant cultural resources. GBUAPCD shall consider and decide the City request under the procedures contained in the 2013 Stipulated Abatement Order No. 130819-01.

5.9.2 Impacts

Aesthetics – Under the Avoidance Alternative, impacts on aesthetics would be substantially the same as under the proposed Project. Approximately 278 acres of the project area would remain as primarily barren playa. Aesthetic improvements in the Managed Vegetation areas would occur. Overall, the Avoidance Alternative would be similar to the proposed Project, but since less acreage would be altered, this alternative would have less aesthetic impact than the proposed Project.

Air Quality and Greenhouse Gases – Under the Avoidance Alternative, temporary construction air pollutant emissions (and greenhouse gas emissions) associated with worker travel, construction equipment, and gravel haul trucks would be reduced as compared to the proposed Project by approximately 6 percent. With implementation of dust controls during construction (as under the proposed Project), air pollutant emissions from this alternative would not exceed established thresholds for nonattainment pollutants. The impact would be less than significant, and less than the air quality impact of the proposed Project.

However, dust suppression measures on approximately 278 acres would not be implemented and these areas could potentially emit fugitive dust. However, since the Stipulated Judgment allows LADWP to request modification of the proposed Project for the protection of cultural resources (with participation in the CRTF), the Avoidance Alternative is considered consistent with the applicable air quality plan for the area and impacts on the air quality plan would be less than significant. If LADWP adopts and implements the Avoidance Alternative, GBUAPCD may issue Orders for control of these areas in the future. Future proposed actions on these parcels would be the subject of additional CEQA review, as applicable.

Biological Resources – Under the Avoidance Alternative, temporary construction disturbance to approximately 278 acres of Owens Lake would not occur, and therefore existing biological resources found in these areas would not be disturbed by construction. Based on the HSM, habitat values would be maintained or enhanced for the six species guilds modeled under the Avoidance Alternative (**Table 5-7**). With implementation of the mitigation measures identified for the proposed Project, and with improvements in the T18S Transition Area, the impact of the Avoidance Alternative on biological resources would be less than significant.

Table 5-7
Projected vs. Existing Habitat Value (value-acres) of Phase 9/10 Project areas for the Avoidance Alternative

Area Name	DCM Type	Projected Habitat Value					
		Diving Waterbird	Breeding Waterfowl	Migrating Waterfowl	Breeding Shorerbird	Migrating Shorebird	Alkali Meadow
C2-L1	MV	0	6	3	4	5	28
DuckPond-L1	MV	0	12	7	7	11	62
T10-1-L1	SF	0	0	16	22	24	0
T17-2-L1	Gravel	0	0	0	2	0	0
T18S	Hybrid	1166	0	445	731	534	0
T21-L1	Gravel	0	0	0	0	0	0
T21-L2	Gravel	0	0	0	0	0	0
T32-1-L1	Gravel	0	0	0	9	0	27
T35-2-L1	Gravel	0	0	0	4	1	0
T37-1-L1	Gravel	0	0	0	2	0	18
T37-2-L1	SF	0	0	21	73	48	0
T37-2-L2	SF	0	0	9	20	17	0
T37-2-L3	SF	0	0	7	15	13	0
T37-2-L4	SF	0	0	27	59	49	0
DuckPond-L2	Gravel	0	0	0	0	0	0
T10-3-L1	Gravel	0	0	0	0	0	0
T21-L3	Gravel	0	0	0	0	0	0
T21-L4	Gravel	0	0	0	0	0	0
Post-Project		**1166**	**18**	**535**	**948**	**702**	**135**

Area Name	DCM Type	Existing Conditions (2013)					
		Diving Waterbird	Breeding Waterfowl	Migrating Waterfowl	Breeding Shorerbird	Migrating Shorebird	Alkali Meadow
C2-L1	None	0	4	2	11	4	5
DuckPond-L1	None	0	0	0	3	0	3
T10-1-L1	None	0	0	0	1	0	0
T17-2-L1	None	0	0	0	1	0	0
T18S	SF	903	0	393	415	466	0
T21-L1	None	0	0	18	68	47	0
T21-L2	None	0	0	0	3	0	0
T32-1-L1	None	0	0	0	9	0	50
T35-2-L1	None	0	0	1	3	4	0
T37-1-L1	None	0	0	0	2	0	18
T37-2-L1	None	0	0	0	2	0	2
T37-2-L2	None	0	0	0	1	0	0
T37-2-L3	None	0	0	0	0	0	0
T37-2-L4	None	0	0	1	11	2	0
DuckPond-L2	None	0	0	0	1	0	0
T10-3-L1	None	0	0	0	5	0	0
T21-L3	None	0	0	1	9	2	0
T21-L4	None	0	0	0	1	0	0
Pre-Project Sum		**903**	**4**	**416**	**546**	**525**	**78**
Percent Change		29%	350%	29%	74%	34%	73%
Net Change		**263**	**14**	**119**	**402**	**177**	**57**

Cultural Resources – Under the Avoidance Alternative, 12 known significant archaeological sites (approximately 210 acres plus 68 acres of buffer) located in five DCAs (and any significant sites on federal or private parcels) would not be damaged or destroyed by construction. Since the DCA perimeter berms would be correspondingly reconfigured, the significant cultural sites would also be protected from inadvertent disturbance during operation of the project. The cultural sites would not be studied further, and therefore no new information on the sites would be documented. The sites would be subject to continued weathering by wind and water. This is a natural process and not an impact of the proposed Project alternative. With implementation of mitigation measures identified for the proposed Project, the Avoidance Alternative would have a less than significant impact on cultural resources. The Avoidance Alternative would have substantially less impact on cultural resources as compared to the proposed Project.

Land Use - Under the Avoidance Alternative, dust control would be installed on approximately 3.18 square miles of Owens Lake, and 0.43 square miles of environmentally sensitive areas (plus any acreage of significant archaeological sites on federal or private parcels) would be avoided. Since the Avoidance Alternative would be consistent with federal, state and local land use policies regarding the protection of cultural resources, the Avoidance Alternative would have a reduced impact on land use as compared with the proposed Project.

Summary - The Avoidance Alternative would prevent unmitigable significant impacts on cultural resources that would occur with implementation of the Phase 9/10 Project. Habitat values would be enhanced or maintained and impacts to biological resources would be less than significant. With less construction required, this alternative would have fewer temporary air pollutant emissions during construction than the proposed Project. The Avoidance Alternative would achieve the basic project objective of dust control in approximately 3.18 square miles of the Phase 9/10 Project areas identified as emissive. Under this alternative, dust control with 99 percent efficiency would be implemented. With participation in the CRTF to address future dust control in the environmentally sensitive areas, the Avoidance Alternative would be consistent with the applicable air quality plan. Implementation of the Avoidance Alternative would require implementation of the mitigation measures identified for the Phase 9/10 Project.

5.9.3 Future Consideration of Environmentally Sensitive Areas

Per the terms of the 2014 Stipulated Judgment, the Avoidance Alternative would also include submission by LADWP of a request to GBUAPCD to approve modification of the proposed Project on certain areas that are determined to contain significant cultural resources. GBUAPCD would review the City's request under the procedures contained in the 2013 Stipulated Abatement Order No. 130819-01. Specifically, it is envisioned that a CRTF process equivalent to that used for Phase 7a would be implemented. The Phase 9/10 Project CRTF process would focus on the approximately 278 acres of environmentally sensitive areas identified for proposed Project (and any additional acres identified on federal or private lands, or discovered during construction).

The objective of the Phase 9/10 Project is to implement dust control measures on Owens Lake to reduce emissions in accordance with applicable laws without increasing water commitments while, to the extent feasible, maintaining existing habitat values, maintaining aesthetics values, providing safe public access, preserving cultural resources, and utilizing existing infrastructure.

The Avoidance Alternative would meet this goal on approximately 3.18 square miles; approximately 0.43 square miles (278 acres) (plus any acreage of significant archaeological sites on federal or private parcels, or discovered during construction) would not be controlled.

Therefore, coordination with a CRTF would focus on:

- Confirmation of the CRHR-eligibility of the known sites
- Review of air dispersion modeling to confirm emissivity and predicted exceedances from the avoided parcels
- Review of potential dust control measures that would avoid extensive earthwork in areas of known significant cultural resources

Second Archaeologist. A qualified archaeologist mutually agreeable to GBUAPCD and LADWP has been identified and is being retained by LADWP (the Second Archaeologist) to review work completed to date by LADWP and its consultant team. In addition to review of Phase 7b cultural resources sites, the Second Archaeologist will review the currently identified cultural resources sites in the Phase 9 areas. Additionally, the Second Archaeologist will review any newly discovered sites found during construction of either the Phase 7a Project or the Phase 9/10 Project.

Air Dispersion Modeling. For the Phase 7a Project, air dispersion modeling was conducted assuming avoidance of the known cultural resources sites. This work demonstrated that one environmentally sensitive area could be avoided without predicted exceedance of the NAAQS at the shoreline. This served to focus the work of the CRTF on the remaining sites. Under the Avoidance Alternative for the Phase 9/10 Project, GBUAPCD and LADWP will collaborate on air dispersion modeling for the Phase 9 Project avoided cultural resources sites after review of the significance of those sites by the Second Archaeologist. If modeling predicts that avoidance of some of the Phase 9 cultural resources sites would not result in exceedance of the air standards, these areas would be monitored, but not considered for alternative dust control in the short-term.

Evaluation of Additional Dust Control Methods. Investigations of Tillage (T12-1 DCA) and Engineered Roughness are being conducted currently. Other, site-specific measures such as restoring spring flows are also being investigated. After confirmation of the CRHR-eligibility of the cultural resources sites by the Second Archaeologist, and additional air dispersion modeling, the CRTF will consider other dust control methods that may be consistent with protection of the cultural resources.

Soil binders will probably be one of the dust control methods considered further by the CRTF. LADWP is conducting a soil binder study to determine the efficacy of the method and to investigate unknown effects such as impacts to surface cultural materials and biological resources. Soil binders are stabilizing substances applied to the soil surface to temporarily reduce wind and water-induced erosion of exposed soils. Most commonly used at construction sites and on unpaved roadways and shoulders, over 25 percent of public and 22 percent of private roads in the United States are treated with chemical dust suppressants (EPA, 2002). Soil binders have been identified as an alternative to the three identified BACM for dust suppression in environmentally sensitive areas because they may not require extensive land leveling or other earthwork that could disturb or destroy cultural resources.

Common dust suppressants include: salts and brines, petroleum-based organics (asphalt emulsion, oils), non-petroleum based organics (vegetable oil, fats), synthetic polymers (polyvinyl acetate, vinyl acrylic), electrochemical products (enzymes, ammonium chloride), clay additives (bentonite), and mulch (paper, wood) (EPA, 2002; UDFCD, 2010). Several soil stabilizers, of two general types, have been identified for review: hygroscopic salts and synthetic polymer emulsions. Hygroscopic salts absorb moisture from the air, limiting the number of smaller dust particles which become airborne. Synthetic polymers bind soil particles, acting as a weak cement to weigh down and agglomerate particles. They are industrially produced chemical substances consisting of a number of molecules linked together with covalent bonds. Examples include plastics and synthetic rubber.

Application methods for the binder will require investigation. Binders sprayed through a fire hose or high pressure water cannon would require a network of access roadways. The efficacy of soil binders for dust suppression is anticipated to vary, based on the product selected, the volume of application, frequency of re-application, and weather conditions during application and between applications.

Pilot testing on the lake was conducted in 2013 and 2014. The pilot test examined a topical application (pre-wetting the surface before application) and a blended application (pre-wetting before and after scarification prior to binder application). After binder application, the soil was disked and then compacted to create a roughly 4-inch solid section of sub-base. Under this test, the topical application was more effective for dust control than the incorporated method. Due to flooding of the soil binder test area, another test in the T32 DCA is being planned; within an area proposed for Gravel Cover. The study area will be isolated from the open playa by rows of sand fences. The second soil binder study will focus on topical methods of binder application.

Based on initial consultation with CDFW, other issues of concern for soil binders include pooling of the liquid binder material, or pooling of binder mixed with stormwater, and possible ingestion by wildlife (L. Greene, pers. comm., 2012). Proper application to avoid standing pools of liquid binder and/or later mobilization would avoid this impact. Another potential concern is bioaccumulation of metals and semi-metallic elements (e.g., boron, which is found in some soil binders) or other compounds if present in soil binders. Selection of a binder with no known bioaccumulation hazard and a sampling program to confirm binder components would address this concern. The effectiveness of the binder over the temperature range experienced at the lake is also a concern.

Potential impacts to cultural resources from soil binders would include road construction needed for soil binder application and direct impacts to surface artifacts. Existing studies and information on the impacts to cultural materials from soil binder application are limited. Concerns include impacts to soil chemistry and structure, and direct impacts to surface resources, if any. The spray application method has the potential to uncover, dislodge and/or relocate surface artifacts. Polymer binders may alter soil pH, making it more alkaline; although impacts to artifacts from relatively minor pH changes are not expected. It is uncertain if soil binders will have adverse effects on archaeological deposits, or if artifacts will remain unaltered and sealed and protected from weathering and disturbance. The pending (second) soil binder study will include pre-application placement of lithic materials similar to cultural artifacts, then evaluation by an archaeologist at the end of the study.

Results of the on-going and future soil binder studies will be provided to a CRTF for review.

5.10 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The following alternatives to the proposed Project were evaluated:

- **No Project** – no construction of dust control on 3.61 square miles of Owens Lake and no transition of 1.82 square miles of existing Shallow Flooding to a hybrid of Shallow Flooding and Gravel Cover.

- **Alternative BACM Scenarios**, including varying combinations of Brine Shallow Flooding, TwB2 and Engineered Roughness.

- **Avoidance Alternative** – Construction of the proposed Project in all areas except 278 acres where there are known significant archaeological sites (plus any areas with significant archaeological resources on federal or private parcels, or significant sites newly discovered during construction).

The No Project Alternative would avoid the significant unmitigable impacts of the proposed Project on cultural resources, but it would not meet the basic project objective of dust control. Since it would also not increase the vegetated area Duck Pond L-1 ad C2-L1 DCAs or improve overall habitat values of the project areas, the No Project Alternative is not environmentally superior to the proposed Project.

The Alternative BACM Scenarios considered would not maintain or enhance habitat values in the project areas. These alternatives would have significant unmitigable impacts on cultural resources. All of the scenarios except one incorporate dust control methods, Tillage and Engineered Roughness, with unconfirmed dust control efficacy. Therefore, none of the Alternative BACM scenarios are environmentally superior to the proposed Project.

The Avoidance Alternative would protect significant cultural resources, increase vegetated area in Duck Pond L-1 and C2-L1 DCAs, maintain or enhance overall habitat values of the Project areas, and achieve dust control on 3.18 square miles of the lake identified as emissive. With participation in a CRTF to further address the environmentally sensitive areas, the Avoidance Alternative best meets the Project objectives with the least impacts and, therefore, is environmentally superior to the proposed Project and to the other alternatives evaluated.

Section 6
Related Projects and Cumulative Impacts

Under CEQA, an EIR must include an evaluation of the cumulative impacts of the project and related projects (State CEQA Guidelines Section 15130). CEQA defines cumulative impacts as "two or more individual effects which, when considered together, are considerable, or which can compound or increase other environmental impacts."

The significance criterion for cumulative impacts in the State CEQA Guidelines, Appendix G is:

> "Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" is defined here to mean that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)"

The determination of whether a project creates significant direct impacts on the environment, as well as whether the project's contribution to area-wide impacts is "cumulatively considerable," is the responsibility of the Lead Agency based on substantial evidence.

6.1 RELATED PROJECTS

Section 15130(b) identifies the "list approach" and the "planning scenario approach" for evaluating cumulative impacts. This EIR uses the list approach for closely related past, present and reasonably foreseeable probably future projects with the potential to produce related or cumulative impacts.

6.1.1 Owens Lake Dust Mitigation Program

Since the 1998 MOA between LADWP and GBUAPCD, LADWP has been designing and installing dust control on Owens Lake in compliance with GBUAPCD Orders under the SIP. As of January 2015, LADWP has installed and is operating approximately 42.5 square miles of DCMs on Owens Lake. The most recently completed dust control project was the Phase 8 Project; 2.03 square miles of Gravel Cover were installed in the northwest portion of Owens Lake in 2012. An additional 2.6 square miles of dust control are currently in construction for the Phase 7a Project. Another approximately 0.5 square miles formerly included in the Phase 7a Project are being reviewed as the Phase 7b Project. GBUAPCD is the lead agency for another related dust control project, the Keeler Dunes Project. Transition of existing Shallow Flood DCAs will soon be implemented in 11 DCAs under the Tillage with BACM Backup Project.

6.1.1.1 Phase 7a Project Dust Control Measures

Originally, the Phase 7a Project included dust control in 3.1 square miles in six DCAs. An additional 3.4 square miles were identified as Transition Areas – from Shallow Flooding to Hybrid BACM. Based on the identification of significant cultural resources within the project area, the Phase 7a Project currently under construction (as of January 2015) includes approximately 2.6 square miles of new DCAs and 3.4 square miles of Transition Areas. The Phase 7a Project components are:

- Shallow Flooding in T1A-4 and a portion of T37-2
- Managed Vegetation in T32-1 and portions of T37-1 and T37-2
- Gravel Cover in a portion of T1A-3 and T37-1
- Tillage BACM test in T12-1

Water demand related to implementation of BACM on the six primary Phase 7a DCAs will be balanced with water conservation measures at seven existing DCAs, including:

- Conversion of approximately 3.2 square miles of existing Shallow Flooding to a hybrid of BACM including Managed Vegetation, Gravel Cover and Shallow Flooding (Transition Areas). The Transition Areas are: T1A-2_a, T28N, T28S, T30-1_a, T30-1_b, and T36-1_b.
- Conversion of existing Shallow Flooding areas T35-1 and T35-2 to Gravel Cover.

The project also includes: construction of three new turnout facilities and modification to four existing turnout facilities; irrigation and drainage systems and other infrastructure to support Shallow Flooding, Managed Vegetation and Tillage; construction of public amenities such as trails, boardwalks, and visitor outlooks; installation or reconfiguration of DCA berms; improvement of an access road; re-routing of the existing Lake Minerals Road to the new T1A-4 perimeter berm; and, construction of a new water supply pipeline.

LADWP considered the EIR for the Phase 7a Project in June 2013 (SCH No. 2011051068). Impacts of the project were found to be less than significant with adoption of mitigation measures for all topics except cultural resources. The Board of Water and Power Commissioners adopted the environmentally superior alternative for the Phase 7a Project - the Avoidance Alternative. With adoption of the Avoidance Alternative and mitigation measures, impacts of the project were found to be less than significant. CDFW issued a Lake Alteration Agreement for the project pursuant to Fish and Game Code 1602 in January 2014. Project construction is anticipated to be completed by July 2015.

6.1.1.2 Keeler Dunes

The Keeler dunes are an approximately 157-acre area of deep sand located northwest of the town of Keeler above the 3,600-foot elevation Owens Lake shoreline. Due to their proximity to the town of Keeler, dust emissions from the Keeler dunes contribute significantly to exceedances of the federal PM_{10} standard in the town. With control of the majority of the emissive areas on Owens lake bed, the Keeler Dunes are one of the largest remaining sources of uncontrolled PM_{10} emissions in the Owens Valley. GBUAPCD is the lead agency for the Keeler Project, with funding provided by LADWP, to control PM_{10} emissions from the Keeler Dunes in order to demonstrate attainment of the federal standard within the OVPA as specified in the 2008 SIP. Under this project, dust control measures (native vegetation and straw bales) are being installed on 194 acres to stabilize the Keeler Dunes between the communities of Keeler and Swansea. Straw bales are being placed on 177 acres, with approximately 12.1 percent direct cover by the bales. The remaining 17 acres have 6.7 percent bale cover. Bale placements in a randomized array that mimics a natural vegetation pattern began on October 20, 2014. Native plants are also proposed: 1,983 plants per acre over 177 acres and 1,092 plants per acre over 17 acres. Planting will continue in 2015. Water supply for plant irrigation will come from the Fault Test well. Water will be applied via ATV water tanks (approximately 150 to 200 gallon capacity).

An EIR/Environmental Assessment (EA) was prepared for the project (SCH No. 2011101065) and a CEQA Notice of Determination filed in July 2014. The BLM is the federal lead agency for the project. The environmental review concluded that the proposed project would not have any significant unavoidable impacts and therefore would not require mitigation measures; nor would the proposed project have any impacts that would be cumulatively considerable.

6.1.1.3 Tillage with BACM Backup

Under TwB2, the majority of 11 existing Shallow Flooding DCAs (4.1 square miles) would be converted to Tillage to reduce water usage (**Table 6-1)**. Tilled areas will be monitored by GBUAPCD, and emissive areas would be rewet as needed to maintain required dust control efficiencies. Water demand for re-wetting tilled areas would be an additional water demand, but cannot be specifically quantified. Existing infrastructure would be used and new pipelines would be installed to allow efficient water distribution. Based on a finding that the proposed modifications to the 11 DCAs would not constitute a substantial change to the previously evaluated projects, LADWP prepared Addenda to three previously adopted CEQA documents for dust control projects on the lake:

- The 2003 Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan Integrated Environmental Impact Report
- The 2005 Owens Valley Dust Mitigation Program Phase 5 Mitigated Negative Declaration
- The 2008 Owens Valley PM_{10} State Implementation Plan Final Subsequent Environmental Impact Report

LADWP then adopted a Resolution to approve TwB2 in August 2014. Areas to be transitioned to TwB2 were selected based on their relatively low existing habitat value and suitability of the soils for tillage:

- Phase 2 Project DCAs **T3SW**, **T3SE** and **T3NE** and Phase 4 DCAs **T24 Addition** – 1.4 square miles to be converted to TwB2.
- Phase 5 Project DCAs **T2-2**, **T2-3**, **T2-4**, **T5-4**, **T29-4** and **T3SE Addition** – 1.04 square miles total. In T2-2, 100 acres of Shallow Flooding will be maintained and enhanced to create habitat values for nesting and foraging for waterfowl and shorebirds.
- Phase 7 Project DCA **T16** – 1.66 square miles total. In T16, the existing 1,060 acres of Shallow Flooding will to be modified to approximately 685 of Tillage with Lateral Shallow Flooding backup and up to 375 acres of Shallow Flooding for the maintenance and enhancement of habitat values. Three 125-acre ponds up to 20 inches deep will be designed to maximize foraging habitat for waterfowl and shorebirds adjacent to small habitat islands while providing deeper water for diving waterbirds.

Construction of TwB2 is planned for February to August 2015. Maintenance activities would include periodic re-tilling, rewetting of soils as warranted, and maintenance associated with DCA berms and water supply systems.

Table 6-1
Summary of Estimated Water Demand with TwB2 Project

DCAs	Acres (approximate)	BACM	Water demand (feet per year)	Total (acre-feet per year)
Existing				
T3SW, T3SE, T3NE, T24 Addition	900	Managed Vegetation	4	-3,600
T2-2, T2-3, T2-4, T5-4, T29-4, T3SE Addition	670	Managed Vegetation	4	-2,680
T16	1,060	Shallow Flood	4	-4,240
Future				
New Pond Areas (T16)	375	Shallow Flood	4	+1,500
New Shallow Flood (T2-2)	100	Shallow Flood	4	+400
Total Savings with TwB2				**-8,620**

6.1.1.4 Phase 7b Project

Formed per a condition of the 2013 Settlement Agreement and Release, the CRTF has been reviewing alternative forms of dust control and making site-specific recommendations for the future treatment of culturally sensitive areas located within Phase 7a DCAs. A combined area of 277 acres of the Phase 7a Project were removed from the project and identified as the Phase 7b Project. Then in February 2014, in response to requests from the Lone Pine Paiute Shoshone, Big Pine Paiute, Timbisha Shoshone, and Fort Independence Tribes, and the NAHC, an additional 63 acres identified by the tribes as a sacred site or Traditional Cultural Property were recommended for removal from the Phase 7a Project by LADWP. Additional requests to place the additional acreage in the Phase 7b Project were received from BLM, CSLC and SHPO. GBUAPCD modified the Order of Abatement to exclude the additional 63 acres at its Board meeting in May 2014. After review by the Second Archaeologist, it is anticipated that additional areas of the Phase 7a Project will be transferred to the Phase 7b Project based on new discoveries of cultural materials made during Phase 7a Project construction. Consideration of alternative forms of dust control on the Phase 7b Project parcels, including the additional 63 acres, is on-going as part of the CRTF.

To date, recommendations from the CRTF include rewetting DCAs through the rehabilitation of an existing spring, avoidance and continued monitoring, and review of potential Shallow Flooding methods that could be implemented with no ground disturbance. Since a Phase 7b Project has not yet been defined, review under CEQA has not been conducted.

6.1.1.5 Future Dust Control Areas

No new Lone Violator or new Watch Areas were identified in the 2013 or 2014 SCRDs. However, GBUAPCD did identify in the 2014 SCRD one 19.54-acre area located near T11 that may require control. Due to its small size and distance from the shoreline, GBUAPCD has not ordered PM_{10} controls on this area at this time. However, monitoring and analysis of the impact on dust standards from emissions from this area are ongoing.

The 2014 Stipulated Judgment identifies a maximum of 4.8 square miles of BACM Contingency Measures, to be implemented on Owens Lake after January 1, 2016 by LADWP if evidence shows that new areas cause or contribute to an exceedance of the NAAQS or State standard. The specific areas of the lake to be controlled in the future will be based on on-going air monitoring and modeling, and are not defined at this time. In the future, if dust control projects are proposed in these 4.8 square miles, additional review under CEQA would be conducted.

6.1.1.6 Owens Lake Master Project

LADWP convened the Owens Lake Master Project Advisory Committee (originally called the Owens Lake Planning Committee) to collaboratively work to develop a Master Project for Owens Lake. The Committee consists of members that represent the following interest groups: Agriculture/ Ranchers, Air Quality, Community, Economic/Local Business, Energy/Solar, Environmental (Bird and Native Plants), Governmental (County, State & Tribal), Open Space, Landowners, Public Access, Public Trust, Recreation and Water. Members live throughout the Owens Valley or work in agencies that have jurisdiction in or around the Owens Lake bed. The outcome of this broad stakeholder process will be a collaborative vision for the future of the Owens Lake bed.

A goal of the Owens Lake Master Project is to control dust on the lake in a more environmentally friendly and sustainable manner. The design and configuration of the DCAs will be rebuilt, incorporating new and modified methods to reduce the use of water by 50 percent or more while continuing to mitigate dust, maintain or enhance habitat, protect cultural resources, and promote public access and recreation. Groundwater as a source of water for dust control may be included.

The project will transition portions of the existing dust control areas to methods that use less or no water, including TwB2, Managed Vegetation, Gravel Cover, and Brine. Tillage areas will maintain the ability to be flooded should they become emissive. The project will be implemented in phases and generally up to 3 square miles will be transitioned at one time, excluding TwB2 activities.

Future management of biological habitat values under the Master Project will use the HSM developed for the lake. The Owens Lake HSM will be used to monitor habitat value of individual DCAs and inform management of dust control measures on each unit. The model will be used during implementation of the Master Project to: 1) track habitat value over time; 2) predict habitat value when planning projects on the lake; and 3) improve understanding of habitat parameters in the adaptive management process.

A NOP of an EIR for the Owens Lake Master Project is expected to be released in 2015.

6.1.2 Solar Projects in the Project Area

6.1.2.1 Solar Demonstration Project

LADWP has recently constructed a solar energy generation demonstration project on approximately 5 acres of Owens Lake within the northeast portion of the Phase 8 Project area (adjacent and just west of Corridor 1). Testing and commissioning is on-going as of January 2015. Once operational, the Solar Demonstration Project will generate approximately 500 kilowatts (kW) of alternating current through the use of ground-mounted photovoltaic (PV) panels comprising solar arrays.

The Solar Demo will provide data to guide future development of solar generation on larger portions of Owens Lake. Solar will be integrated with gravel for dust mitigation. Power generated during operation of the Solar Demo will be interconnect to the direct-buried 4.8kV line directly beneath the existing Corridor 1 gravel road and may be used to supply the power for dust control water pumping.

Since it was determined that the project would not result in significant impacts on the environment as mitigated, a Mitigated Negative Declaration was adopted in 2013 (SCH No. 2013031075).

6.1.2.2 Southern Owens Valley Solar Ranch

LADWP's Southern Owens Valley Solar Ranch (SOVSR) project would be a 200 megawatt (MW) net generating capacity solar energy facility using solar PV panel modules and associated infrastructure. The project site is approximately 1,200 acres on City of Los Angeles-owned property in the Owens Valley about 6 miles southeast of the town of Independence and about 10 miles north of the town of Lone Pine. Regional access to the project site is provided by U.S. Highway 395 (US 395), located approximately 4 miles west of the site. Manzanar Reward Road runs along the southern perimeter of the site, and 3rd Road is to the east; Mazourka Canyon Road is approximately 3 miles north of the Project site.

The power produced by the project would be conveyed to the power grid via interconnection to LADWP's existing 230 kilovolt (kV) Inyo–Rinaldi transmission line, which is located along the western perimeter of the project site. The proposed project would help the City of Los Angeles, and, by extension, the State of California, meet its renewable energy goals. The project would produce approximately 440 gigawatt hours of clean, renewable energy annually. This amount of energy would be sufficient to power approximately 75,000 households and help achieve the goals of the California Renewable Portfolio Standard (RPS) and other State and local renewable energy programs.

A Draft EIR was released on September 4, 2013; impacts of the proposed project were found to be less than significant with incorporation of mitigation measures. There have been concerns expressed regarding the impact on views of the desert and mountains from the Manzanar National Historic Site. The Draft EIR found that the view impact will be minimized by several factors, including the distance of about 4 miles from Manzanar, low profile and orientation of the solar panels to blend with the Valley floor. A Final EIR has not yet been published.

6.1.3 Groundwater Development Projects in the Project Area

6.1.3.1 Crystal Geyser Roxane Cabin Bar Ranch Water Bottling Plant Project

Cabin Bar Ranch is located on the east side of Hwy 395, south of the community of Cartago. The Crystal Geyser Roxane project at Cabin Bar Ranch includes construction and operation of a spring water bottling facility and ancillary uses. The project includes a 198,500-square-foot bottling plant with four bottling lines and a 40,000-squarefoot warehouse. Groundwater would be withdrawn from three existing on-site wells perforated in the shallow aquifer underlying the project area at a combined average rate of 170 gallons per minute (gpm) year-round and up to a combined rate of 500 gpm during summer months, for a total of approximately 360 acre-feet per year. Project implementation would require a General Plan Amendment by Inyo County for land use designation changes from Rural Protection (RP) and Rural Residential, High Density (RRH) to Light Industrial (LI); a Zone Reclassification for Zone Changes from Open Space, 40-Acre Minimum (OS-40) and Rural Residential One-Acre Minimum (R-1.0) to Light Industrial (M-2); and a Conditional Use Permit for a water bottling facility within the M-2 zone. Construction would take place in three phases over a number of years, with build-out anticipated in 2025-2027. An EIR was certified by the Inyo County Board of Supervisors in February 2013; impacts of the proposed project were found to be less than significant with incorporation of mitigation measures. A Groundwater Mitigation Monitoring and Reporting Program was also approved for the project by Inyo County in July 2014.

6.1.3.2 Owens Lake Groundwater Evaluation Project

The OLDMP Shallow Flooding and Managed Vegetation DCAs are supplied with Los Angeles Aqueduct and Lower Owens River water, conveyed via the Lower Owens River Project (LORP) pump station. With the goal of ensuring the future availability of water supply for the DCMs and protecting the environment of Owens Lake, LADWP is studying the potential of using groundwater for a portion of dust suppression activities. Since March 2009, LADWP staff have partnered with the Inyo County Water Department (ICWD), GBUAPCD, and MWH to develop a conceptual and numerical hydrogeological model of the Owens Lake groundwater basin. The Owens Lake Groundwater Evaluation Project (OLGEP) developed a data base of relevant groundwater information, formulated a conceptual hydrogeological model, and implemented a field monitoring program (including the drilling of monitoring wells) (MWH, 2012). The conceptual hydrogeological model was based on the extensive previous studies of the Owens Lake groundwater basin and existing geologic and water quality information. The conceptualization characterizes water budget, hydrostratigraphy, depositional history, water quality, aquifer parameters, structural geology, faulting, groundwater levels and flow gradients, springs and seeps, sensitive habitats, and land subsidence. The conceptual model also involves a 3D visualization of the groundwater basin through the importation of lithologic logs into a groundwater modeling system (GMS).

Additional water volume monitoring is planned on the west side of the lake to further refine the model. Additionally, a Master Project groundwater subgroup has been working on a baseline monitoring plan. Since a specific groundwater development project has not been defined, environmental review under CEQA has not yet commenced.

6.2 CUMULATIVE IMPACTS WITH RELATED PROJECTS

The related projects include other dust control activities on Owens Lake, solar projects on or near the lake, a Master Project for the dust control measures on the lake, expansion of an existing water bottling plant south of the lake, and a modeling study of the groundwater under the lake.

6.2.1 Aesthetics

The proposed projects listed in **Section 6.1** have the potential to alter aesthetics and views of the lake. The proposed Project plus the existing dust control and the Phase 7a Project (currently under construction), would total approximately 48.6 square miles of DCAs on the lake. Under TwB2 and the Owens Lake Master Project, additional areas of Tillage and Gravel Cover would be installed on the lake. The application of Gravel Cover will alter views of the site; however, the use of gravel from local sources will be consistent in coloration with the Lake bed. The existing network of DCMs on the lake is a highly engineered and managed system. Design of the proposed Project and all future projects would include enhanced habitat areas, recreational amenities, and aesthetic improvements (i.e., meandering edges and transitions to soften the historically straight lines of the berm roads and ponding areas, groupings of boulders, variation in vegetation type and height, variation in rock size and color, etc.). These improvements are anticipated to improve the visual character of some existing areas of dust control on the lake. Overall, the combined visual impact of the proposed Project and the related projects would be less than cumulatively considerable.

6.2.2 Air Quality

Related projects with construction schedules that overlap with construction of the Phase 9/10 Project have the potential for cumulative air quality impacts. Construction of the Crystal Geyser project may overlap with Phase 9/10 Project construction. During any overlap in construction, air pollutant emissions from vehicles and equipment would be emitted from both projects. The EIR prepared for the Crystal Geyser project includes six mitigation measures to be implemented during construction to reduce dust emissions (PCR, 2011). Since particulate matter is the only pollutant out of attainment, and since mitigation will be incorporated into the related projects to minimize fugitive dust emissions during construction, the impact of equipment and vehicle air pollutant emissions during construction would be less than cumulatively considerable.

Operation of the related projects and the Phase 9/10 Project would result in air pollutant emissions from maintenance equipment and vehicles. However, since particulate matter is the only pollutant out of attainment, and since mitigation would be incorporated into projects to minimize fugitive dust emissions during operation, the impact of equipment and vehicle air pollutant emissions during operation is not cumulatively considerable. The operational impact of the Phase 9/10 Project, Phase 7a Project, the Keeler Project, solar projects on gravel cover, and other dust mitigation efforts on the lake would be cumulatively beneficial regarding reduction of PM_{10} emissions.

Less than cumulatively considerable greenhouse gas emissions from the Phase 9/10 Project are discussed in **Section 4.2**.

6.2.3 Biological Resources

The proposed Project would disturb existing areas of Owens Lake, primarily barren playa, and potentially impact wildlife resources during construction. Mitigation measures have been defined in **Section 4.3** to reduce impacts to less than significant levels and the Transition Area has been designed to increase habitat values, consistent with Master Project habitat goals. Similarly, pond and shallow flooding areas are incorporated into the TwB2 project to maintain existing habitat values of Shallow Flooding areas transitioned to Tillage. Implementation of TwB2 will include pond elements to maintain habitat value for shorebirds, waterfowl and diving waterbirds. With the proposed Tillage, the acreage of standing water will be reduced, but design of the pond areas (including proposed habitat islands) will enhance habitat suitability for bird foraging, loafing, roosting and nesting. The OLGEP is focused on defining a groundwater pumping regime for dust control that is protective of existing habitat. The Solar Demo project has been constructed on an existing area of Gravel Cover (part of the Phase 8 Project area) which minimized impacts on biological resources. For related projects that are not yet constructed, it is anticipated that mitigation measures would be incorporated into the projects to reduce impacts on biological resources during construction.

The proposed Project and future dust control projects would be consistent with the Owens Lake Habitat Management Plan (OLHMP) (LADWP, 2010a). The OLHMP serves as a guide for compatibility between construction, maintenance, and operational needs of the dust control program, and the needs of resident and migratory wildlife resources utilizing the Owens Lake Dust Control Area. The overall goal of the OLHMP is to avoid direct and cumulative impacts to native wildlife communities that may result from the dust mitigation program. Implementation of Phase 9/10 Project, and future dust control projects, would be consistent with the resource management actions described in the OLHMP. The OLHMP includes yearly monitoring, including a written report documenting the results of the management techniques, observed effectiveness of the techniques, and suggested improvements for habitat management within the lake bed.

Additionally, each phase of the dust control program is subject to the permitting requirements of the CDFW per the terms of a Lakebed Alteration Agreement under Fish and Game Code Section 1602. For the Phase 7a Project, the Agreement states, “If the project results in increased HVA compared to 2010 values after evaluation of all Phase 7a project impacts, this surplus habitat value may be applied to future projects through a lake wide planning effort which results in a lake wide plan or project (e.g., Owens Lake Plan). This would require that 1) an Owens Lake Plan is approved by CDFW and 2) a new 1600 Master Agreement is issued by CDFW to implement an Owens Lake Plan.” The Phase 7a Project, TwB2 and the Phase 9/10 Project are all predicted to maintain or enhance habitat values for the six bird guilds considered. Therefore, continued use of the HSM together with monitoring of the habitat values of the dust control areas is anticipated to maintain or enhance habitat values over existing conditions. Overall, the impact of the proposed Project and the related projects on biological resources would be less than cumulatively considerable.

6.2.4 Cultural Resources

Projects proposed for Owens Lake and the surrounding area that include ground disturbing activities have the potential to disturb significant cultural resources. Without mitigation, the disturbance to unique historic, archeological, and/or paleontological resources could result in the loss of important information about the prehistoric and historic development in the Owens Lake region.

Significant cultural resources are known for the proposed Project areas and other sites on Owens Lake. The Solar Demo project is also located on the Phase 8 parcel. Within the Phase 8 area, archaeological evaluation and data recovery mitigation has been performed at four prehistoric CRHR-eligible archaeological sites. Each of these sites had been exposed by high winds and shifting sands, which suggests this area is culturally sensitive for possibly unidentified prehistoric archaeological resources that may still be buried beneath the ground surface. Therefore, ground disturbing activities for the Phase 7a Project, including work on the parcels adjacent to Phase 8, is currently being monitored for cultural resources. Similarly, a monitoring program for construction of the Phase 9/10 Project is defined as a mitigation measure for the Project. Since construction related to the TwB2 project would be limited to existing Shallow Flooding areas, impacts to significant cultural resources are not anticipated in these areas. Significant resources identified in the Keeler Dunes would be avoided by project design.

As described in **Section 4.4**, the Phase 9/10 Project would result in significant impacts on cultural resources. Additional impacts from construction of the related projects together with the cultural resources impacts of the proposed Project would be cumulatively considerable. However, implementation of the Avoidance Alternative and the mitigation measures outlined in **Section 4.4**, and mitigation as applicable by future related projects would reduce significant impacts on cultural resources to below a level of significance. The combined impact of the Avoidance Alternative and related projects would be less than cumulatively considerable.

6.2.5 Land Use and Recreation

Combined, the Phase 9/10 Project, the existing dust control system, TwB2, and the currently under construction Phase 7a Project, would result in approximately 48.6 square miles of DCMs on the lake bed. Cumulatively, these projects will reduce dust emissions, an improvement to public health and safety, and a public trust benefit. These projects would also maintain or enhance habitat values while conserving water, additional public trust benefits. The Phase 9/10 Project would include construction on BLM parcels containing cultural resources. While BLM's analysis of the Project's impacts on cultural resources is pending, in the case where significant cultural resources are present on BLM Project parcels, Project constructions activities which damaged these resources could be expected to be considered inconsistent with BLM policies. Therefore, the impact of the proposed Project on federal land use and planning is potentially significant. With adoption of the Avoidance Alternative, the proposed Project and the other related projects would not impact cultural resources evaluated as significant, and therefore would not conflict with any applicable land use plan, policy, or regulation. Therefore, the combined land use impact of the Avoidance Alternative and the related projects would be less than cumulatively considerable.

The Phase 9/10 Project includes public access opportunities for recreation such as a visitor overlook area in T18S and DCA perimeter access berms. If additional dust control or solar projects are developed on the lake, these features could be connected to other recreational amenities, as feasible. This would be consistent with the goals of the Owens Lake Master Project. Overall, the combined impact on recreation of the proposed Project and the related projects would be less than cumulatively considerable.

6.2.6 Summary

Overall, the combined impact of the proposed Project and the related projects would be beneficial for PM_{10} reductions and less than cumulatively considerable for aesthetics, air quality, and biological resources. Due to the adverse impacts on significant archaeological sites known for Owens Lake, additional impacts from construction of the related projects together with the cultural resources impacts of the proposed Project would be cumulatively considerable. The cumulative impact of the related projects and the proposed Project may also be inconsistent with BLM policies regarding the protection of cultural resources; therefore the impact on federal land use and planning is potentially cumulatively considerable.

Overall, the combined impact of the Avoidance Alternative and the related projects would be beneficial for PM_{10} reductions. Since the Avoidance Alternative would not adversely impact significant archaeological resources on Project DCAs, and mitigation for the protection of cultural resources is included in the related projects, the cumulative impact of the related projects and the Avoidance Alternative would be less than cumulatively considerable for cultural resources and federal land use and planning, as well as less than cumulatively considerable for aesthetics, air quality, and biological resources.

Section 7
Additional CEQA Analyses

This section summarizes impact determinations for the proposed Project and provides additional environmental analyses required in the State CEQA Guidelines for EIRs.

7.1 EFFECTS FOUND NOT TO BE SIGNIFICANT

Based on the analyses presented in the Initial Study (**Appendix A**) and **Section 4** of this EIR, **Table 7-1** summarizes the potential environmental topics for the Project found to have no impacts, beneficial impacts, less than significant impacts, or less than significant impacts where mitigation has been identified to further reduce adverse effects.

Table 7-1
Owens Lake Dust Mitigation Program - Phase 9/10 Project
Summary of Less Than Significant Impacts

Topic	No Impact	Less than Significant Impact	Less than Significant Impact With Mitigation Identified to Further Reduce Adverse Effects
Aesthetics – scenic vistas and scenic resources		√	
Aesthetics – visual character and light and glare		√	
Agriculture and Forest Resources	√		
Air Quality – Air Quality Plan		√	
Air Quality – odors		√	
Air Quality - construction and maintenance pollutants (except dust)			√
Biological Resources – riparian habitat and wetlands		√	
Biological Resources – policies, ordinances, and habitat plans		√	
Geology and Soils		√	
Greenhouse Gas		√	
Hazards and Hazardous Materials		√	
Hydrology – water quality		√	
Hydrology – groundwater		√	
Hydrology – flooding, runoff, drainage		√	
Land Use and Planning (except for federal policies regarding cultural resources)		√	
Mineral Resources		√	

Topic	No Impact	Less than Significant Impact	Less than Significant Impact With Mitigation Identified to Further Reduce Adverse Effects
Noise – project construction and operation		√	
Noise – airport/airstrip areas	√		
Population and Housing		√	
Public Services - fire		√	
Public Services – police, schools, parks, other	√		
Recreation – increased use of parks	√		
Recreation – new facilities		√	
Traffic – circulation system		√	
Traffic – congestion management program		√	
Traffic – air patterns	√		
Traffic – public transit	√		
Utilities - water, wastewater, solid waste		√	

7.1.1 Mitigation Measures to Further Reduce Less than Significant Effects

Air Quality - With the exception of particulate matter, air pollutant emissions from construction and maintenance vehicles and equipment would be less than significant. Mitigation measures AIR-2 through AIR-5 shall be implemented to reduce less than significant construction vehicle and equipment tailpipe emissions to the maximum extent practical, feasible, and available.

Air-2. Low Emissions Tune-ups Schedule. A schedule of low emissions tune-ups shall be prepared for all equipment operating on site for more than 10 working days.

Air-3. Low-emission Equipment Utilization. Low-emission equipment/mobile construction equipment shall be used for Project construction to the maximum extent practical, feasible, and available.

Air-4. Low-emission Mobile Vehicle Utilization during Construction. Low-emission or alternative-fueled mobile vehicles shall be used during Project construction to the maximum extent practical, feasible, and available. In addition, carpooling of construction workers shall be encouraged.

Air-5. Low-emission Mobile Vehicle Utilization during Operation. Hybrid, low-emission (CA LEV II; PZEV, SULEV; or ULEV) or alternative-fueled mobile vehicles, such as electric or fuel cells, shall be used for the proposed Project site to the maximum extent practical, feasible, and available. In addition, carpooling of operations and maintenance workers shall be encouraged.

7.2 POTENTIALLY SIGNIFICANT IMPACTS MITIGATED TO LESS THAN SIGNIFICANT LEVELS

7.2.1 Air Quality

PM_{10} emissions would result from construction and maintenance activities required to implement DCMs at Owens Lake. Construction activities would generate PM_{10} emissions due to surface disturbance, creation of berms, travel of vehicles and construction equipment on unpaved surfaces, and material handling of gravel for those areas that would use Gravel Cover for dust mitigation. Mitigation Measure AIR-1 would reduce dust emissions during construction and maintenance activity to less than significant levels.

Air-1. Fugitive Dust Emissions Control and Minimization. In compliance with GBUAPCD requirements, a Dust Control Plan shall be implemented during construction. The plan shall specify specific measures to be taken when removing T18S DCA from service. Best available control measures shall be implemented during construction and maintenance activities to minimize emission of fugitive dust from earthwork and travel on unpaved roads and other areas. Best available control measures may include, but would not be limited to:

- Temporary sand fences shall be installed where feasible as soon as practicable without delaying Project completion and shall be maintained as necessary until areas of Managed Vegetation have been established. Sand fences may be used temporarily during construction in order to limit the movement of sand from construction zones to adjacent areas of the lake bed. Sand fence would be black fabric with 50 percent porosity that is UV stabilized (Model SF-50 from U.S. Fence, or equivalent) and supported by steel T-posts (approximately 7 feet in height and driven into the ground to a depth of approximately 4 feet, resulting in approximately 3 feet of height for exposed post). Since the fence will not exceed 60 inches in height, wire or monofilament line across the top would not be necessary to reduce perching by predators (corvids). Temporary sand fence shall be maintained and then removed at the completion of construction activities. Sand fences that deteriorate and could potentially create litter on the lake bed shall be repaired or removed.
- Water trucks shall be used as necessary and feasible during construction - engineering specifications shall mandate water sprays not less than three times per day on each main access road and temporary or secondary road that is being used in construction.
- Tillage shall be implemented where soil conditions allow.
- Placement of a gravel surface on interim staging areas within the DCA used by the contractor.
- Construction activities shall cease during high wind events.

At a minimum, one or more of the applicable best available control measures shall be used during active operations to minimize fugitive dust emissions from each fugitive dust source type. The final selection of the BACM controls depends upon the final engineering design and construction plans, and GBUAPCD's approval.

7.2.2 Biological Resources

Mitigation Measures BIO-1 through BIO-4 were described in the 2008 SIP Supplemental EIR (GBUAPCD, 2008a) for the 15.1 square miles of DCMs proposed under that project. These measures are still relevant to the Phase 9/10 Project areas. Mitigation Measure BIO-5 would reduce impacts on other nesting birds, if any are present during construction or maintenance of the Phase 9/10 Project. To reduce impacts to biological resources to a less than significant level, the following mitigation measures shall be implemented.

BIO-1. Lake Bed Worker Education Program. To minimize potential direct impacts to Snowy Plover from construction activities, LADWP shall continue the lake bed worker education program consistent with the previous approach and per CDFW recommendations. The program shall be based on Snowy Plover identification, basic biology and natural history, alarm behavior of the snowy plover, and applicable mitigation procedures required of LADWP and construction personnel. The program shall be conducted by a biologist familiar with the biology of the Snowy Plover at Owens Dry Lake and familiar with special status plant and wildlife species of the Owens Lake basin. The education program shall explain the need for the speed limit in the snowy plover buffer areas and the identification and meaning of buffer markers. All construction, operation, and maintenance personnel working within the Project area shall complete the program prior to their working on the lake bed. A list of personnel who have completed the education program shall be maintained and made available to GBUAPCD and CDFW upon request.

BIO-2. Preconstruction Surveys for Snowy Plover. To minimize potential direct impacts to Snowy Plover within the Project area due to construction activities, LADWP shall conduct a preconstruction survey for Snowy Plover in all potential snowy plover habitat prior to any construction activity that is performed during the Snowy Plover breeding season (March 15 to August 15). Preconstruction surveys shall be performed no more than 7 days prior to the start of ground-disturbing activities. A 200-foot buffer shall be placed around all active snowy plover nests that are discovered within the construction area. This buffer shall protect the plover nest from both destruction and construction noise. Green-colored stakes of less than 60 inches in height shall be used to mark buffer edges, with stakes spaced at approximate cardinal directions. The location of the nest (global positioning system coordinates) and current status of the nest shall be reported within 24 hours of discovery to GBUAPCD and CDFW. Maps of snowy plover nest locations shall be posted at the construction office and made available to all site personnel and GBUAPCD staff, and submitted to CDFW. The activity of the nest shall be monitored by a biological monitor, as per existing guidelines for the North Sand Sheet and Southern Zones dust control projects and any revisions to the monitoring protocol that have been approved by CDFW. Active snowy plover nests shall be monitored at least weekly. The nest buffer shall remain in place until such time as the biological monitor determines that the nest is no longer active and that fledglings are no longer in danger from proposed construction activities in the area. Buffers shall be more densely marked where they intersect project-maintained roads. Vehicles shall be allowed to pass through nest buffers on maintained roads at speeds less than 15 miles per hour, but shall not be allowed to stop or park within active nest buffers. Permitted activity within the nest buffer shall be limited to foot crews working with hand tools and shall be limited to 15-minute intervals, at least 1 hour apart, within a nest buffer at any one time.

BIO-3. Snowy Plover Nest Speed Limit. To minimize potential direct and cumulative impacts to Snowy Plover and other sensitive biological resources from vehicles construction activities, LADWP shall implement a speed limit of 30 miles per hour within all active construction areas on Owens Dry Lake during construction of dust control measures. Speed limits shall be 15 miles per hour within active snowy plover nest buffers. Designated speed limits for other construction areas outside of active nest buffers shall be maintained at 30 miles per hour where it is determined to be safe according to vehicle capabilities, weather conditions, and road conditions. Site personnel and GBUAPCD staff shall be informed daily of locations where active nest buffers overlap with roads in the construction area. Signs shall be posted that clearly state required speed limits. Speed limit signs shall be posted at all entry points to the lake. The number of speed limit signs shall be kept at a minimum near active snowy plover nest areas to reduce potential perches for raptors and other snowy plover predators and shall be outfitted with Nixalite or the functional equivalent if greater than 72 inches (increased from the original 60 inches) in height at entry points to the lake and 60 inches in height by active snowy plover nest areas.

BIO-4. Lighting Best Management Practices. To minimize indirect impacts to nesting bird species associated with Project lighting during construction activities, LADWP shall institute all best management practices to minimize lighting impacts on nocturnal wildlife consistent with previous requirements and CDFW recommendations. Best management practices include those listed below, and are included in the Project Description of the GBUAPCD 2008 State Implementation Plan Subsequent Environmental Impact Report. Previous construction has occurred during nighttime hours to complete construction schedules and to prevent personnel from working during times of high temperatures. If night work is deemed necessary, then construction crews shall make every effort to shield lighting on equipment downward and away from natural vegetation communities or playa areas, and especially away from known nesting areas for snowy plovers during the nesting season (March 15 to August 15). All lighting, in particular any permanent lighting, on newly built facilities shall be minimized to the greatest extent possible, while still being in compliance with all applicable safety requirements. Required lighting shall be shielded so that light is directed downward and away from vegetation or playa areas.

BIO-5. Preconstruction Surveys for Nesting Birds. If vegetation removal activities are scheduled to occur during the bird breeding season (January 15 to July 31), pre-construction surveys for bird nests shall be conducted no more than 7 days prior to the start of ground-disturbing activities. Surveys shall be conducted in areas of suitable nesting habitat that will be impacted by construction. Active nests will be marked at a safe distance with visible flagging and the construction crew supervisor will be made aware of these locations. Construction may commence in all areas without active bird nests. All bird nests will remain undisturbed while they are active. After a nest ceases to be active (fledges or fails), and the qualified biologist has made this determination, construction may proceed in the area. If construction is initiated in one breeding season and persists into subsequent breeding seasons, additional surveys are not necessary unless construction activities involve additional vegetation removal.

7.2.3 Transportation and Traffic

Impacts on transportation and traffic were found to be less than significant with the exception of increased traffic hazards from truck travel during Project construction (**Appendix A**). Mitigation measures Trans-1 and Trans-2 shall be implemented to reduce impacts on traffic hazards to less than significant levels:

Trans-1. LADWP shall develop and implement a Traffic Work Safety Plan to be approved by Caltrans for the construction phase of the Phase 9/10 Project. The Plan shall address the use of warning lights, signs, traffic cones, signals, flag persons and/or comparable measures as needed to maintain safe travel of haul trucks on SR 136 and SR 190 during construction.

Trans-2. LADWP shall repair damage to SR 136 and SR 190 where Project related truck traffic would travel on these roadways. Prior to the start of construction activity, existing conditions on SR 136 and SR 190 shall be documented. After construction is complete, physical damage documented on the portions of SR 136 and SR 190 used for construction of the Phase 9/10 Project shall be repaired. In addition, LADWP shall have its contractor install corrugated steel plates to reduce the possibility of trucks tracking dirt onto the highways. Any debris tracked onto the highways shall be removed in a timely manner.

7.3 SIGNIFICANT ENVIRONMENTAL IMPACTS FOR WHICH NO FEASIBLE MITIGATION IS AVAILABLE

7.3.1 Cultural Resources

Construction of the Phase 9/10 Project would significantly impact CRHR-eligible archaeological resources located in the Project areas. As described above, implementation of a Phase III data recovery program for the significant archaeological sites located in the Phase 9/10 Project DCAs is not identified as feasible mitigation for the Project to reduce impacts on archaeological resources to below a level of significance. Implementation of mitigation measures CR-1 to CR-5 would ensure adequate evaluation of cultural materials found during construction, and reduce impacts to below a level of significance for historic era structures or buildings, human remains, and paleontological resources. However, the portions of the 12 CRHR-eligible sites, and any significant archaeological sites on BLM or private property or any significant archaeological sites discovered during construction, that overlap with Project construction areas would still be significantly adversely impacted. Therefore, the impact on archaeological resources after incorporation of feasible mitigation is significant.

As a result of the cultural resource analysis, LADWP has identified an environmentally superior alternative (Avoidance Alternative, **Section 5**) that excludes approximately 278 acres (plus the acreage of significant sites on BLM and private lands, and any significant archaeological sites identified during construction) of the original 3.61 square mile Phase 9/10 Project in order to reduce impacts to significant archaeological resources to a less than significant level.

However, if the Phase 9/10 Project is adopted by LADWP as proposed for all 3.61 square miles of new DCAs, then a Phase III data recovery program would be implemented as a mitigation measure for known significant archaeological sites and the impact of the proposed Project on archaeological resources would be significant with incorporation of mitigation.

7.4 ALTERNATIVES TO THE PROPOSED PROJECT

The following alternatives to the proposed Project were evaluated:

- **No Project** – no construction of dust control on 3.61 square miles of Owens Lake and no transition of 1.82 square miles of existing Shallow Flooding to a hybrid of Shallow Flooding and Gravel Cover.

- **Alternative BACM Scenarios**, including varying combinations of Brine Shallow Flooding, TwB2 and Engineered Roughness.

- **Avoidance Alternative** – Construction of the proposed Project in all areas except 278 acres where there are known significant archaeological sites (plus any areas with significant archaeological resources on federal or private parcels, or discovered during construction).

7.4.1 Environmentally Superior Alternative

The Avoidance Alternative would protect significant cultural resources, increase vegetated area in Duck Pond L-1 and C2-L1 DCAs, maintain or enhance overall habitat values of the Project areas, and achieve dust control on approximately 3.18 square miles of the lake identified as emissive. With participation in a CRTF to further address the environmentally sensitive areas, the Avoidance Alternative best meets the Project objectives with the least impacts and, therefore, is environmentally superior to the proposed Project and to the other alternatives evaluated. BLM's analysis of Project impacts on cultural resources and BLM policies concerning cultural resources is pending. However, under the Avoidance Alternative, BACM would not be installed on the portions of federal parcels with significant cultural resources. Under the Avoidance Alternative, impacts on federal land use policies would be less than significant.

Implementation of the Avoidance Alternative and the following mitigation measures would reduce impacts on cultural resources to less than significant levels:

CR-1. Avoidance of resources immediately adjacent to the Phase 9/10 Project Areas to the extent feasible – using a 100-foot buffer around archaeological sites

Construction activities and heavy vehicle travel could inadvertently damage intact portions of cultural resources adjacent to the various Phase 9/10 Project areas. A qualified archaeologist shall prepare maps depicting archaeological sites with a 100-foot buffer as environmentally sensitive areas. The location of the buffer will be noted in the field through survey and a marking system. To avoid identifying the locations of significant cultural resources to the public, no physical barriers will be erected. These maps shall be available for cultural resources monitors and construction crews to use for avoidance during all construction activities and vehicle transportation through the Phase 9/10 Project areas.

CR-2. Cultural Resources on Private Parcels

As of January 2015, all of the private parcels included in the Phase 9/10 Project have been surveyed for cultural resources. Due to the time delay resulting from securing permissions to survey the sites, evaluations of the significance of observed cultural resources are pending. Prior to construction on private lands, a qualified archaeologist shall conduct evaluative testing (Phase II investigation), if recommended by the Project archaeologist.

Under the Avoidance Alternative to the proposed Project, the treatment plan for significant archaeological resources identified on private parcels shall describe avoidance/preservation in place. If the Avoidance Alternative is not adopted, and the proposed Project for the entire 3.61 square miles of dust control is adopted by LADWP, and if avoidance of significant archaeological resources on private parcels is deemed infeasible, a data recovery plan shall be implemented for the resources and the impact on archaeological resources would be significant with mitigation.

CR-3. Cultural Resources Construction Monitoring Program

Impacts to surface and subsurface cultural resources not previously identified shall be mitigated through preparation of a cultural resources monitoring program and its implementation during construction or other ground-disturbing activities. The Cultural Resources Construction Monitoring Program shall include:

- The retention of a qualified archaeologist to implement a monitoring and recovery program. The "qualified archaeologist" shall meet the U. S. Secretary of the Interior's Historic Preservation Professional Qualification Standards for Archaeology. The qualifications of the archaeologist shall be submitted to the responsible agency (CSLC) for approval.

- The Lone Pine Paiute-Shoshone tribe shall be contacted prior to the start of Project construction. Qualified Lone Pine Paiute-Shoshone cultural resources monitors shall be afforded an opportunity to be present during earthwork and excavation activities associated with construction of the Phase 9/10 Project.

- The qualified archaeologist shall be required to secure a written agreement with a recognized museum repository, such as the University of California, Riverside, regarding the final disposition and permanent storage and maintenance of any unique archaeological resources or historical resources recovered as a result of the archaeological monitoring, as well as corresponding geographic site data that might be recovered as a result of the specified monitoring program. The written agreement shall specify the level of treatment (i.e., preparation, identification, curation, cataloging, etc.) required before the collection would be accepted for storage.

- The qualified archaeologist shall provide cultural resources awareness training prior to the start of construction for all construction personnel. Construction personnel shall be briefed on procedures to be followed in the event that a unique archaeological resource, historical era building or structure, or human remains are encountered during construction. A training log shall be kept on-site throughout the construction period. The qualified archaeologist will also prepare and distribute informative Fact Sheets regarding archaeological and Native American sensitivities that provide samples of possible finds and procedures to be followed in the event of a discovery. The Fact Sheet will also have relevant contact information for the archaeologist, including a telephone number where they can be reached by the construction contractor, as necessary.

- The qualified archaeologist shall monitor ground-disturbing activities, including trenching, grading, and other earth-moving activities in each of the Phase 9/10 Project DCAs, including C2-L1, Duck Pond-L1 (including an access road), T10-1-L1 (including an access road), T17-2-L1, T21-L1, T21-L2, T32-1-L1, T35-2-L1, T37-1-L1, T37-2-L1, T37-2-L2, T37-2-L3, T37-2-L4, Duck Pond-L2, T10-3-L1, T21-L3, and T21-L4. In T18S DCA, which was previously disturbed by shallow flooding, the qualified archaeologist will determine monitoring locations and frequency. Monitors will move among construction locations as directed by LADWP in consultation with the cultural resources manager and the construction contractor. Backfilling and removal of previously constructed berms composed of previously disturbed soils generally will not require monitoring. In those areas, it will be up to the discretion of the archaeological monitor to determine which areas will require monitoring and how frequently. The archaeologist will consult with LADWP and LADWP will halt work briefly in a single location as necessary to examine soils and possible archaeological features. The archaeologist shall coordinate with the construction manager to divert work around the discovery of any potentially significant archaeological resource, if any are encountered. In the event of a cultural resources discovery, avoidance measures such as staking a 100-foot buffer (or in case of human remains, steel plating) will be used to prohibit or otherwise restrict access to sensitive areas until a qualified archaeologist can assess the significance of the find according to CRHR criteria. If the resource is determined to be significant, the qualified archaeologist shall prepare and implement a treatment plan in consultation with LADWP. Construction will not recommence in the area until authorized to do so by LADWP.

  If significant historic era buildings or structures are newly identified during construction activities, then Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) documentation would be prepared to reduce impacts below a level of significance.

  Under the Avoidance Alternative to the proposed Project, the treatment plan for newly discovered significant archaeological resources will describe avoidance/preservation in place. If the Avoidance Alternative is not adopted, and the proposed Project for the entire 3.61 square miles of dust control is adopted by LADWP, and if avoidance of newly discovered significant archaeological resources is deemed infeasible, a data recovery plan shall be implemented for the resources and the impact on archaeological resources would be significant with mitigation.

- If construction personnel discover a cultural resource in the absence of an archaeological monitor, construction shall be halted within 100 feet of the find, and a qualified archaeologist shall be contacted to perform Phase II excavations to evaluate the resource and recommend the appropriate treatment. If the resource is determined to be significant, the qualified archaeologist shall prepare and implement a treatment plan in consultation with LADWP. Construction will not recommence in the area until authorized by LADWP.

- The qualified archaeologist shall ensure that all construction personnel are informed of the requirements to notify the Inyo County coroner within 24 hours of the discovery of human remains on state lands (as required by Public Resources Code 5097).

- The coordinates of artifacts, features, and sites will be obtained by the archaeologist, and artifacts from ineligible sites and isolated artifacts discovered during construction will be collected, cataloged, and placed in a dry and secure temporary storage area until the end of the Project, when they will be given to the CSLC for dissemination to the Lone Pine Paiute-Shoshone Reservation. Any artifacts that may be collected from CRHR-eligible sites will be curated at the repository at University of California, Riverside.

- The qualified archaeologist shall maintain daily monitoring logs during ground-disturbing activities that shall be submitted weekly to LADWP. A complete set of the daily monitoring logs shall be kept on site throughout the ground-disturbing activities and be available for inspection. The daily monitoring log shall indicate the area monitored, the date, assigned personnel including tribal representatives, and the results of monitoring, including the recovery of archaeological resources, sketches of recovered materials, photographic record, and associated geographic site data. In addition, progress reports that describe new discoveries and issues in the field shall be submitted weekly to LADWP. Within 120 days of the completion of the archaeological monitoring, a monitoring report shall be submitted to LADWP, CSLC, and to the EIC at the University of California, Riverside. The report, when submitted to LADWP, shall signify the completion of the program to mitigate impacts to unique archaeological resources or historical resources.

CR-4. Unanticipated Discovery of Human Remains

Upon the discovery of human remains, there shall be no further excavation or disturbance of the site or any areas that are reasonably suspected to overlie adjacent human remains until the following conditions are met:

- The Inyo County Coroner has been informed and has determined that no investigation of the cause of death is required.
- If the remains are of Native American origin, the Native American Heritage Commission (NAHC) will be contacted. In consultation with the Most Likely Descendant, the NAHC and qualified archaeologist shall determine the treatment and disposition of the human remains and any associated grave goods, with appropriate dignity, as provided in Public

Resources Code Section 5097.98. Avoidance of human remains shall be considered to the extent feasible.

- If the remains are not of Native American origin, the Inyo County Coroner will make a determination as to the disposition of the remains.

Ground-disturbing activities may continue once compliance with all relevant sections of the California Health and Safety Code have been addressed and authorization to proceed issued by the Inyo County Coroner and LADWP.

CR-5. Paleontological Resources Construction Monitoring Program

Impacts to surface and subsurface paleontological resources not previously identified shall be mitigated through preparation of a written paleontological monitoring plan to be implemented during construction ground-disturbances, including trenching, grading, and other earth-moving activities. Backfilling and removal of previously constructed berms composed of previously disturbed soils would not require monitoring. LADWP shall require that construction monitoring, salvage, and recovery of unique paleontological resources is consistent with standards for such recovery established by the Society of Vertebrate Paleontology (SVP). The Paleontological Resources Construction Monitoring Program shall include:

- LADWP shall retain a qualified paleontologist to implement the mitigation plan and maintain professional standards of work. A "qualified paleontologist" is defined as a practicing scientist who meets the qualifications established by the SVP. The qualifications of the paleontologist shall be submitted to the responsible agency (CSLC) for approval.

- The qualified paleontologist shall be required to secure a written agreement with a recognized repository, regarding the final disposition, permanent storage, and maintenance of any significant fossil remains and associated specimen data and corresponding geologic and geographic site data that might be recovered as a result of the specified monitoring program. The written agreement shall specify the level of treatment (i.e., preparation, identification, curation, cataloging, etc.) required before the collection would be accepted for storage. In addition, a technical report shall be completed. The final disposition of paleontological resources recovered on State lands must be approved by the CSLC.

- The paleontological monitor may be a qualified paleontologist or a cross-trained archaeologist or geologist working under the supervision of a qualified principal paleontologist. The function of the monitor is to identify potential resources and recover them with appropriate scientific data.

- LADWP shall require the qualified paleontologist to provide a paleontological resources briefing prior to the start of construction for all construction personnel. Construction personnel shall be briefed on procedures to be followed in the event that a unique paleontological resource is encountered during construction. A training log shall be kept on-site throughout the construction period. The qualified paleontologist will also prepare and distribute informative Fact Sheets regarding paleontological sensitivities that provide samples of possible finds and procedures to be followed in the event of a discovery. The Fact Sheet will also have relevant contact information for the paleontologist, including a telephone number where they can be reached by the construction contractor, as necessary.

- The paleontological monitor shall monitor ground-disturbing activities, including trenching, grading, and other earth-moving activities, in each of the Phase 9/10 Project areas, including C2-L1, Duck Pond-L1 (including an access road), T10-1-L1 (including an access road), T17-2-L1, T21-L1, T21-L2, T32-1-L1, T35-2-L1, T37-1-L1, T37-2-L1, T37-2-L2, T37-2-L3, T37-2-L4, Duck Pond-L 2, T10-3-L1, T21-L3, T21-L4, and T18S DCAs. Monitors will move among construction locations as directed by LADWP in consultation with the Project cultural resources manager. Backfilling and removal of previously constructed berms composed of previously disturbed soils would not require monitoring. The monitor shall coordinate with the construction manager to divert work around potentially significant paleontological resources, if any are encountered.

- Discovery of fossil-producing localities shall require that stratigraphic columns be measured and that geologic samples be taken for analysis.

- If fossil localities are discovered, the paleontologist shall collect controlled samples for processing. All fossils recovered shall be prepared, identified, and cataloged before submission to the accredited repository designated by the lead agency.

- In conjunction with the subsurface work, the paleontological monitor shall inspect exposed sediments, including microscopic examination of matrix, to determine if fossils are present. In addition, the qualified paleontologist shall be available on call to respond to unanticipated discoveries.

- If construction personnel discover a paleontological resource in the absence of a paleontological monitor, construction shall be halted as directed by LADWP and in accordance with SVP guidelines, a qualified paleontologist shall be contacted to evaluate the resource and make recommendations regarding its treatment. If the fossil material is determined to be significant, the qualified paleontologist shall prepare and implement a treatment plan in consultation with LADWP. Construction activity shall not resume until authorization has been provided by LADWP.

- The qualified paleontologist or paleontological monitor shall maintain daily monitoring logs during ground-disturbing activities that shall be submitted weekly to LADWP. A complete set of the daily monitoring logs shall be kept on site throughout the ground-disturbing activities and be available for inspection. The daily monitoring log shall indicate the area monitored, the date, assigned personnel including the tribal representative, and the results of monitoring, including the recovery of paleontological resources, sketches of recovered materials, photographic record, and associated geographic site data. In addition, progress reports that describe new discoveries and issues in the field shall be submitted weekly to LADWP. Within 120 days of the completion of the paleontological monitoring, a final mitigation report shall be submitted to LADWP, and CSLC with an appended, itemized inventory of the specimens observed and collected. The report should include a list of specimens recovered, documentation of each locality, interpretation of fossils recovered and any technical or specialist's reports as appendices. The report and inventory, when submitted to LADWP, shall signify the completion of the program to mitigate impacts to paleontological resources.

7.5 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

As described in **Section 4.4**, the Phase 9/10 Project as originally proposed (3.61 square miles of dust control) would have significant irreversible impacts on archaeological resources. Therefore, an alternative to the Project has been defined. With implementation of mitigation measures, the Avoidance Alternative will have less than significant impacts on archaeological resources.

Construction of the Project will require the use of heavy equipment, workers' vehicles, and gravel hauling trucks. The equipment and vehicles will consume nonrenewable fossil fuels for the length of construction, and during the life of the Project for maintenance. The objective of the Phase 9/10 Project is to implement DCMs on Owens Lake to reduce emissions in accordance with applicable laws without increasing water commitments while, to the extent feasible, maintaining existing habitat values, maintaining aesthetic values, providing safe public access, preserving cultural resources, and utilizing existing infrastructure. Overall, since the Project would improve environmental conditions in the area, the benefits of the Project justify the use of irreplaceable resources (fossil fuels) and the irreversible environmental changes associated with the Project would be less than significant.

With implementation of the Avoidance Alternative and identified mitigation measures, there would be no significant irreversible environmental changes associated with the Phase 9/10 Project.

7.6 GROWTH-INDUCING IMPACTS

The CEQA Guidelines Section 15126.2(d) require that an EIR identify:

- The ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly in the surrounding environment
- Obstacles to growth removed by the project
- Characteristics of the projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively

The proposed Project does not involve construction of new homes or businesses and does not include construction of new, potentially growth-inducing, infrastructure such as potable water or wastewater systems. The Project would expand the existing system of DCMs on Owens Lake for the improvement of air quality. Infrastructure associated with the OLDMP would not foster population growth. Therefore, the Project would not be directly or indirectly growth-inducing related to expansion of infrastructure systems.

The Project would require approximately 100 construction workers on Owens Lake for 18 months. It is anticipated that these workers would frequent businesses in the Project area during this period. However, due to the limited number of workers required and the temporary nature of construction, the impact on economic growth is less than significant. Operation of the Project would require approximately four additional workers over existing operations and maintenance staff. The impact on economic growth would be less than significant.

Section 8
References, Acronyms and Preparers

This section includes references used during preparation of the EIR, and acronyms and abbreviations used in the document. Preparers of the EIR are also listed.

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8.2 PERSONS CONSULTED

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8.3 ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
A.D.	Anno Domini
afy	acre-feet per year
AQMP	Air Quality Management Plan
ASTM	American Society for Testing and Materials
ATSAC	Automated Surveillance and Control
BACM	Best Available Control Measure
BLM	Bureau of Land Management
BMPs	Best Management Practices
BOD	Biochemical Oxygen Demand
B.P.	Before Present
BRMP	Bishop Resource Management Plan
ca.	Circa
Ca	Calcium
C&C	Carson and Colorado Railroad Company
CAA	Clean Air Act
CAAA	California Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
Cal/EPA	California Environmental Protection Agency
CA LEV II	California Low Emission Vehicle II
CARB	California Air Resources Board
CARV	Combination Air Vacuum Release Valve
CCR	California Code of Regulations

CDCAP	California Desert Conservation Area Plan
CDFG	California Department of Fish and Game (now California Department of Fish and Wildlife)
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFC	Chlorofluorocarbon
CFP	California Fully Protected
cfs	cubic feet per second
CH_4	methane
CH	Critical Habitat
CIWMB	California Integrated Waste Management Board
CIR	color-infrared
cm	centimeters
CMP	Congestion Management Program
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2-e	carbon dioxide equivalent
COPEC	chemicals of potential ecological concern
CR	California Rare
CRHR	California Register of Historic Resources
CRTF	California Resources Task Force
CSC	California Species of Special Concern
CSCU	Controlled Surface Collection Units
CSLC	California State Lands Commission
CUPA	Certified Unified Program Agency
CV	Control Valve
CWA	Clean Water Act
dBA	Decibel, A-weighted scale
DCA	Dust Control Area

DCM	Dust Control Measures
EC	Electrical Conductivity
EDR	Environmental Data Resources, Inc.
EIC	Eastern Information Center
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ETV	Environmental Technology Program
Farmland	Prime Farmland, Unique Farmland, or Farmland of Statewide Importance
°F	degrees Fahrenheit
FAC	Facultative
FACW	Facultative Wetland
FC	Listed as candidate under the federal Endangered Species Act
FE	Federal Endangered Species
FE	flow elements
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FLPMA	Federal Land Policy and Management Act
FMMP	Farmland Mapping and Monitoring Program
FPS	Federally Protected Species
FSEIR	Final Subsequent Environmental Impact Report
ft	Feet
FT	Listed as threatened under the federal Endangered Species Act
GANDA	Garcia and Associates
GC	Gravel Cover
GHG	Greenhouse Gas
FSEIR	Final Subsequent Environmental Impact Report
GBUAPCD	Great Basin Unified Air Pollution Control District
GMS	groundwater modeling system
gpm	gallons per minute
HCFC	Hydrochlorofluorocarbons
HCP	Habitat Conservation Plan
HDPE	High Density Polyethylene

HFC	hydrofluorocarbons
HFE	hydrofluorinated ethers
hp	horsepower
H_2S	hydrogen sulfide
HSC	(California) Health and Safety Code
HSM	Habitat Suitability Model
Hwy	Highway
Hz	hertz
I	Interstate
IDC	Inyo Development Company
IS	Initial Study
km	Kilometer
KV	Kilovolt
LAA	Los Angeles Aqueduct
LADWP	(City of) Los Angeles Department of Water and Power
lbs	pounds
LC	Local Concern
Ldn	day/night noise level
Leq	equivalent noise level
LGP	Low Ground Pressure
LOEC	Lowest Observed Effective Concentration
LORP	Lower Owens River Project
LOS	Level of Service
LST	Localized Significance Threshold
LGP	Low Ground Pressure
M&R	Moat and Row
MBTA	Migratory Bird Treaty Act
MCL	Maximum Contaminant Level
MDCE	minimum dust control efficiencies
Mg	Magnesium
Mg/kg	Milligrams per kilogram
Mg/L	Milligrams per liter
MMRP	Mitigation Monitoring and Reporting Program

MMT	million metric tons
MOA	Memorandum of Agreement
MPO	Metropolitan Planning Organization
mS/cm	milliSiemens per centimeter
MSDS	Material Safety Data Sheet
MSL	Mean Sea Level
MVN	Managed Vegetation
MW	Megawatt
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NF_3	nitrogen trifluoride
NHPA	National Historic Preservation Act
N_2O	nitrous oxide
NO_2	nitrogen dioxide
NO_3	nitrate
NO_x	Oxides of Nitrogen
NOEC	No Observed Effect Concentration
NOP	Notice of Preparation
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NSPC	Natural Soda Products Company
O_3	ozone
OBL	Obligate
OBWS	Owens Basin Wetland and Aquatic Species
ODSs	Ozone-Depleting Substances
OEHHA	(California) Office of Environmental Health Hazard Assessment
OLDMP	Owens Lake Dust Mitigation Program
OLGEP	Owens Lake Groundwater Evaluation Project
OLHMP	Owens Lake Habitat Management Plan
OPR	(Governor's) Office of Planning and Research
OVPA	Owens Valley Planning Area

PAH	Polycyclic Aromatic Hydrocarbons
PAM	Polyacrylamide
Pb	lead
PCE	Passenger Car Equivalent
PCE	tetrachloroethylene
PE	Proposed to be listed as endangered under the federal Endangered Species Act
PFC	perfluorocarbons
PIT	Pressure Indicating Transmitters
$PM_{2.5}$	particulate matter 2.5 microns or less in diameter
PM_{10}	particulate matter 10 microns or less in diameter
POM	Polycyclic Organic Matter
ppm	parts per million
PRV	Pressure Reducing Valve
PT	Proposed to be listed as threatened under the federal Endangered Species Act
PV	Photovoltaic
PZEV	Partial Zero-Emission Vehicle
RAP	Remedial Action Plan
ROG	reactive organic gases
ROW	Right-of-Way
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board (Regional Board)
SB	Senate Bill
SC	Special Concern
SCAB	South Coast Air Basin
SCADA	Supervisory Control And Data Acquisition
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCCIC	South Central Coast Information Center
SCR	Supplemental Control Requirement
SCRD	Supplemental Control Requirement Determination
SE	Listed as endangered by the State of California
SEIR	Supplemental Environmental Impact Report
SF_6	sulfur hexafluoride

SFL	Shallow Flooding Lateral
SFL	State and Federal Lands
SFP	Shallow Flooding Pond
SHPO	State Office of Historic Preservation
SIP	State Implementation Plan
SIV	Suitability Index Value
SMARA	(California) Surface Mining and Reclamation Act
SNA	Significant Natural Areas
SO_2	sulfur dioxide
SO_x	sulfur oxides
SOP	Standard Operating Procedure
SOVSR	Southern Owens Valley Solar Ranch
S.P.	Southern Pacific Railway
SPCC	Spill Prevention Control and Countermeasure
Sq mi	Square Mile
SR	State Route
SR	State Listed Rare Species
SSC	Species of Special Concern
ST	Listed as threatened under the State of California
STC	Sound Transmission Class
STLC	Soluble Threshold Limit Concentration
STPs	Shovel Test Pits
SULEV	Super Ultra-low Emission Vehicle
SVP	Society of Vertebrate Paleontology
SWPPP	Storm Water Pollution Prevention Plan
TAC	Toxic Air Contaminants
TAM	Transmontane Alkali Meadow
TCE	trichloroethylene
TSP	Total Suspended Particulates
TL	Tillage
TTLC	Total Threshold Limit Concentration
µg/m3	micrograms per cubic meter
ULEV	Ultra-low Emission Vehicle

USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
UV	Ultraviolet
UWMP	Urban Water Management Plan
V/C	volume-to-capacity (ratio)
VAC	Volt Alternating Current
VOC	Volatile Organic Compound
vph	vehicles per hour
WDR	Waste Discharge Requirements
WL	Watch List

8.4 GLOSSARY OF CULTURAL RESOURCES TERMS

Historic debris – a grouping of historic-era trash, such as bottles, broken glass, ceramics, metal, or structural items.

Isolates –Fewer than ten artifacts discovered within a 10-by-10-meter area that appears to reflect a single event, loci, or activity.

Lithic tools – stone artifacts such as projectile points (arrowheads), scrapers, and knives.

Lithic scatter – chipped stone debris dispersed throughout an area.

Multicomponent site – a site containing artifacts of both prehistoric and historic origin.

Rock feature – arrangements of rock that form a pattern, such as rock piles or rock alignments.

Tabular concentration (clusters) – a grouping of thin lithic artifacts, slightly ovoid in shape with flat surfaces, and usually sharpened along the edges.

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