CHAPTER 3.0
ENVIRONMENTAL SETTING

3.1 AESTHETICS / VISUAL RESOURCES

This section provides a discussion of the existing visual resources in the vicinity of the proposed project / proposed action site that could potentially be affected by the construction and operation of the proposed project / proposed action and alternatives. This section references the Visual Resource Management Approach used by the BLM to evaluate key observation points (KOPs) (see Appendix B, *Visual Resources Technical Report*).[1,2,3]

3.1.1 REGULATORY FRAMEWORK

3.1.1.1 FEDERAL

A. Section 4(f) of the U.S. Department of Transportation Act of 1966

The U.S. Department of Transportation Act of 1966, Section 4(f), "Protection of Publicly Owned Park, Recreation Area, Wildlife or Waterfowl Refuge, or Land from Historic Sites," provides certain protections to publicly owned parks; recreation areas; wildlife and waterfowl refuges; and land from historic sites of national, state, or local significance. Section 4(f) requires that the federal agency must show that there are no feasible or prudent alternatives to the use of these areas.

B. Federal Land Policy and Management Act

The FLPMA of 1976 identifies scenic resources as one of the resources that the BLM must manage on public lands. The BLM's Visual Resource Management (VRM) policy establishes a visual assessment methodology to inventory and manage scenic values on public lands. The BLM manual M-8400 (VRM), Handbook H-8410 (Visual Resource Inventory [VRI]), and Handbook H-8431 (Visual Resource Contrast Rating [VRCR]) provide policies and procedures for determining visual resource values, establishing management objectives, and evaluating proposed actions for conformance with the objectives established by the BLM.

C. Visual Resource Inventory

The primary means to determine visual resource values is to conduct a VRI, as described in Manual H-8410-1 – Visual Resource Inventory (Manual H-8410-1). The VRI is a process to determine visual (scenic) values within the Field Office at a specific point in time. Visual Resource Inventory Classes provide the basis for considering visual values in the Resource Management Planning process and incorporate several factors including scenic quality, viewer sensitivity and viewing distance. They do not establish management direction but do provide a basis for analyzing impacts and developing mitigating measures for projects. They are considered the baseline data for existing conditions.

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[1] Bureau of Land Management. 1984. *Manual 8400 – Visual Resource Management* (VRM). Available at: http://www.blm.gov/nstc/VRM/8400.html

[2] Bureau of Land Management. 1986. *Manual H-8431 – Visual Resource Contrast Rating*. Available at: http://www.blm.gov/nstc/VRM/8431.html#Anchor-II-47857

[3] Bureau of Land Management. 1986. *Manual H-8410-1 – Visual Resource Inventory*. Available at: http://www.blm.gov/nstc/VRM/8410.html

Based on a scenic quality, sensitivity level, and distance zones, federal lands managed by the BLM are placed into one of four VRI classes that represent the relative value of the visual resources. There are four VRI classes (I to IV). These inventory classes represent the relative value of the visual resources. Classes I and II are the most valued, Class III represents a moderate value, and Class IV is of the least value for visual resources.

D. Visual Resources Management

The BLM determines VRM classes through analyses of multiple land uses and natural resources, including visual resources, for all BLM-administered lands through the RMP process. The VRM classes are a land use plan decision that guides future site-specific management actions for implementing the RMP. Boundaries of classes may be adjusted as necessary to reflect resource allocation decisions made in RMPs. For example, the BLM may assign an area with a VRI Class II designation a VRM Class IV designation, based on its overriding value for mineral resource extraction, or its designation as a utility corridor. Visual Resource Management Objectives that have been established for each class in Manual H-8410-1 (Table 3.1.1.1-1, *Visual Resource Management Objectives by Class*).

The BLM VRI and VRCR were based on an assessment of scenic quality, sensitivity, distance zones, and visual contrast ratings. The project area VRM classification is a Class III. The objective of Class III is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of casual observers. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape. KOPs were used to assess how the proposed project / proposed action would affect the VRM Class III Objectives.

TABLE 3.1.1.1-1
VISUAL RESOURCE MANAGEMENT OBJECTIVES BY CLASS

VRM Class	Objective
Class I	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
Class II	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
Class III	The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
Class IV	The objective of this class is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

Source: Bureau of Land Management. 1986. Manual H-8410-1 – Visual Resource Inventory. Available at: http://www.blm.gov/nstc/VRM/8410.html.

E. Visual Contrast Rating

Manual H-8431 -Visual Resource Contrast Rating (Manual H-8431) (BLM, 1986b) states:

> The contrast rating system is a systematic process used by the Bureau of Land Management (BLM) to analyze potential visual impact of proposed projects and activities. . . . The basic philosophy underlying the system is: The degree to which a management activity affects the visual quality of a landscape depends on the visual contrast created between a project and the existing landscape. The contrast can be measured by comparing the project features with the major features in the existing landscape. The basic design elements of form, line, color, and texture are used to make this comparison and to describe the visual contrast created by the project. This assessment process provides a means for determining visual impacts and for identifying measures to mitigate these impacts.

The contrast rating system is not the only means of resolving potential visual impacts. Rather, it serves as a guide to ensure that potential visual impacts are minimized. The contrast rating is done from key observation points (KOPs), the most critical viewpoints in the project area where the view of a project would be the most revealing. These typically occur along commonly traveled routes or at other likely observation points. Factors considered in selecting KOPs from which the contrast rating is performed include angle of observation, number of viewers, length of time the project is in view, relative project size, season of use, and light conditions.

F. Bishop Resource Management Plan

The BLM is the predominant land owner in the Keeler Dunes area. The Keeler Dunes are located within the Owens Lake Management Area and South Inyo Management Area, two of nine management areas managed by the BLM pursuant to the Bishop Resource Management Plan.[4] The proposed DCMs would be implemented within the Owens Lake Management Area, with the exception of the KCSD well tank (Alternative 5), which is located within the South Inyo Management Area. The BLM's responsibilities include managing public land and associated natural resources to provide a variety of uses. The Bishop Resource Management Plan provides guidance and policies for managing BLM land within the nine management areas, including planning direction for the future use of 750,000 acres of public lands in the eastern Sierra region of Inyo and Mono counties. The management plan's policies and guidelines applicable to the Owens Lake Management Area address several key issues: preservation and protection of the environment; archaeological artifacts; wildlife habitat; and management of land tenure adjustment, domestic sources of minerals, off-highway vehicle use, grazing, recreation, and VRM Class III lands.

[4] U.S. Department of the Interior, Bureau of Land Management, Bakersfield District. 1993. *Bishop Resource Management Plan Record of Decision*. Bakersfield, CA.

3.1.1.2 STATE

A. California Department of Transportation, California Scenic Highway Program

The California Scenic Highway Program preserves and protects scenic highway corridors from changes that would diminish their aesthetic value. Caltrans designates scenic highway corridors and establishes those highways that are eligible for the program. The California Legislature created the Scenic Highway Program in 1963.[5] The California Streets and Highways Code includes a list of highways that are either designated or considered eligible for designation.

There are no officially designated State scenic highways within the vicinity of the proposed project / proposed action site. The nearest officially designated State scenic highways are the portion of SR 190 within Death Valley National Park, which is located approximately 16.7 miles southeast of the proposed project / proposed action site on the opposite side of the Inyo Mountain range; and the stretch of Interstate 395 from Fort Independence Indian Reservation north to the intersection of U.S. 395 and Fish Springs Road, which is located approximately 28.0 miles northwest of the proposed project / proposed action site. The California Scenic Highway Program identified SR 190 approximately 5.4 miles south of the proposed project / proposed action site and U.S. 395 approximately 7.0 miles west of the proposed project / proposed action site as eligible state scenic highways, which is distinct from an officially designated scenic highway.[6,7] An eligible state scenic highway becomes officially designated when the local governing body applies to Caltrans for scenic highway approval, adopts a Corridor Protection Program, and receives notification that the highway has been officially designated.[8]

The purpose of the Scenic Highway Program is to enhance and protect scenic resources along California highways in the following ways:

- Protect the scenic corridor from encroachment of incompatible land uses, such as junkyards, dumps, concrete plants, and gravel pits
- Mitigate activities within the corridor that detract from its scenic quality by proper siting, landscaping, or screening
- Prohibit billboards and regulate on-site signs so they do not detract from scenic views
- Make development more compatible with the environment and in harmony with the surroundings
- Regulate grading to prevent erosion, cause minimal alteration of existing contours, and preserve important vegetative features along the highway
- Preserve views of hillsides by minimizing development on steep slopes and along ridgelines

[5] *California Streets and Highways Code*, Sections 260–284.

[6] California Department of Transportation. 4 February 2009. *The California Scenic Highway System*. Available at: http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm

[7] California Department of Transportation. 14 October 2013. *California Scenic Highway Program: Eligible (E) and Officially Designated (OD) Routes*. Available at: http://www.dot.ca.gov/hq/LandArch/scenic/cahisys.htm

[8] California Department of Transportation. Accessed 12 July 2010. "Frequently Asked Questions." Available at: http://www.dot.ca.gov/hq/LandArch/scenic/faq.htm

- Prevent the need for noise barriers (sound walls) by requiring a minimum setback for residential development adjacent to a scenic highway[9]

3.1.1.3 LOCAL

A. Inyo County General Plan

The Inyo County General Plan provides goals and policies for the protection of scenic and visual resources namely in two elements: the Conservation and Open Space Element and the Circulation Element.

The Conservation and Open Space Element of the Inyo County General Plan provides goals and policies to protect the visual resources in Inyo County and contains a summary of the existing conditions in the planning area and major issues in regards to visual resources.[10]

The Conservation and Open Space Element also provides definitions for visual resources. The Conservation and Open Space Element defines a viewshed as the area that can be seen from a given vantage point and viewing direction. A viewshed is composed of foreground items (items closer to the viewer) that are seen in detail and background items (items at some distance from the viewer) that frame the view.[11] Relevant policies in the Inyo County General Plan include the following:

- Policy VIS-1.1, Historic Character. The County shall preserve and maintain the historic character of communities within the County.
- Policy VIS-1.2, Community Design. The County will encourage and assist in the establishment and maintenance of design themes within existing communities.
- Policy VIS-1.3, Grading Impacts. Man-made slopes should be treated to reflect natural hillside conditions in the surrounding area.
- Policy VIS-1.4, Equipment Screening. Within communities, building equipment shall be screened from public view.

The Circulation Element of the Inyo County General Plan also contains goals and policies related to scenic highways. The County contains three officially designated state scenic highways, two designated National Forest Scenic Byways, 63 miles of BLM National Scenic Byways, and 82 miles of BLM Backcountry Byways.[12] A scenic highway is defined as a highway or segment of a highway that has been designated as an official scenic highway by Inyo County and Caltrans. The following goal and policy from the Circulation Element are relevant to the proposed project / proposed action:[13]

- Goal SH-1. Maintain a system of scenic routes that will preserve and enhance the quality of life for present and future generations
- Policy SH-1.1, Protect the Natural Qualities of Designated Scenic Routes. The natural qualities of designated scenic routes should be protected.

[9] California Department of Transportation. Accessed 12 July 2010. *The Benefits of Scenic Highway Designation*. Available at: http://www.dot.ca.gov/hq/LandArch/scenic/can_do.htm

[10] Inyo County Planning Department. December 2001. *Inyo County General Plan, Conservation and Open Space Element*. Independence, CA.

[11] Inyo County Planning Department. December 2001. *Inyo County General Plan*. Independence, CA.

[12] Inyo County Planning Department. December 2001. *Inyo County General Plan*. Independence, CA.

[13] Inyo County Planning Department. December 2001. *Inyo County General Plan*. Independence, CA.

The proposed project / proposed action site is not visible from any State Scenic Highway, National Forest Scenic Byway, BLM National Scenic Byway, or BLM Backcountry Byway afforded consideration in the Circulation Element of the Inyo County General Plan. The nearest National Scenic Byway is the portion of SR 190 within Death Valley National Park, which is located approximately 16.7 miles southeast of the proposed project / proposed action site on the opposite side of the Inyo Mountain range (please refer to Figure 3.1.2.2-1).[14]

3.1.2 AFFECTED ENVIRONMENT

The project area VRM classification is Class III.[15] The proposed project / proposed action site is located immediately north-northwest of the community of Keeler, California, and east of the 110-square-mile (70,000-acre) Owens Lake bed, located within the Owens Valley, Inyo County, California. The proposed project / proposed action includes the Keeler Dunes geologic feature, with the Owens Lake bed to the west, the nearby Inyo Mountain range to the east, the more distant Coso Mountain range to the south, and the Sierra Nevada range to the far west. The topographic relief of the proposed project / proposed action study area is 280 feet and extends from approximately 3,600 feet above MSL near the historic shore of Owens Lake to approximately 3,880 feet above MSL on the alluvial fan (Please refer to Figure 2.1.5.1-2, *Topographic Map with USGS 7.5-Minute Quadrangle Index*).

The proposed project / proposed action study area is characterized primarily by two plant communities dominated by two populations: Parry's saltbush (*Atriplex parryi*) and greasewood (*Sarcobatus vermiculatus*). The majority of the proposed project / proposed action study area is dominated by open dry areas with little or no vegetation present. It is adjacent to SR 136. The study area is surrounded by similar desert plant communities to the north, the community of Keeler to the southeast, and Owens Lake, with Managed Vegetation, Shallow Flooding, and Gravel Best Available Control Measures to the west (Figure 3.1.2-1, *Existing Conditions*).

Although the proposed project / proposed action site is uninhabited, the community of Keeler (population: 66) is located downwind and adjacent to the southeastern border of the site,[16] and the community of Swansea is located to the north. One designated Native American reservation, the Lone Pine Paiute-Shoshone Indian Reservation, is located approximately 10 miles to the northwest near the town of Lone Pine in the surrounding unincorporated area of Inyo County. The proposed project / proposed action is visible to residents of the community of Keeler who are known to use the Keeler Dunes for hiking, dog-walking, and other low-impact recreational activities.[17] The proposed project / proposed action site may also be visible to outside recreationalists, such as birders, hikers, and visitors to the historic mining/smelter sites of Swansea and Cerro Gordo, and as part of the viewshed from nearby recreational areas, such as the Lower Owens River Project (LORP) and Owens Lake dust control projects.

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[14] California Department of Transportation. n.d. *California Scenic Highway Program: Inyo County*. Available at: http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm

[15] Bureau of Land Management, Bakersfield District. April 1993. *Bishop Resource Management Plan Record of Decision*. Bakersfield, CA.

[16] U.S. Census Bureau. 2010. *2010 Census*. Washington, DC.

[17] Sapphos Environmental, Inc. 12 July 2011. Memorandum for the Record No. 1. Subject: Summary of the June 29, 2011, Project Kickoff Meeting for the Keeler Dunes Environmental Impact Report / Environmental Impact Statement. Pasadena, CA.

PHOTO 1

PHOTO 2

FIGURE 3.1.2-1
Existing Conditions

PHOTO 3

FIGURE 3.1.2-1
Existing Conditions

3.1.2.1 SCENIC VISTAS

There are no designated scenic vistas within the vicinity of the proposed project / proposed action. There are no scenic vistas designated in the Inyo County General Plan or the BLM Bishop Resource Management Plan near the proposed project / proposed action. The proposed project / proposed action is not visible from any scenic vista designated in the Inyo County General Plan or the BLM Bishop Resource Management Plan. In addition, the proposed project / proposed action is not designated as a park of national, state, or historic nature by any local, state or federal agency. The nearest designated recreational area to the proposed project / proposed action is Diaz Lake Recreation Area, approximately 9 miles northwest of the proposed project / proposed action; additionally, Inyo County intends to develop the delta leading into Owens Lake as a Delta Habitat Area for birding, with trails as near as 2 miles northwest of the proposed project / proposed action study area, under the Lower Owens River Recreation Plan.[18] Visual resources are a consideration for photographers in the area due to the scenic nature of the viewshed in the Owens Lake area.[19] There are no other national, state, local or historic parks within a 10-mile radius of the proposed project / proposed action.

The proposed project / proposed action site is composed of BLM-owned and administered lands and the LADWP-owned lands that are closed to off-road vehicle use. The area is not recognized as a scenic trail or recreational facility by any local, state, or federal agency.

3.1.2.2 SCENIC HIGHWAYS AND RESOURCES

The proposed project / proposed action site is not visible from any State scenic highway, National Forest Scenic Byway, BLM National Scenic Byway, or BLM Country Byway. Inyo County contains three officially designated state scenic highways, two designated National Forest Scenic Byways, 63 miles of BLM National Scenic Byways, and 82 miles of BLM Backcountry Byways (Figure 3.1.2.2-1, *Scenic Highways and Resources*). The nearest officially designated State scenic highway and National Scenic Byway is a 82-mile stretch of SR 190 located approximately 16.7 miles from the proposed project / proposed action site, near the entrance to Death Valley National Park on the opposite side of the Inyo Mountain range. The proposed project / proposed action site is not visible from that location.

3.1.2.3 VISUAL SENSITIVITY AND CHARACTER

Visual sensitivity is based on the activities of viewers from public areas near a particular site, which in this case is the proposed project / proposed action site. Areas surrounding the proposed project / proposed action site include two communities in the unincorporated area of Inyo County (the community of Keeler southeast and adjacent to the southern border of proposed project / proposed action and the community of Swansea to the north) and the town of Lone Pine and adjacent Lone Pine Paiute-Shoshone Indian Reservation, located northwest of the proposed project / proposed action site.

The existing proposed project / proposed action site is used by the residents of the nearby community of Keeler for recreational activities. Recreationalists and visitors to the historic mining/smelter sites of

[18] Inyo County Water Department. January 15, 2013. *Draft Plan: Lower Owens River Recreation Use Plan*. PDF available online at: http://www.inyowater.org/LORP/DOCUMENTS/LowerOwensRiver_RecreationUsePlanDRAFT_011513.pdf Page 27 contains a map, *Preferred Recreation Concept*, for the recreation area.

[19] City of Los Angeles Department of Water and Power. August 2001. *Mitigated Negative Declaration Southern Zones Dust Control Project, Owens Lake Dust Mitigation Program, Owens Lake, California*. Prepared by: CH2M HILL, Santa Ana, CA.

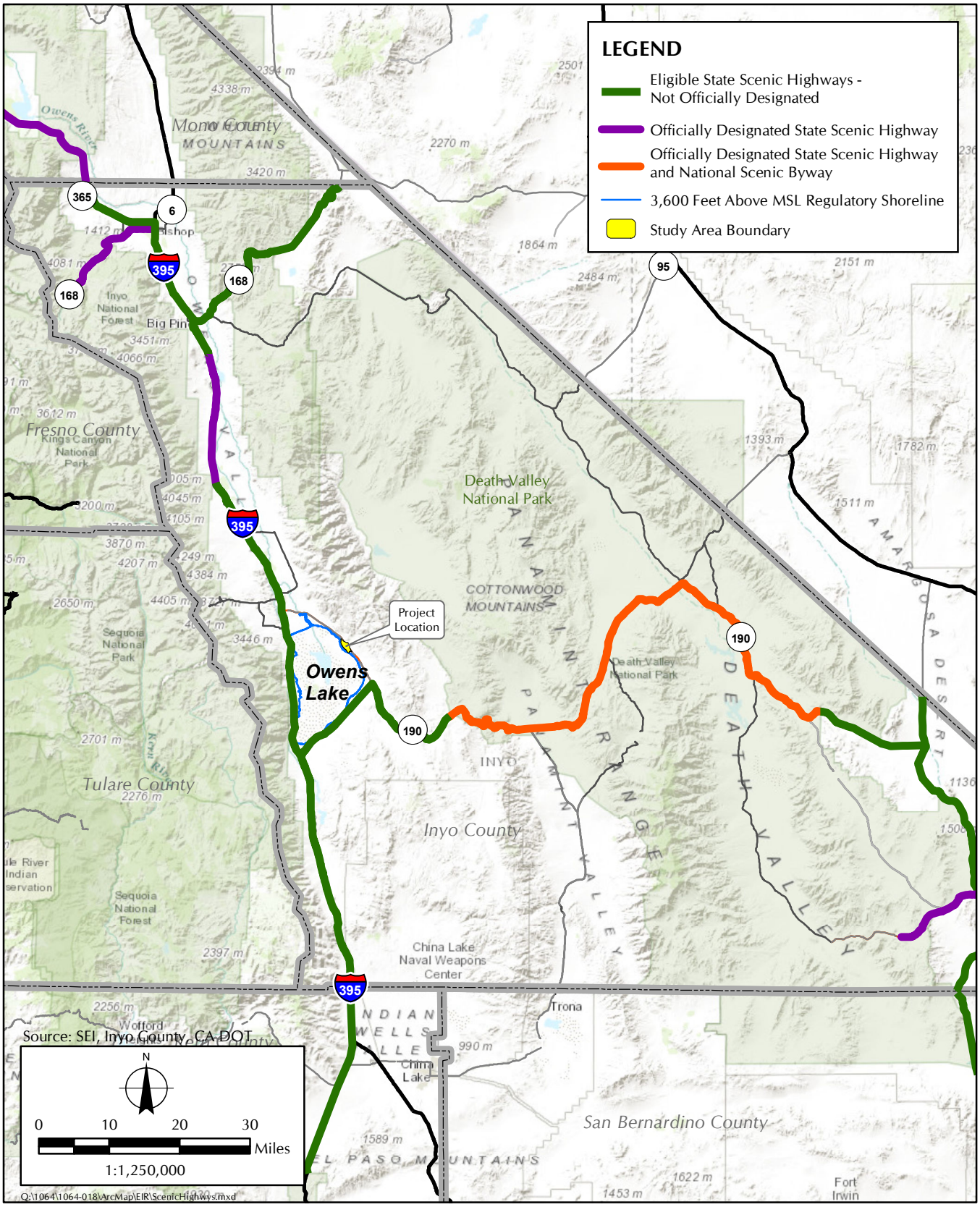

FIGURE 3.1.2.2-1

Scenic Highways and Resources

Swansea, Cerro Gordo, LORP, and the Owens Lake Dust Control Projects are able to view the proposed project / proposed action site.

The proposed project / proposed action lands are predominantly owned by the BLM, with small areas owned by LADWP and other landowners (please refer to Figure 2.1.5.1-1, *Study Area Location and Parcels Map*). The visual character of the study area is characterized by predominantly undeveloped, sparsely vegetated open space and the paved SR 136. Trucks, including watering trucks and double rigs, are frequently present on SR 136 and in the Owens Lake area. Vertical electrical transmission line poles pass through the proposed project / proposed action site on the western side of SR 136 from KOP 3 northwest past the proposed Staging Area 4. The Keeler Community Services District well is located less than 300 feet southeast of KOP 2 along the southeastern edge of the proposed project / proposed action site. Vegetation is low, sparse, simple, and indistinct under BLM definitions. The terrain in the study area and surrounding area can be characterized as a gradually sloped alluvial fan near the base of a mountain range along the edge of an expansive valley bottom containing low roads with shrubs, native vegetation, dunes, and the Owens Lake bed. To the west, the Owens Lake bed can be viewed in the middleground while the Sierra Nevada crest can be seen in the background. Colors in the proposed project / proposed action study area vary from the beige of the landform to green and tan of the vegetation to the blue, white, brown, and gray of the mountains. The visual character of the proposed project / proposed action study area is very representative of typical landscapes found in this area (Figure 3.1.2-1).

KOPs were located based on their usefulness in evaluating existing landscapes and potential impacts on visual resources with various levels of sensitivity, in different terrain, and from various vantage points. Visual simulations were prepared from KOPs that were selected[20] at the most critical viewpoints, as determined by the BLM office.[21] The observation points were chosen to represent typical views of the project property from various directions and to find potential areas of most viewer sensitivity. These KOPs were used to evaluate potential sensitive viewpoints, potential scenic resources, and recreational resources. These observation points represent the views from corridor users at SR 136 and the community of Keeler in the proposed project / proposed action vicinity. Geographic information system (GIS) coordinates of each existing condition photograph were recorded (Table 3.1.2.3-1, *Key Observation Points*; and Figure 3.1.2.3-1, *Key Observation Point Index Map*). Type, amount of use, and level of public access of KOPs are reflected in BLM Form 8400-6 (see Appendix C, *BLM 8400-6 Forms*, to the Visual Resources Technical Report [Appendix B to the EIR/EA]). Four KOPs were used for the analysis of scenic quality, visual contrast, and sensitivity.

[20] Selection of the KOPs was coordinated with the BLM Bishop Field Office. All KOP locations were approved during the site visit and photo documentation occurred.

[21] Primosch, Lawrence R., Bureau of Land Management, Bishop Field Office, Bishop, CA. 24 April 2012. Proposed Project Site Visit with Grace Holder, Great Basin Unified Air Pollution District, Bishop, CA, and David Lee and Leanna Guillermo, Sapphos Environmental, Inc., Pasadena, CA.

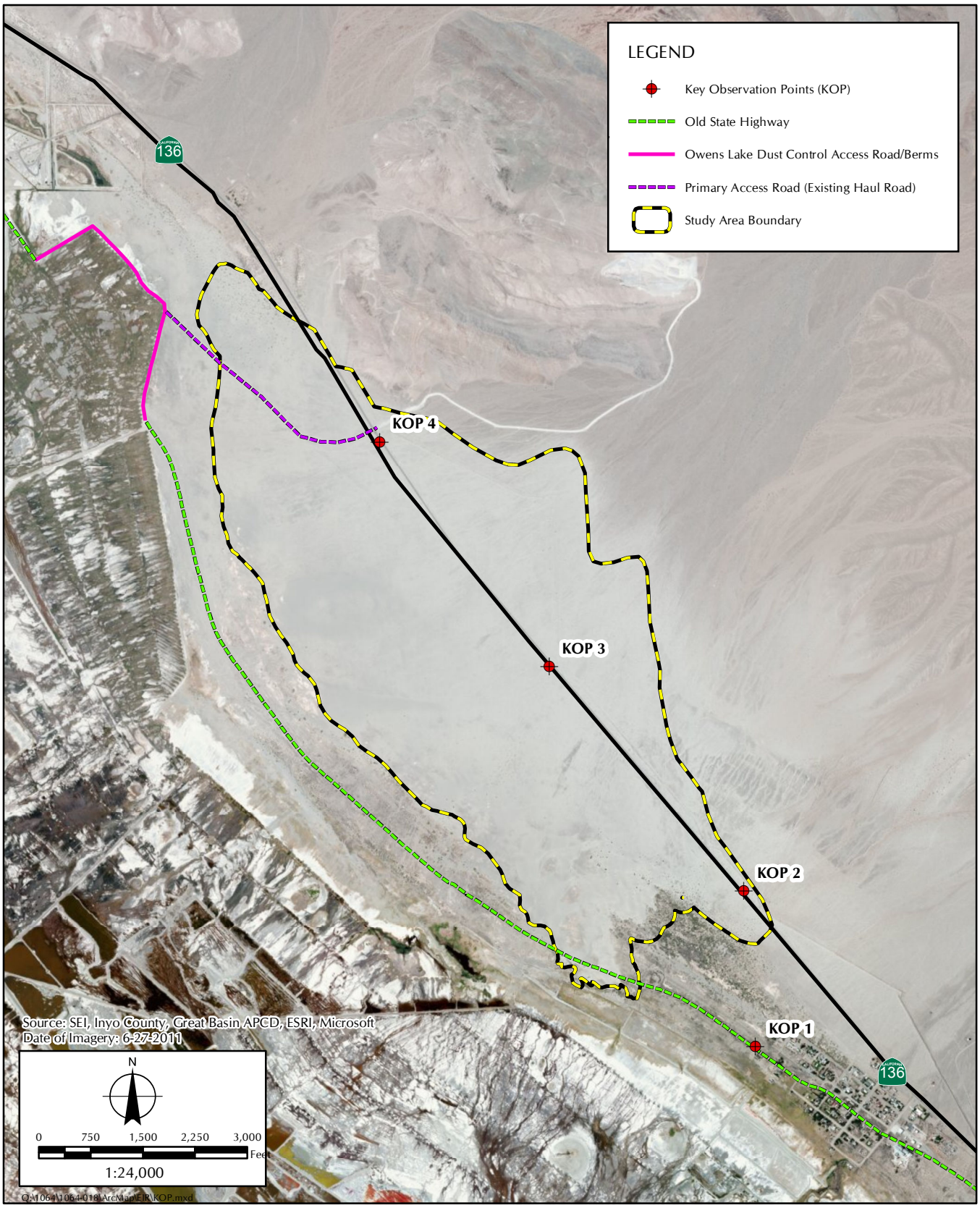

FIGURE 3.1.2.3-1

Key Observation Point Index Map

TABLE 3.1.2.3-1
KEY OBSERVATION POINTS

KOP ID	GIS Coordinate X	GIS Coordinate Y	Distance from Proposed Project / Proposed Action Area	Landscape Character
KOP 1	421321	4038764	0.5 mile (2,492 feet) southeast	A point KOP from the community of Keeler, representing a public gathering place, where the proposed project / proposed action would occupy the foreground
KOP 2	421270.7	4039446	0.2 mile (1,080 feet) east	A linear KOP along SR 136, representing a public road, where the proposed project / proposed action would occupy the foreground
KOP 3	420415.9	4040433	Within the proposed project / proposed action boundary	A point KOP from the LADWP scenic overlook, representing viewers on LADWP point of interest overlooks, where the proposed project / proposed action would occupy the foreground
KOP 4	419672	4041418	0.03 mile (164 feet) east	A linear KOP along SR 136, representing a public road, where the proposed project / proposed action would occupy the foreground

Key:
KOP = key observation point
GIS = geographic information system
LADWP = Los Angeles Department of Water and Power
Coordinate system: NAD 1983 UTM Zone 11 North

A. Existing Visual Setting

Photographs were taken at each KOP inventory location as part of the visual impact assessment process, to identify the existing visual setting. Visual resources surveys of the proposed project / proposed action property were conducted in order to understand the existing visual resources in the vicinity of the proposed project / proposed action. BLM protocol forms and worksheets were completed for the proposed project / proposed action to determine the level of contrast the proposed project / proposed action would have on the existing visual resources. Then, based on the classification of the visual resources for the proposed project / proposed action property, it was determined whether the visual resources management objectives for the proposed project / proposed action property were met.

An interdisciplinary team of visual resource management practitioners from Sapphos Environmental, Inc. conducted a collaborative analysis of the landscape's scenic quality using a quantitative method adapted from the BLM's VRM methodology. Photo documentation was conducted to document the existing conditions and provide a visual simulation of the proposed project / proposed action in operation from the three observation points. The KOPs have been analyzed as representations of the proposed project / proposed action area from potential areas of viewer sensitivity. Therefore, the ratings that are designated for the KOPs are also ratings designated for the proposed project / proposed action area.

Key Observation Point 1

This KOP provides a view toward the proposed project / proposed action area from the community of Keeler. This KOP illustrates little to no diversity in the landscape. Vegetation is low, sparse, simple, and indistinct under BLM definitions (Figure 3.1.2.3-2, *Observation Point 1*). The landform can be characterized as an expansive, relatively flat valley bottom. The foreground shows a low road, shrubs, native vegetation, dunes, and the Owens Lake bed. The Owens Lake bed can be viewed in the middleground, while the mountain ridgelines can be seen in the background.

Key Observation Point 2

This KOP provides a view from the paved SR 136. Vegetation is native, low, and simple in foreground. The dark grey, smooth, straight SR 136 can also be seen in the foreground. The landform is extremely coarse and relatively flat in the foreground, the Owens Lakebed in the middleground, and the Sierra Nevada ridgeline occupies the background (Figure 3.1.2.3-3, *Observation Point 2*). The features of this KOP are coarse, with colors varying from the beige of the landform, green and tan of the vegetation, and blue and brown of the mountains.

Key Observation Point 3

This KOP was taken at the LADWP overlook for the Owens Lake dust control project. The KOP illustrates flat land with minimal vertical relief in the foreground and middleground with the mountain ridgeline in the background (Figure 3.1.2.3-4, *Observation Point 3*). Vertical electrical transmission lines are located less than 150 feet northwest of KOP 3 and are visible in the foreground. The vegetation is low and scattered, consisting of native vegetation. The features of this KOP are coarse, with colors varying from the beige of the landform, green and tan of the vegetation, and blue and brown of the mountains. The Owens Lake bed can be seen in the middleground. This view is very representative of typical landscapes found in this area.

Key Observation Point 4

This KOP provides a view from a roadside turnout along the paved SR 136. The KOP illustrates the vast, relatively flat valley bottom in the foreground, the Owens Lake bed in the middle ground, and the mountain ridgeline in the background (Figure 3.1.2.3-5, *Observation Point 4*). Vertical electrical transmission line poles can be seen in the foreground, along with the coarse, scattered, native vegetation. The view depicts a beige landform, green and tan vegetation, and dark blue and brown mountains. This view is very representative of typical landscapes found in this area.

B. Visual Simulation

For the visual simulations, a Google Earth Keyhole Markup Language (KML) of the KOPs and control points was created. The proposed project / proposed action site was added to the Google Earth KML as a translucent red shading. Three images in Portable Document Format (PDF) were created that correspond to the camera angles for KOPs 2, 3, and 4 for the visibility simulation. Reference points were added to the PDFs and to the original photographs. The PDF and photographs were superimposed and transformed to align the reference points. The straw bales were then added to the corresponding areas proposed for mitigation. A viewshed analysis determined what portions of the proposed project / proposed action site were within a visible range from the combined viewsheds of four key observation points within and surrounding the proposed project / proposed action property.

PHOTO 1
Existing Conditions

FIGURE 3.1.2.3-2
Observation Point 1

PHOTO 1
Existing Conditions

PHOTO 2
Visual Simulation

FIGURE 3.1.2.3-3
Observation Point 2

PHOTO 1
Existing Conditions

PHOTO 2
Visual Simulation

FIGURE 3.1.2.3-4
Observation Point 3

PHOTO 1
Existing Conditions

PHOTO 2
Visual Simulation

FIGURE 3.1.2.3-5
Observation Point 4

The analysis includes a graphic representation of those areas of the proposed project / proposed action that would be visible from the combined viewsheds of the KOPs.

Key Observation Point 1

Under direction of the BLM Bishop Field Office, no visual simulation was created for this KOP due to the low visibility of the proposed project / proposed action components (straw bales) in the view.[22]

Key Observation Point 2

The proposed project / proposed action would be visible from this vantage point in the foreground as it is less than 2 miles from the vantage point (Figure 3.1.2-1). The existing vegetation is tan in color. With project implementation, the view from this point would have tan colored straw bales covering a portion of the previously beige valley bottom (Figure 3.1.2-1). From this view, as the straw bales and the vegetation are both tan in color and appear at the similar heights, the straw bales would be of the same height and color as the existing, native vegetation. In fact, the straw bales would appear inter-mixed, blend in, and be compatible in the view with the existing vegetation. The other infrastructure project elements (a temporary access route, temporary staging areas for equipment, and periodic water delivery trucks parked at Staging Areas 1, 2, and 3 along Old State Highway) and additional elements proposed in Alternatives 3, 4, and 5 (temporary irrigation lines, water storage tanks, and/or irrigation trunk lines) would be barely visible from this vantage point and would appear intermixed within the existing visual setting. The proposed project / proposed action components would be visible but mixed with the already existing vegetation in the foreground.

Key Observation Point 3

The visual simulation depicts the addition of the proposed project / proposed action features, with straw bales visible in horizontal lines within 2 miles of the vantage point (Figure 3.1.2.3-4). Therefore, the proposed project / proposed action components would be visible in the foreground. The existing vegetation is tan and green in color, with the tan similar to the tan in the straw bales. The vegetation is coarsely scattered throughout the proposed project / proposed action site and surrounding area. The straw bales that would be visible from this viewpoint are tan and coarse; which are similar to the color and characteristics of the existing vegetation. From this view, the straw bales would be the same height and blend in and be compatible with the color of the existing, native vegetation. The other infrastructure proposed project / proposed action elements (a temporary access route, temporary staging area for equipment, and periodic water delivery trucks parked at Staging Areas 1, 2, and 3 along Old State Highway) and additional elements proposed in Alternatives 3, 4, and 5 (temporary irrigation lines, water storage tanks, and irrigation trunk lines) would be barely visible from this KOP and would appear intermixed within the existing visual setting. The proposed project / proposed action components would be visible but mixed with the existing vegetation in the foreground.

Key Observation Point 4

The proposed project / proposed action would be visible from this vantage point in the foreground as it is less than 2 miles from the vantage point (Figure 3.1.2.3-5). The straw bales from the proposed project / proposed action are visible in the center-right side of the photograph. The straw bales are a

[22] Primosch, Lawrence R., Bureau of Land Management, Bishop Field Office, Bishop, CA. 24 April 2012. Proposed Project Site Visit with Grace Holders, Great Basin Unified Air Pollution District, Bishop, CA, and David Lee and Leanna Guillermo, Sapphos Environmental, Inc., Pasadena, CA.

tan color and appear coarse in this vantage point. The existing vegetation is tan and green in color, with the tan similar to the tan in the straw bales. The vegetation is coarsely scattered throughout the proposed project / proposed action site and surrounding area. From this view, the straw bales would be of the same height and blend in and be compatible with the color of the existing, native vegetation. The other infrastructure proposed project / proposed action elements (a temporary access route, temporary staging area for equipment, and periodic water delivery trucks parked at Staging Areas 1, 2, and 3 along Old State Highway) and additional elements proposed in Alternatives 3, 4, and 5 (temporary irrigation lines, water storage tanks, and irrigation trunk lines) would be barely visible from this viewpoint and would appear intermixed within the existing visual setting. The proposed project / proposed action components would be visible but mixed with the already existing vegetation in the foreground.

Pilot Demonstration Test

In addition to the impact analysis conducted through visual simulation, the District is currently conducting a pilot study to validate the efficacy of using straw bales and native vegetation to stabilize the dune complex and reduce emissivity, as well as to provide site-specific information that will be utilized for the final design of the proposed project / proposed action. Figure 3.1.2.3-6, *Pilot Demonstration Test Photographs*, demonstrates the visibility of the test site.

3.1.2.4 Light and Glare

There is no glare or light-emitting elements existing on the proposed project / proposed action site. Perceived glare is the unwanted and potentially objectionable sensation as observed by a person looking directly into the light source (e.g., the sun, the sun's reflection, automobile headlights, or other light fixtures). Reflective surfaces on existing buildings, car windshields, etc., can expose people and property to varying levels of glare. The salt and surface water at the adjacent Owens Lake bed are sources of light and glare in the vicinity of the proposed project / proposed action site.

Pilot Demonstration Test Site
Altitude: 1,101 meters
3,612 feet

FIGURE 3.1.2.3-6
Pilot Demonstration Test Photographs

Old State Highway Looking Northeast at Test Site
View of Pilot Demonstration Test Site from approximately 951 feet southwest of Test Site on Old State Highway, Altitude: 3,599 feet

FIGURE 3.1.2.3-6
Pilot Demonstration Test Photographs

Inyo Mountains Looking Southwest at Test Site
View of Pilot Demonstration Test Site from approximately 4,600 feet northeast of Test Site on a ridge, Altitude: 4,278 feet

FIGURE 3.1.2.3-6
Pilot Demonstration Test Photographs

3.2 AIR QUALITY

Air quality in this section has been characterized from data provided by the Great Basin Unified Air Pollution Control District (District) and the Air Quality and Greenhouse Gas Emissions Technical Report prepared by Sapphos Environmental, Inc. The District maintains a monitoring network in the proposed project / proposed action study area composed of 16 sand motion monitoring sites.

3.2.1 REGULATORY FRAMEWORK

Responsibility for attaining and maintaining ambient air quality standards in California is divided between the California Air Resources Board (CARB) and regional air pollution control or air quality management districts. Areas of control for the regional districts are set by CARB, which divides the state into air basins. These air basins are based largely on topography that limits air flow access or by county boundaries. The proposed project / proposed action is located in Inyo County, California, within the District.

3.2.1.1 FEDERAL

A. Federal Clean Air Act

The Federal Clean Air Act (CAA) was enacted in 1970 to foster growth in the economy and industry while improving human health and the environment. The Federal CAA is the comprehensive federal law that regulates air emissions from stationary and mobile sources.

Among other things, the Federal CAA authorizes the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) to protect public health and public welfare and to regulate emissions of hazardous air pollutants. Existing national standards and state standards were considered in the evaluation of air quality impacts (Table 3.2.1.1-1, *Current [2013] Ambient Air Quality Standards*). The Federal CAA requires the U.S. EPA to routinely review and update the NAAQS in accordance with the latest available scientific evidence. For example, the 1-hour standard for O_3 was revoked in 2005 in favor of a new 8-hour standard intended to better protect public health.

B. National Ambient Air Quality Standards

The NAAQS were established by the U.S. EPA per the requirements of the Federal CAA. The NAAQS are used to identify thresholds for specific pollutants. Two types of air quality standards were established by the Federal CAA: (1) primary standards and (2) secondary standards. Primary standards define limits for the intention of protecting public health, which includes sensitive populations such as asthmatics, children, and the elderly. Secondary standards define limits to protect public welfare to include protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

There are seven federally regulated pollutants (ozone [O_3], nitrogen dioxide [NO_2], sulfur dioxide [SO_2], carbon monoxide [CO], lead [Pb], respirable particulate matter [PM_{10}], and fine particulate matter [$PM_{2.5}$]). On August 7, 1987, the U.S. EPA designated the southern Owens Valley (known as the Owens Valley Planning Area [OVPA]; see Figure 1.2-1, *Study Area Boundary in Relation to Owens Valley Planning Area*) as one of the areas in the nation that violated the new PM_{10} NAAQS. Subsequent air quality monitoring by the District has shown that the bed of Owens Lake (defined as the area below 3,600 feet above mean sea level [MSL]), most of which is owned by the State of California and managed by the California State Lands Commission (CSLC), is the major source of PM_{10} emissions

contributing to air quality violations in the OVPA. Owens Lake is considered an anthropogenic (human-caused) source of PM_{10} because the City of Los Angeles's Aqueduct diverts water sources that historically supplied the lake. The 1990 Federal CAA sets the PM_{10} attainment deadline in "serious" non-attainment areas at the year 2005. In January 1993, the southern Owens Valley was reclassified as "serious non-attainment" for PM_{10}.

The U.S. EPA required the State of California to prepare a State Implementation Plan (SIP) for the OVPA that demonstrated how PM_{10} emissions would be decreased to prevent exceedances of the NAAQS. The District is the agency delegated by the State of California to fulfill this requirement. In accordance with Section 189(b) of the Federal CAA, an Attainment SIP that demonstrates conformance with the federal air quality standards through the implementation of a program of control measures was required to be submitted to the U.S. EPA by February 8, 1997. In November 1998, the District adopted the SIP, which was approved by the U.S. EPA on August 17, 1999. In 2003 and 2008, the District adopted revised SIPs requiring dust control measures, in addition to those from 1998, in the OVPA.

TABLE 3.2.1.1-1
CURRENT (2013) AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards [a]	National Standards [b]	
		Concentration	Primary [c]	Secondary[d]
Ozone (O_3)	1 Hour	0.09 ppm (180 $\mu g/m^3$)	—	Same as Primary Standard
	8 Hour	0.070 ppm (137 $\mu g/m^3$)	0.075 ppm (147 $\mu g/m^3$)	
Respirable Particulate Matter (PM_{10})	24 Hour	50 $\mu g/m^3$	150 $\mu g/m^3$	Same as Primary Standard
	Annual Arithmetic Mean	20 $\mu g/m^3$	—	
Fine Particulate Matter ($PM_{2.5}$)	24 Hour		35 $\mu g/m^3$	Same as Primary Standard
	Annual Arithmetic Mean	12 $\mu g/m^3$	12.0 $\mu g/m^3$	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	—
	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	—
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)	—	—
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm (339 $\mu g/m^3$)	100 ppb (188 $\mu g/m^3$)	—
	Annual Arithmetic Mean	0.030 ppm (57 $\mu g/m^3$)	0.053 ppm (100 $\mu g/m^3$)	Same as Primary Standard
Sulfur Dioxide (SO_2)[e]	1 Hour	0.25 ppm (655 $\mu g/m^3$)	75 ppb (196 $\mu g/m^3$)	—
	3 Hour	—	—	0.5 ppm (1300 $\mu g/m^3$)
	24 Hour	0.04 ppm (105 $\mu g/m^3$)	0.14 ppm (for certain areas)	—
	Annual Arithmetic Mean	—	0.030 ppm (for certain areas)	—

TABLE 3.2.1.1-1
CURRENT (2013) AMBIENT AIR QUALITY STANDARDS, *CONTINUED*

Pollutant	Averaging	California Standards [a]	National Standards [b]	
Lead[f]	30 Day Average	1.5 $\mu g/m^3$	—	—
	Calendar Quarter	—	1.5 $\mu g/m^3$ (for certain areas)	Same as Primary Standard
	Rolling 3-Month Average	—	0.15 $\mu g/m^3$	
Visibility Reducing Particles	8 Hour	See footnote g	No National Standard	
Sulfates	24 Hour	25 $\mu g/m^3$		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 $\mu g/m^3$)		
Vinyl Chloride[f]	24 Hour	0.01 ppm (26 $\mu g/m^3$)		

Notes:

a: California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

b: National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

c: National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

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

e: The 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

f: The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

g: In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Sources:

California Air Resources Board. Reviewed 24 November 2009. California Ambient Air Quality Standards (CAAQS). Available at: http://www.arb.ca.gov/research/aaqs/caaqs/caaqs.htm

California Air Resources Board. Updated 7 June 2012. Ambient Air Quality Standards. Available at: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf

U.S. Environmental Protection Agency. Updated 14 July 2009. National Ambient Air Quality Standards (NAAQS). Available at: http://www.epa.gov/air/criteria.html

California Air Resources Board. Reviewed 24 November 2009. California Ambient Air Quality Standards (CAAQS). Available at: http://www.arb.ca.gov/research/aaqs/caaqs/caaqs.htm

C. General Conformity Rule

The U.S. EPA has authority over SIP general conformity in areas that do not meet federal air quality standards, and the federal land managers have review authority over any new projects that may affect federal Class I areas, as defined in 40 Code of Federal Regulations (CFR), Part 51.166; 40 CFR, Part 51, Subpart W; and 40 CFR, Part 93, Subpart B: General Conformity. These regulations ensure that federal actions conform to state and local plans for attainment. The District adopted these General Conformity requirements in District Regulation XIII and is delegated to enforce the federal regulations for projects that take place in the District. As federal lead agency, the Bureau of Land Management (BLM) must determine if the proposed project / proposed action requires a conformity determination. It is determined that this action does not require a conformity determination under District Rule 1303.c.4 because the implementation of dust control measures in the Keeler Dunes is required by the 2008 Owens Valley SIP and therefore would be in compliance with the federal General Conformity Rule.

D. Bureau of Land Management Bishop Resource Management Plan

The BLM is the predominant land owner in the Keeler Dunes area. The Keeler Dunes are located within the Owens Lake Management Area and South Inyo Management Area, two of nine management areas managed by the BLM pursuant to the Bishop Resource Management Plan (RMP).[1] The proposed DCMs would be implemented within the Owens Lake Management Area, with the exception of the KCSD well tank (Alternative 5), which is located within the South Inyo Management Area.

The RMP includes decisions that are presented in two parts: the area-wide decisions, which present management prescriptions valid throughout the entire Bishop Resource Area; and the decisions for individual management areas. Regarding air quality for the Owens Lake Management Area, the RMP specifies:

- Incorporate dust abatement measures in all discretionary actions.

The Bishop RMP includes the following standard operating procedures relevant to air quality:

- Avoid the use of soil disturbing equipment or vehicles on wet, poorly drained or erosive soils.
- Require soil layer separation and topsoil stockpiling for any activity that involves mechanical soil disturbance. Soil layers will be re-deposited and re-contoured to their natural configuration following project completion.
- Secure any necessary permits or clearances from state and local agencies relative to air quality requirements for projects that may impact air quality.

[1] U.S. Department of the Interior, Bureau of Land Management, Bakersfield District. 1993. *Bishop Resource Management Plan Record of Decision*. Bakersfield, CA.

3.2.1.2 STATE

A. California Clean Air Act

The California CAA of 1988 requires all air pollution control districts in the state to endeavor to achieve and maintain state ambient air quality standards (Table 3.2.1.1-1) for O_3, CO, and NO_2 by the earliest practicable date and to develop plans and regulations specifying how they will meet this goal. There are no planning requirements for the state PM_{10} standard. The CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for meeting state requirements of the Federal CAA, administrating the California CAA, and establishing the California Ambient Air Quality Standards (CAAQS). The California CAA, amended in 1992, requires all air districts in the state to endeavor to achieve and maintain the CAAQS. The CAAQS are generally stricter than national standards for the same pollutants, but there is no penalty for non-attainment. California has also established state standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles, for which there are no national standards.

3.2.1.3 REGIONAL

A. Great Basin Unified Air Pollution Control District Plans, Rules, and Regulations

The District has the responsibility to enforce federal, state, and local air quality regulations and to ensure that the federal and state air quality standards are met within the district. These standards are set to protect the health of sensitive individuals by restricting how much pollution is allowed in the air. To meet these standards the District aims to enforce those federal laws and state laws on stationary sources of pollution, and pass and enforce its own regulations as they become necessary for air quality issues.

For transportation conformity purpose and as required by District Rule 1231(e),[2] areas such as the OVPA, where construction-related fugitive PM_{10} is a contributor to the non-attainment problem, regional PM_{10} emissions analysis must consider construction-related fugitive PM_{10}, including emissions generated by new highway construction projects in the OVPA. Also, the level of construction activity, fugitive PM_{10} control measures in the SIP, and the dust-producing capacity of the proposed activities in the applicable implementation plan must also be included in the analysis.

General conformity requirements are contained in District Regulation XIII,[3] implementing section 176 (c) of the federal CAA, as amended (42 U.S.C. 7401 *et seq.*), and regulations under 40 CFR Part 51 Subpart W. This regulation requires that federal actions and federally funded projects conform to SIP rules and do not interfere with efforts to attain federal air quality standards.

[2] Great Basin Unified Air Pollution Control District. Adopted 10 May 1994. Regulation XII--Conformity to State Implementation Plans of Transportation Plans, Programs, and Projects Developed, Funded or Approved under Title 23 U.S.C. or the Federal Transit Act, District Rule 1231(e) - Procedures for determining regional transportation-related emissions. Available at: http://www.arb.ca.gov/drdb/gbu/curhtml/reg-12.htm

[3] Great Basin Unified Air Pollution Control District. Adopted 10 May 1994. Regulation XIII - Conformity of General Federal Actions to State Implementation Plans. Available at: http://www.arb.ca.gov/drdb/gbu/curhtml/reg-13.htm

All fugitive dust sources are required to meet District Rule 400[4] and Rule 401,[5] which limit visible emissions to less than 20 percent opacity and require reasonable precautions to be taken to prevent visible emissions from leaving the proposed project / proposed action area. Reasonable precautions include, but are not limited to, water suppression, chemical stabilizers, windbreaks, and surface coverings. Fugitive dust sources such as vehicles on unpaved roadways, earthmoving, and gravel mining operations are affected by these District Rules.

3.2.1.4 LOCAL

A. Inyo County General Plan

The Inyo County General Plan contains policies related to air quality in its Safety element.[6] The goal of the Safety element is to foster compatible land use arrangements that contribute to reduced energy consumption and improved air quality. The Safety element contains a summary of the existing conditions in the planning area, major issues, and policies designed to aid Inyo County in achieving its goal. There are three policies in the Inyo County General Plan that are relevant to the proposed project / proposed action:

> Policy AQ-1.1: Regulations to Reduce PM_{10}. Support the implementation of the State Implementation Plan and the agreement between Great Basin Unified Air Pollution Control District and the City of Los Angeles Department of Water and Power.
>
> Policy AQ-1.2: Attainment Programs. Participate in the Great Basin Unified Air Pollution Control District's attainment programs.
>
> Policy AQ-1.3: Dust Suppression During Construction. Require dust-suppression measures for grading activities.

3.2.2 AFFECTED ENVIRONMENT

The proposed project / proposed action property is located in the Great Basin Valleys Air Basin (GBVAB), a 13,975-square-mile (9-million-acre) area encompassing Inyo County, Mono County, and Alpine County. The GBVAB is located in eastern California and is comprised of a single air district, the Great Basin Unified Air Pollution Control District (District).

The climate of the proposed project / proposed action site is characterized as a desert climate with hot summers; cold winters; infrequent rainfalls; moderate- to high-wind episodes; and low humidity. Average temperature and precipitation data have been recorded at the Independence Monitoring Station (Station Number 044232, located approximately 30 miles northwest of the proposed project / proposed action site at latitude 36° 48' North, longitude 118° 11' West). From 1893 to 2013, the annual maximum temperature was 75.2 degrees Fahrenheit (ºF), with an average maximum winter (December, January, and February) temperature of approximately 55.6ºF and an average maximum summer (June, July, and August) temperature of approximately 95.1ºF (Appendix C, *Air Quality and*

[4] Great Basin Unified Air Pollution Control District. Revised 18 January 1979. Rule 400 - Ringelmann Chart. Available at: http://www.District.org/rulesandregulations/PDF/Rule401.pdf

[5] Great Basin Unified Air Pollution Control District. Revised 4 December 2006. Rule 401 - Fugitive Dust. Available at: http://www.District.org/rulesandregulations/PDF/Rule401.pdf

[6] Inyo County Planning Department. December 2001. *Inyo County General Plan, Public Safety Element.* Independence, CA.

Greenhouse Gas Emissions Technical Report, *Appendix A*). Average minimum temperatures were recorded as approximately 28.9ºF in winter and 61.6ºF in summer. The average precipitation per year is approximately 5.21 inches, which occurs mostly during the winter, and relatively infrequently during the summer (Appendix A of AQTR). Precipitation averages approximately 1.00 inch per month during the winter (December, January, and February), approximately 0.28 inch per month during the spring (March, April, and May), approximately 0.33 inch per month during the fall (September, October, and November), and approximately 0.12 inch per month during the summer (June, July, and August; Appendix A). The average wind speed, as recorded at the Independence Monitoring Station from 2004 to 2013, was approximately 4.8 miles per hour (MPH) (Appendix A of AQTR).

The GBVAB contains many mountain ranges to the east of Sierra Nevada and west of the California-Nevada border. The mountain peaks on either side of the Owens Valley reach above 14,000 feet in elevation. The mountain ranges of the GBVAB form a barrier that protects much of California from extremely cold air from the east in winter. The Sierra Nevada to the west blocks the majority of cool, moist coastal air from entering the GBVAB from the west, so the GBVAB experiences infrequent rainfalls and prevalent low humidity.

3.2.2.1 Applicable Air Quality Plan: 2008 Owens Valley PM_{10} State Implementation Plan

In 1974, Inyo County, Mono County, and Alpine County joined together in a joint powers agreement to form the District, which governs the GBVAB. The analysis of existing conditions related to air quality summarizes pollutant levels that exist prior to implementation of each component of the proposed project / proposed action.

The 2008 SIP requires that the OVPA (including the emissions from the Keeler Dunes) be in attainment of the federal PM_{10} NAAQS by March 2017, but due to delays in getting funding and in completing this EIR/EA, this deadline will not be achieved. Implementation of the proposed project / proposed action will reduce the PM_{10} emissions from the Keeler Dunes to levels below the federal and state 24-hour standards such that the communities of Keeler and Swansea would be in attainment by spring 2018. The District is responsible for developing and implementing a dust control strategy and plan for the Keeler Dunes PM_{10} emissions.

3.2.2.2 Local Air Quality

A. Emission Sources

The Keeler Dunes and associated sand deposits are a source of fugitive dust emissions that impact air quality in the communities of Keeler and Swansea. The proposed project / proposed action site is approximately 194 acres and is located adjacent to and east of the bed of historic Owens Lake between the communities of Keeler and Swansea. Dust concentrations measured within the community of Keeler from the Keeler Dunes continue to exceed the Federal and State PM_{10} 24-hour standards of 150 and 50 $\mu g/m^3$, respectively.[7] The number of exceedances of the Federal PM_{10} standard in the community of Keeler that are attributed to Owens Lake bed emissions has decreased with time,

[7] Kiddoo, Phill, Great Basin Unified Air Pollution Control District, Bishop, CA. 8 November 2013. Email to Adam Furman, Sapphos Environmental, Inc., Pasadena CA.

from as many as 16 per year in 1994 to just over 1 per year from 2006 to 2012.[8] This air quality improvement in Keeler is due to the implementation of dust control projects on the lake bed. However, the uncontrolled Keeler Dunes have continued to cause an average of six PM_{10} standard exceedances every year since 1993.[9] These standard exceedances threaten the health, property and environment of the residents of Keeler and Swansea.

B. Air Monitoring Stations

The District operates 15 air quality monitoring stations within the District boundaries. These stations are located in four planning areas (Coso Junction, OVPA, Mono Basin, and Mammoth Lakes) and in two of the District's three counties (Inyo and Mono) (Figure 3.2.2.2-1, *Great Basin Unified Air Pollution Control District Air Quality Monitoring Sites*).[10] Each of the 15 stations monitors PM_{10} concentrations, and only the Keeler station monitors $PM_{2.5}$ concentrations. Because the District is primarily rural, only the monitoring station at Mammoth Lakes reflects a more urban influence. Yearly concentrations of PM_{10} from 2009 through 2012 are summarized in Table 3.2.2.2-1 (*Summary of 2009–2012 PM_{10} Concentrations at the District's 15 Air Quality Monitoring Sites*). During this 4-year period, particulate levels exceeded the 24-hour Federal PM_{10} standard 307 times.[11] During windy conditions, dust from the beds of Mono Lake and Owens Lake produce extremely high PM_{10} concentrations, which reached 14,147$\mu g/m^3$ in over 24 hours in 2009. The highest concentrations from 2009 to 2012 occurred at the Keeler and Mono North Shore (north of the OVPA) monitoring stations. Annual average $PM_{2.5}$ concentrations at the Keeler monitoring site are low (maximum of 8.58 $\mu g/m^3$). Lizard Tail (4 kilometers north) and Keeler (1 kilometer south) are the closest PM monitor sites to the proposed project / proposed action site.

[8] Great Basin Unified Air Pollution Control District. November 16, 2012. *Final Staff Report on the Origin and Development of the Keeler Dunes*. Bishop, CA.

[9] Great Basin Unified Air Pollution Control District. November 16, 2012. *Final Staff Report on the Origin and Development of the Keeler Dunes*. Bishop, CA.

[10] Kiddoo, Phill, Great Basin Unified Air Pollution Control District, Bishop, CA. 10 October 2012. Email to Makeba Pease, Sapphos Environmental, Inc., Pasadena CA.

[11] Kiddoo, Phill, Great Basin Unified Air Pollution Control District, Bishop, CA. 8 November 2013. Email to Adam Furman, Sapphos Environmental, Inc., Pasadena CA.

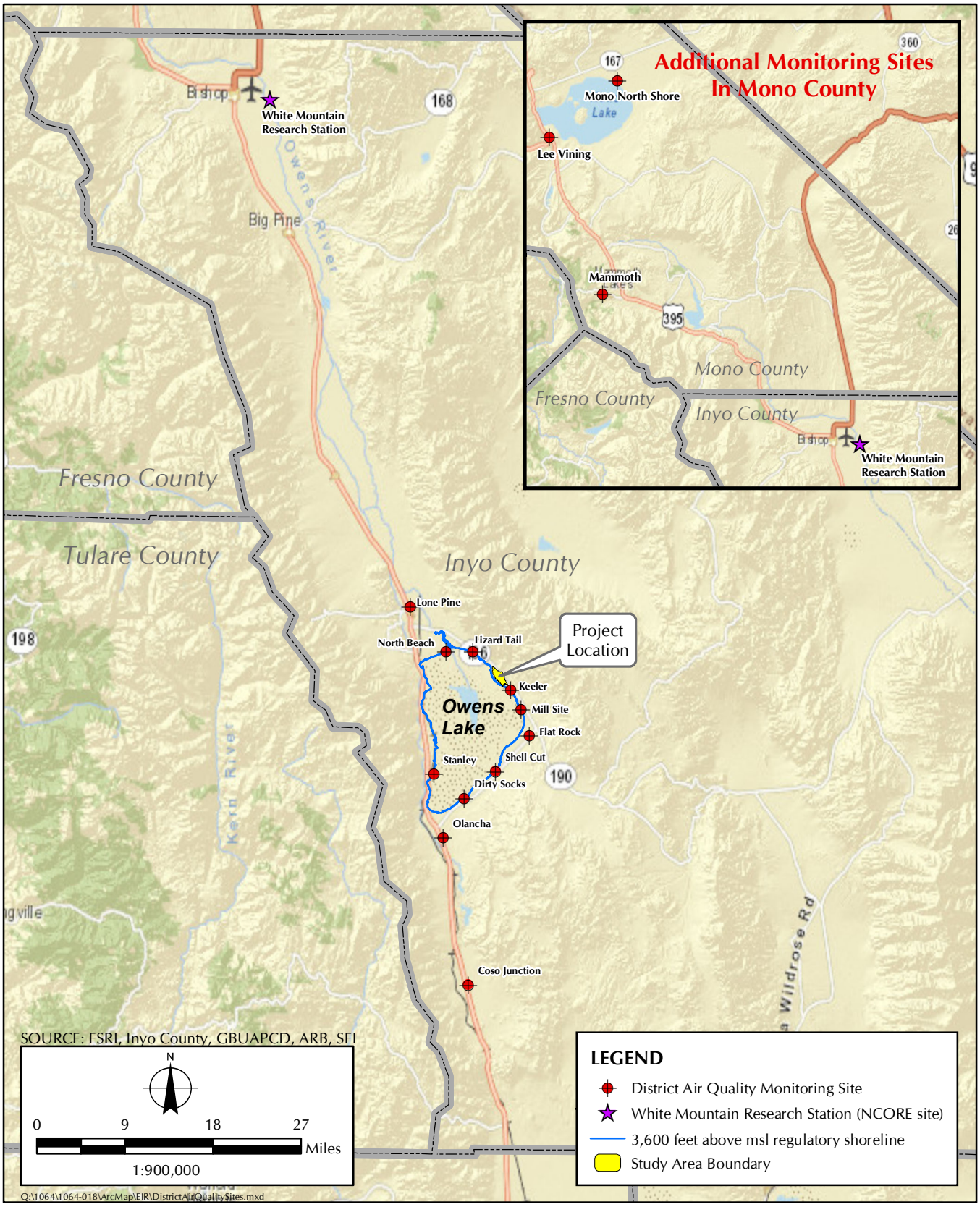

FIGURE 3.2.2.2-1

Great Basin Unified Air Pollution Control District
Air Quality Monitoring Sites

TABLE 3.2.2.2-1
SUMMARY OF 2009–2012 PM_{10} CONCENTRATIONS AT THE DISTRICT'S 15 AIR QUALITY MONITORING Stations

Monitoring Site	PM_{10} ($\mu g/m^3$) Maximum 24-hr	PM_{10} NAAQS Exceedances
Coso Junction	219	5
Dirty Sox	1,437	33
Flat Rock	871	12
Keeler	13,380	31
Lee Vining	115	0
Lizard Tail	4,571	42
Lone Pine	264	3
Mammoth Lakes	128	0
Mill Site	754	7
Mono North Shore	14,147	81
North Beach	2,067	37
Olancha	779	16
Shell Cut	2,149	23
Stanley	1,507	12
White Mountain Research Station	626	5

Source: Kiddoo, Phill, Great Basin Unified Air Pollution Control District, Bishop, CA. 8 November 2013. Email to Adam Furman, Sapphos Environmental, Inc., Pasadena CA.

In addition to the air monitoring stations, the District also operates 16 sand motion monitoring sites within the proposed project / proposed action study area (see Figure 2.2.1-1, *Dust Control Measures and Minimum Efficiency Requirements*).

3.2.2.3 SENSITIVE RECEPTORS

Locations that can be considered sensitive receptors for air quality impacts include residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes.[12] Sensitive individuals with compromised immune systems, such as children and the elderly, have the potential to be exposed to emissions from the construction-related activities associated with the vegetation of the proposed project / proposed action. The greatest potential for exposure of sensitive receptors to air contaminants would occur under strong wind events during the various stages of project construction, when minimal ground would be disturbed during grubbing and clearing and equipment would be used for site preparation, materials delivery, and planting.

The characterization of the baseline conditions included an identification of the sensitive receptors to be evaluated in conjunction with the consideration of criteria emissions during installation, maintenance, and monitoring of the proposed project / proposed action. The nearest sensitive receptors in the vicinity of the proposed project / proposed action located in the unincorporated area of Inyo County are the community of Swansea located north and adjacent to the proposed project / proposed action and the community of Keeler located southeast and adjacent to the proposed project / proposed action. One designated Native American reservation (Lone Pine Paiute-Shoshone Indian

[12] California Environmental Protection Agency, Air Resources Board, "Air Quality and Land Use Handbook: A Community Health Perspective"(March 29, 2005)

Reservation) and the town of Lone Pine are approximately 10 miles to the northwest (Figure 3.2.2.3-1, *Sensitive Receptors*).

3.2.2.4 ODORS

There have been no reports to the District or Inyo County of nuisance odor for the Keeler Dunes.[13,14]

[13] Holder, Grace, Great Basin Unified Air Pollution Control District, Bishop, CA. 28 May 2013. Personal Communication to Adam Furman, Sapphos Environmental, Inc., Pasadena, CA.

[14] Long, Mark, Inyo County Environmental Health, Bishop, CA. 28 May 2013. Personal Communication to Adam Furman, Sapphos Environmental Inc., Pasadena, CA.

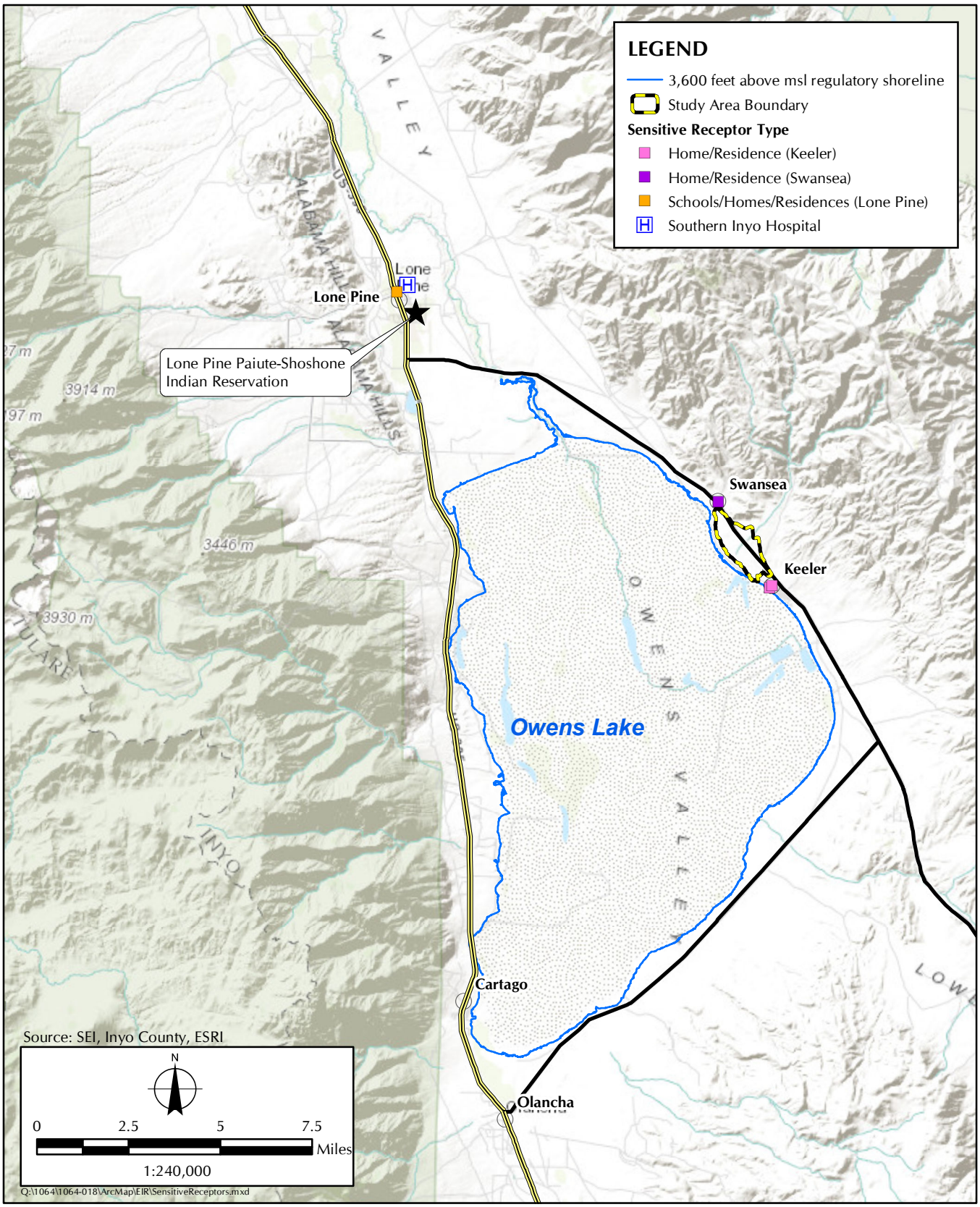

FIGURE 3.2.2.3-1

Sensitive Receptors

3.3 BIOLOGICAL RESOURCES

This section provides a background discussion of the regulatory framework and the affected environment. The regulatory framework discussion focuses on the federal, state, and local regulations. The affected environment discussion focuses on the plant communities and associated vegetation, general wildlife, riparian habitat and sensitive natural communities, special status species of plants and wildlife; jurisdictional waters, habitat connectivity and wildlife corridors, and the Bishop RMP area. Information contained in this section is summarized from the Keeler Dunes Dust Control Project Biological Resources Technical Report (Appendix D of this EIR/EA).

3.3.1 REGULATORY FRAMEWORK

3.3.1.1 FEDERAL

A. National Environmental Policy Act

The National Environmental Policy Act (NEPA) and its supporting federal regulations establish certain requirements that must be adhered to for any proposed action "financed, assisted, conducted, or approved by a federal agency." The BLM is the lead agency pursuant to NEPA for the lands that it administers in the proposed action area. The U.S. Army Corps of Engineers (USACOE) would be the lead agency pursuant to NEPA for that portion of the proposed action requiring the issuance of a nationwide or individual permit under Section 404 of the Clean Water Act. The proposed action area contains wetlands that are subject to USACOE jurisdiction.

B. Federal Endangered Species Act

Section 7(a)(2) of the ESA requires all federal agencies, including the USFWS, to evaluate the proposed project / proposed action with respect to any species proposed for listing or already listed as endangered or threatened and their critical habitat, if any is proposed or designated. Federal agencies must undertake programs for the conservation of endangered and threatened species and are prohibited from authorizing, funding, or carrying out any action that will jeopardize a listed species or destroy or modify its critical habitat. There are no plant or wildlife species listed under the ESA that are known or expected to be present with the study area.

C. Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC 668-668c), enacted in 1940 and as amended, prohibits anyone, without a permit issued by the USFWS, from "taking" bald and golden eagles, including their parts, nests, or eggs. The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." For purposes of these guidelines, "disturb" means: "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

D. Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) makes it unlawful to pursue, capture, kill, or possess or attempt to do the same to any migratory bird or part, nest, or egg of any such bird listed in wildlife protection treaties among the United States, Great Britain, Mexico, Japan, and the countries of the former Soviet Union. As with federal ESA, the MBTA authorizes the Secretary of the Interior to issue permits for incidental take. Nesting birds and the contents of the nest within the construction area of the proposed project / proposed action study area are protected pursuant to the MBTA.

E. Section 404 of the Federal Clean Water Act

The proposed project / proposed action does not involve any wetlands or other designated waters of the United States, nor does it involve any potential wetland designated on the National Wetlands Inventory (NWI). Wetlands designated on the NWI are present along the western border of the proposed project / proposed action study area but occur outside proposed project / proposed action impact areas.

F. BLM California

Survey Protocols for Special Status Plants. BLM-California has developed protocols for the survey (inventory) of special status plants that must be followed in order to comply with BLM policy, the National Environmental Policy Act (NEPA), and the Endangered Species Act (ESA).

G. Bishop Resource Management Plan

The BLM's responsibilities include managing public land and associated natural resources to provide a variety of uses. The Bishop Resource Management Plan (RMP) provides planning direction for the future use of land in the Bishop Resource Area.[1] The proposed project / proposed action study area is located within the Owens Lake Management Area and South Inyo Management Area, two of nine management areas managed by the BLM pursuant to the Bishop Resource Management Plan. The proposed dust-control measures would be implemented within the Owens Lake Management Area only. Policies relevant to the proposed project / proposed action include the following:

RMP Decision

Provide Yearlong Protection of endangered, threatened, candidate and sensitive plant and animal habitats. Yearlong Protection is defined in the RMP as: No discretionary actions which would adversely affect target resources would be allowed.

Wildlife

1. Consult with the California Department of Fish and Wildlife (CDFW) prior to design and accomplishment of wildlife habitat improvement projects.

2. Notify the CDFW one year in advance of any revegetation or vegetation manipulation projects.

[1] U.S. Department of the Interior, Bureau of Land Management, Bakersfield District. April 1993. *Bishop Resource Management Plan Record of Decision*. Bakersfield, CA.

3. Manage candidate species, sensitive species and other species of management concern in a manner to avoid the need for listing as state or federal endangered or threatened species.

In addition, the Bishop Resource Management Plan has identified several goals and decisions that apply to the Owens Lake Management Area, which includes the Owens Lake bed and surrounding areas including the proposed project / proposed action study area west of Highway 136. The plan states the following Decisions:

- Maintain and enhance habitat for Owens pupfish, Owens tui chub, western snowy plover, Owens Valley vole and Owens sand dune snout beetle.

- Enhance wildlife habitat and watershed conditions with the following Desired Plant Community (DPC) prescriptions:

    - Meet DPC goals on 3,214 acres (75 percent) of total dune habitat to maintain habitat for the Owens sand dune snout beetle.

The DPC goal is as follows:

Desired Plant Community for Sand Dunes in the Owens Lake and South Inyo Management Areas.

- Desired plant community for stabilized and partially stabilized desert dunes along the periphery of Owens Lake: The goal is to insure adequate vegetative cover and microclimatic conditions for the Category 2 species *Trigonoscuta owensi*, Owens sand dune snout beetle. Dunes and sand accumulations would be maintained through retention of present vegetative cover which varies from scant cover of widely scattered shrubs and herbs to nearly closed shrub canopies. Plants which predominate in the dune areas and are primarily responsible for stabilization of dune hummocks are Parry's saltbush (*Atriplex parryi*), greasewood (*Sarcobatus vermiculatus*), and bush seepweed (*Suaeda moquinii*). Maintain the current overall vegetative cover of approximately 7 percent in the dune habitat.

3.3.1.2 STATE

A. California Endangered Species Act

The California ESA (CESA) prohibits the take of listed species except as otherwise provided in State law. Unlike the federal ESA, CESA applies the take prohibitions to species petitioned for listing (state candidates). State lead agencies are required to consult with CDFW to ensure that any actions undertaken by that lead agency are not likely to jeopardize the continued existence of any state-listed species or result in destruction or degradation of required habitat. CDFW is authorized to enter into memoranda of understanding with individuals, public agencies, universities, zoological gardens, and scientific or educational institutions to import, export, take, or possess listed species for scientific, educational, or management purposes. CESA was considered due to the potential presence of state-listed rare, threatened, or endangered species within the region of the proposed project study area. One species listed under CESA has been identified with the potential to occur near or within the proposed project study area.

B. State Fish and Game Code

The proposed project / proposed action does not involve any river, stream, lake, ephemerally flooded dry washes, or altered or artificial waterways that provide benefits to fish and wildlife resources. There is one active drainage in the proposed project / proposed action study area that brings water that is captured at the southern terminus of the diversion structures and directs it across the road and through a series of channels that cross through the Keeler Dunes. Neither the main active drainage nor its series of channels contain riparian habitat. Additionally, the drainage and channels occur outside proposed project / proposed action impact areas (Figure 3.3.1.2-1, *National Wetlands Inventory Map*).

Section 2080 and 2081 Threatened and Endangered Species

Section 2080 of the State Fish and Game Code (Code) states that "no person shall import into [California], export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the [State Fish and Game Commission] determines to be an endangered species or threatened species, or attempt any of those acts, except as otherwise provided in this chapter, the Native Plant Protection Act, or the California Desert Native Plants Act".

Under Section 2081 of the Code, the CDFW may authorize individuals or public agencies to import, export, take, or possess, any state-listed endangered, threatened, or candidate species. These otherwise prohibited acts may be authorized through permits or memoranda of understanding if (1) the take is incidental to an otherwise lawful activity, (2) impacts of the authorized take are minimized and fully mitigated, (3) the permit is consistent with any regulations adopted pursuant to any recovery plan for the species, and (4) the applicant ensures adequate funding to implement the measures required by CDFW. CDFW shall make this determination based on the best scientific and other information that is reasonably available and shall include consideration of the species' capability to survive and reproduce. Section 2081 of the State Fish and Game Code was considered due to the potential presence of state-listed rare, threatened, or endangered species within the region of the proposed project / proposed action study area. Several species listed under the California ESA have been identified with the potential to occur near or within the proposed project / proposed action study area.

Section 3503 and 3503.5 Resident and Migratory Birds

Sections 3503 and 3503.5 of the State Fish and Game Code provide regulatory protection to resident and migratory birds and all birds of prey within the state. These sections prohibit take of nests and eggs unless other provided for by the State Fish and Game Code.

C. Native Plant Protection Act

The Native Plant Protection Act includes measures to preserve, protect, and enhance rare and endangered native plants. The definitions of rare and endangered differ from those contained in CESA. However, the list of native plants afforded protection pursuant to the Native Plant Protection Act includes those listed as rare and endangered under CESA. The Native Plant Protection Act provides limitations on take as follows: "No person shall import into this state, or take, possess, or sell within this state" any rare or endangered native plant, except in compliance with provisions of the act. Individual land owners are required to notify the CDFW at least 10 days in advance of changing land uses to allow the CDFW to salvage any rare or endangered native plant material. The Native Plant Protection Act was considered in this analysis due to the potential presence of state-listed rare, threatened, or endangered plant species in the region of the proposed project / proposed action study

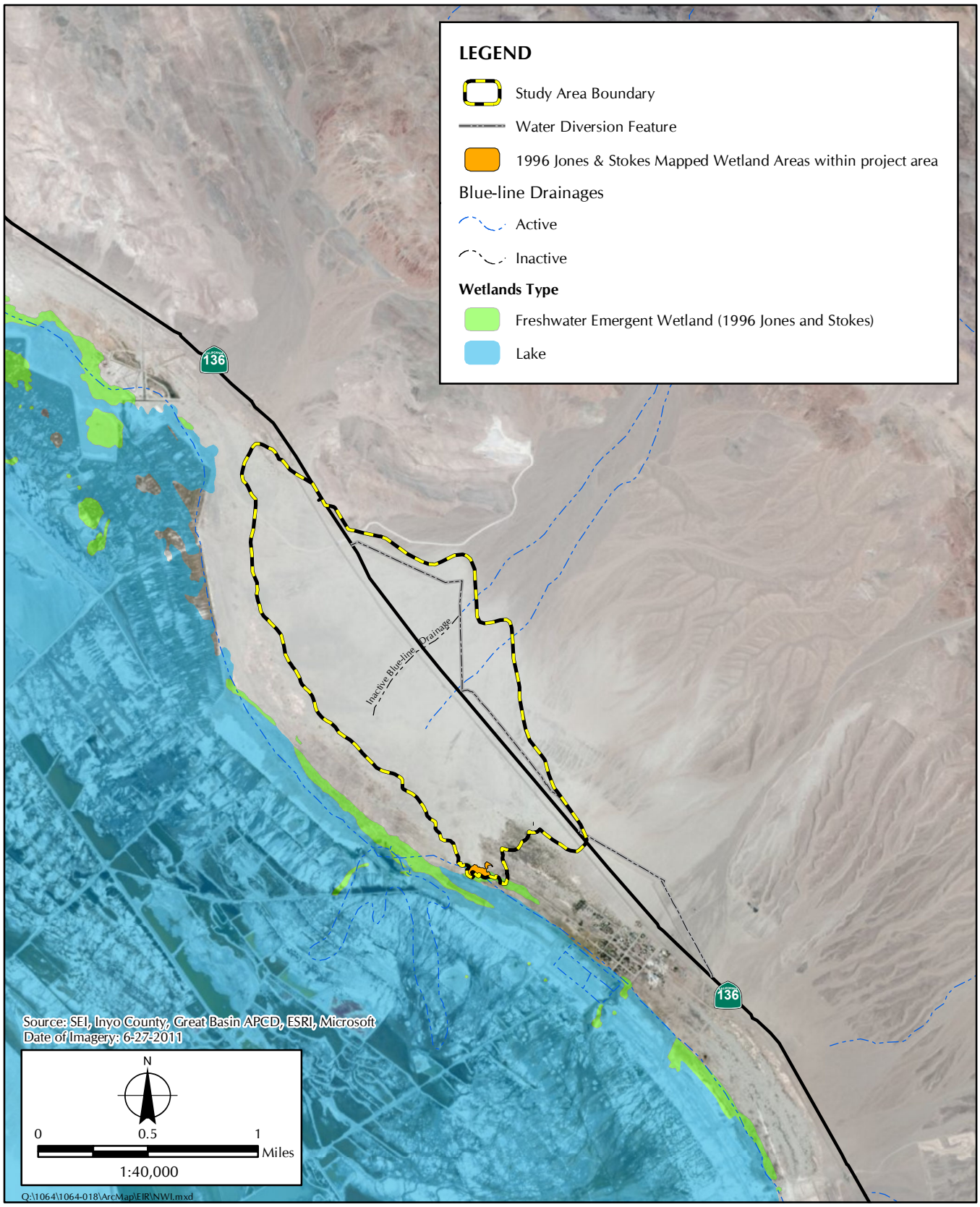

FIGURE 3.3.1.2-1

National Wetlands Inventory Map

area. Several species listed under the Native Plant Protection Act have been identified with the potential to occur near or within the proposed project / proposed action study area.

D. California Desert Native Plants Act

The California Desert Native Plants Act applies to the private and public lands that are not administered by the BLM, or any other Federal agency. The California Desert Native Plants Act was passed in 1981 to protect non-listed California desert native plants from unlawful harvesting on both publicly- and privately-owned lands. Harvest, transport, sale, or possession of specific native desert plants is prohibited unless a person has a valid permit, or wood receipt, and the required tags and seals.

3.3.1.3 REGIONAL

A. Inyo County General Plan

Conservation and Open Space Element

The Conservation and Open Space Element of the Inyo County General Plan contains policies related to biological resources.[2] The Conservation and Open Space Element contains a summary of the existing conditions in the planning area, major issues, and policies designed to aid the County to achieve its goals. The two goals identified by the County for biological resources include:

- **GOAL BIO-1.** Maintain and enhance biological diversity and healthy ecosystems in the county.

- **GOAL BIO-2**. Provide a balanced approach to resource protection and recreational use of the natural environment.

Biological resources policies relevant to the proposed project / proposed action include the following:

- **Policy BIO-1.1, Regulatory Compliance.** The County shall review development proposals to determine impacts to sensitive natural communities, of both local and regional concern, and special-status species. Appropriate mitigation measures will be incorporated into each project, as necessary.

- **Policy BIO-1.2, Preservation of Riparian Habitat and Wetlands.** Important riparian areas and wetlands, as identified by the County, shall be preserved and protected for biological resource value.

- **Policy BIO-1.3, Restoration of Biodiversity.** Encourage the restoration of degraded biological communities.

- **Policy BIO-1.4, Limitations for ERAs.** The County shall discourage development in Environmental Resource Areas (ERA).

[2] Inyo County Planning Department. December 2001. *Inyo County General Plan, Conservation and Open Space Element*. Independence, CA.

- **Policy BIO-1.5, Develop Outside of Habitat Areas.** Work with regulatory agencies and private developers to direct development into less significant habitat areas. Discourage urban development in areas containing sensitive natural communities or known to contain special-status species.

- **Policy BIO-1.6, Wildlife Corridors.** The County shall work to preserve and protect existing wildlife corridors where appropriate.

- **Policy BIO-1.7, Noxious Weeds.** Avoid activities that will promote the spread of noxious weeds in the County.

- **Policy BIO-1.8, Owens River Restoration.** The County will work with the LADWP and regulatory agencies to complete the restoration of habitat values along the historic Owens River channel as mitigation for degradation done with water export activities. This policy shall apply to the portion of the Owens River identified as the Lower Owens River Project.

- **Goal BIO-2.** Provide a balanced approach to resource protection and recreational use of the natural environment.

- **Policy BIO-2.1 Coordination on Management of Adjacent Lands.** Work with other government land management agencies to preserve and protect biological resources while maintaining the ability to utilize and enjoy the natural resources in the County.

- **Policy BIO-2.2 Appropriate Access for Recreation.** Work with other government land management agencies to preserve and protect biological resources while maintaining the ability to utilize and enjoy natural resources in the County.

3.3.2 STUDY METHODS

Information contained in this section is summarized from the *Keeler Dunes Dust Control Project Biological Resources Technical Report*.[3] The Biological Resources Technical Report (BRTR) is provided as Appendix D of this EIR/EA.

3.3.2.1 LITERATURE REVIEW

The literature review consisted of known ranges and habitat for the species, a query of the California Diversity Database (CNDDB), a review of the CNPS database, the BLM special status species list and species records from other sites in the vicinity.

Prior to conducting field surveys within the proposed project / proposed action site, a query of the CNDDB[4] and a review of the California Native Plant Society (CNPS) database were undertaken to identify special-status species, including listed, sensitive, and locally important species with the potential to occur within, and adjacent to, the proposed project / proposed action site. The query was

[3] Sapphos Environmental, Inc. 13 February 2013. *Keeler Dunes Dust Control Project Biological Resources Technical eport*. Pasadena, CA.

[4] California Department of Fish and Wildlife. 2005. *Rarefind 3: A Database Application for the Use of the California Department of Fish and Wildlife Natural Diversity Database*. Sacramento, CA.

conducted for the following nine U.S. Geological Survey (USGS) 7.5-minute series topographic quadrangles: Bartlett,[5] Dolomite,[6] Keeler,[7] Lone Pine,[8] Owens Lake,[9] Cerro Gordo Peak,[10] Olancha,[11] Vermillion Canyon,[12] and Centennial Canyon,[13] as well as an additional two surrounding 7.5-minute series topographic quadrangles, Union Wash[14] and Haiwee Reservoirs.[15] The typical CNDDB search included any quadrangle that is directly adjacent to the quadrangle that contains the proposed project / proposed action site. A preliminary analysis of sensitive species using 11 quadrants was pared down to potential considerations based on proximity and habitat constraints, producing 61 species (Appendix A of the BRTR, *Potential Sensitive Species*). Further consideration, based on the change in elevation of habitats in adjacent quadrangles when compared to the proposed project / proposed action site and while comparing each species' habitats to the characteristics present within the proposed project / proposed action site, produced the 27 more closely scrutinized candidates detailed within Section 5.0, *Result and Discussions*. Reviewed literature included the following: *Bishop Resource Management Plan Record of Decision*;[16] the Conservation and Open Space Element of the Inyo County General Plan;[17] previously completed environmental documentation, including field efforts conducted between April 2002 and May 2006 in preparation of the *2008 Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan*;[18] and *Rare Plant Survey Report Owens Dry Lake Dust Control Project Site*.[19]

[5] U.S. Geological Survey. 1987. *7.5-Minute Series, Bartlett, California, Topographic Quadrangle*. Denver, CO.

[6] U.S. Geological Survey. 1987. *7.5-Minute Series, Dolomite, California, Topographic Quadrangle*. Denver, CO.

[7] U.S. Geological Survey. 1987. *7.5-Minute Series, Keeler, California, Topographic Quadrangle*. Denver, CO.

[8] U.S. Geological Survey. 1994. *7.5-Minute Series, Lone Pine, California, Topographic Quadrangle*. Denver, CO.

[9] U.S. Geological Survey. 1987. *7.5-Minute Series, Owens Lake, California, Topographic Quadrangle*. Denver, CO.

[10] U.S. Geological Survey. 1987. *7.5-Minute Series, Cerro Gordo Peak, California, Topographic Quadrangle*. Denver, CO.

[11] U.S. Geological Survey. 1987. *7.5-Minute Series, Olancha, California, Topographic Quadrangle*. Denver, CO.

[12] U.S. Geological Survey. 1987. *7.5-Minute Series, Vermillion Canyon, California, Topographic Quadrangle*. Denver, CO.

[13] U.S. Geological Survey. 1987. *7.5-Minute Series, Centennial Canyon, California, Topographic Quadrangle*. Denver, CO.

[14] U.S. Geological Survey. 1982. *7.5-Minute Series, Union Wash, California Topographic Quadrangle*. Denver, CO.

[15] U.S. Geological Survey. 1982. *7.5-Minute Series, Haiwee Reservoirs, California Topographic Quadrangle*. Denver, CO.

[16] Bureau of Land Management. 1993. *Bishop Resource Management Plan Record of Decision*. Bishop, CA.

[17] Inyo County Planning Department. December 2001. *Inyo County General Plan, Conservation and Open Space Element*. Independence, CA.

[18] Schade, Theodore D., et al. *2008 Owens Valley PM10 Planning Area Demonstration of Attainment State Implementation Plan*. Bishop, CA: Great Basin Unified Air Pollution Control District.

[19] City of Los Angeles Department of Water and Power. 2001. *Rare Plant Survey Report Owens Dry Lake Dust Control Project Sites*. Los Angeles, CA.

3.3.2.2 FIELD SURVEYS

The approximately 870.6-acre survey area encompasses the entire proposed project / proposed action study area. Approximately 780 acres are on lands managed by BLM, with the remaining approximately 66.7 acres being predominantly lands owned by the City of Los Angeles. Field surveys performed are described below.

A. General Biological Survey

Habitat assessments and general biological surveys of the proposed project / proposed action were undertaken by Sapphos Environmental, Inc. biologists. Survey dates for general biological surveys included April 12 and 13, 2011, June 6, 2012 and July 23, 2013. The purpose of these surveys was to document existing botanical resources, identify potential jurisdictional federal and state waters and wetlands and document suitable habitat for endangered, threatened, and sensitive species.

Surveys were conducted by a team of three biologists (one botanist, two wildlife biologists). During the field visits, observations and recordings of plant and wildlife species, as well as plant communities, were documented using a number of methods including, but not limited to: terrestrial photographs, aerial support photographs, and global positioning system (GPS) units. Habitat assessment was performed to document the presence or absence of habitat suitable to support special-status species and communities within the proposed project / proposed action site, as well as to provide a baseline description of existing biological resources. Permission was granted by the Los Angeles Department of Water and Power (LADWP) to access any areas within the study area that were under its jurisdiction, including potential areas depicted as wetlands on the National Wetlands Inventory (NWI) map (Figure 3.3.1.2-1). The limited size of the proposed project / proposed action site allowed for 100 percent of the area to be surveyed by foot.

B. Wetlands Survey

The determination regarding the potential presence or absence of federally protected wetlands were reviewed using topographic maps and NWI maps, interpretation of aerial photographs, spatial analysis using geographic information systems (GIS) software, and plant community mapping along with field analysis conducted concurrent with the habitat assessment. All potential wetlands identified on the National Wetlands Inventory (NWI) map were visited in the field to verify presence or absence, along with habitat functions and values (Figure 3.3.1.2-1). During ground-truthing, three essential criteria were looked for in evaluating the site for wetlands: (1) hydrophytic (wetland) vegetation; (2) hydric soils; and (3) wetlands hydrology, which is the presence of water at or above the soil surface for a sufficient period of the year to significantly influence the plant types and soils that occur in the area, where hydric soils have characteristics that indicate they were developed in conditions where soil oxygen was limited by the presence of saturated soil for long periods during the growing season.[20,21]

[20] U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, and U.S. Department of Agriculture Soil Conservation Service. 1989. *Federal Manual for Identifying and Delineating Jurisdictional Wetlands*. An Interagency Cooperative Publication. Washington, DC.

[21] U.S. Army Corps of Engineers. n.d. "Recognizing Wetlands – An Informational Pamphlet." Available at: http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/techbio.aspx

C. Plant Community Survey

The evaluation of plant communities was undertaken in a two-phase effort consisting of a preliminary, data-driven field mapping effort on the CNPS rapid assessment protocol,[22] followed by verification and refinement of the field map in-house. The final plant community map was constructed on the field identification of regional assemblages of vegetation characterized by the presence of dominant plant species.[23] The vegetation assemblages described in this report follow a system used by the CDFW, the Sawyer and Keeler-Wolf classification,[24] rather than Holland classification.[25] The Sawyer and Keeler-Wolf classification focuses on floristics (i.e., the group of plant species occurring on a site) and dominance (i.e., which species are most abundant and which are less common) as the basis for their system.[26] Delineation of plant communities follows the current (2003) classification system of CDFW, the CNDDB of the State Resources Agency,[27] and was cross-referenced with Sawyer and Keeler-Wolf's *A Manual of California Vegetation*.[28] Where applicable, the plant community descriptions provided in *Preliminary Descriptions of the Terrestrial Natural Communities of California*[29] was used. Botanical names and common names used are according to *The Jepson Manual*.[30] Common names not available from *The Jepson Manual* are taken from Calflora.[31] Plant community surveys were completed in accordance with the CDFW protocol for special status plants[32]. The special status plant survey methods were reviewed by the BLM. The survey methods, in conjunction with the Special Status Plant Design Features, were determined to be adequate in regards to meeting the BLM Special Status Plant survey protocols.

If no plants were visible, the area was marked as barren. If plants were visible, the field crews walked to all patches and determined species composition and estimated abundance. During field surveys, 13 photo stations were selected at strategic points throughout the site. At each photo station, four pictures were taken (Appendix B of the BRTR, *Photo Station Pictures*), one in each cardinal direction (Appendix B of the BRTR; Figure 2.2-1, *Photo Stations Map*).

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[22] California Native Plant Society Vegetation Committee. September 2004. *California Native Plant Society Vegetation Rapid Assessment Protocol*. Sacramento, CA. Available at: http://www.cnps.org/cnps/vegetation/pdf/rapid_assessment_protocol.pdf

[23] Munz, Philip A., and D.D. Keck. 1949. "California Plant Communities." *El Aliso*, *2*(1): 87–105.

[24] Sawyer, J.O., and T. Keeler-Wolf. 1995. *A Manual of California Vegetation*. Sacramento: California Native Plant Society.

[25] Holland, R.F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Sacramento, CA: California Department of Fish and Wildlife.

[26] Sawyer, J.O., and T. Keeler-Wolf. 1995. *A Manual of California Vegetation*. Sacramento, CA: California Native Plant Society.

[27] California Department of Fish and Wildlife, Wildlife and Habitat Data Analysis Branch. September 2003. *List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database*. Sacramento, CA. Available at: http://www.dfg.ca.gov/whdab/html/natural_communities.html

[28] Sawyer, J.O., and T. Keeler-Wolf. 2009. *A Manual of California Vegetation*. Sacramento, CA: California Native Plant Society.

[29] Holland, Robert F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Sacramento, CA: California Department of Fish and Wildlife.

[30] Hickman, J.C., ed. 1993. *The Jepson Manual: Higher Plants of California*. Berkeley, CA: University of California Press.

[31] Calflora. n.d. Calflora Database. Available at: http://www.calflora.org. This database is continually updated, so it is an appropriate source of names for new species not described in *The Jepson Manual*.

[32] California Department of Fish and Wildlife. 2009. *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Communities*. Available at: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/Protocols_for_Surveying_and_Evaluating_Impacts.pdf

D. Vertebrate Community

The limited size of the proposed project / proposed action site allowed for 100 percent of the area to be surveyed by foot and supported by driving accessible roads around the entire site during the early morning hours and late afternoon hours. Identification of wildlife species was aided by the use of photography, binoculars, and a spotting scope.

While conducting pedestrian surveys, biological survey crews assessed habitat for special-status species and relevant habitat was scrutinized for target species. Invertebrates and reptiles were searched for by visually inspecting the ground and turning over rocks, as well as searching under vegetation. A visual and auditory search was performed for birds. Mammals were surveyed by sight and investigation of diagnostic sign (i.e., track, scat, nests, and burrows). All wildlife species were identified to taxonomic level and compiled into a compendium (Appendix C of the BRTR, *Floral and Faunal Compendium*).

E. Invertebrates

To survey for insects, nonlethal pitfall traps were placed along several transects. Pitfall traps were checked in the morning, evening, and throughout the night to sufficiently sample insects during different activity periods. Pitfall traps (17 × 17 × 8 centimeters) were located in a grid across the dune area, replicating the various habitat types (BRTR; Figure 2.4-1, *Insect Sampling Locations*). Each trap was filled with a biodegradable, soapy water solution (< 1 percent soap), which breaks surface tension, so that insects remain in the traps. Twenty-six traps were located within the area. In addition, nocturnal surveys used light sampling, which often attracts species that would not be detected in pitfalls. One two-sided white sheet and light source (propane lantern) were set at a central location near the alkali flats, near trap #7. This light was set at dusk and remained until dawn, with periodic monitoring throughout the night.

Summer insect surveys were conducted May 3 to 4, 2011 and May 28 to 31, 2012. In addition, surveys were conducted for *Tescalsia giulianiata*, a winter moth, between January 7 and January 13, 2012. Due to the number of traps and breadth of area sampled, each monitoring of the pitfall traps took 4 to 5 hours to complete (a single transect was about 6 miles total linear distance). All traps were set between 2:00 p.m. and 7:00 p.m., sampled between 9:00 p.m. and 2:00 a.m., and sampled again between 6:00 a.m. and 11:00 a.m. All traps were removed and displaced sand was returned to the holes.

3.3.3 AFFECTED ENVIRONMENT

The affected environment addressed in this portion of the analysis includes the proposed project / proposed action study area, inclusive of the proposed project / proposed action and action alternatives

3.3.3.1 TOPOGRAPHY AND SOILS

The proposed project / proposed action study area is situated on the western portion of the Keeler alluvial fan that slopes from the Inyo Mountains on the east to the bed of Owens Lake on the west. The topographic relief of the proposed project / proposed action study area is 285 feet and extends from approximately 3,600 feet above mean sea level (MSL) near the historic shore of Owens Lake to approximately 3,885 feet above MSL on the alluvial fan. The location of the proposed project /

proposed action is depicted on U.S. Geological Survey (USGS) 7.5-minute series topographic quadrangles Owens Lake[33] and Dolomite.[34]

3.3.3.2 PLANT COMMUNITIES

A plant community is defined as a regional element of vegetation characterized by the presence of certain dominant species.[35] The plant communities described in this section are described in accordance with the definitions provided in Preliminary Descriptions of the Terrestrial Natural Communities of California and cross-referenced to the vegetation series described in A Manual of California Vegetation.[36,37]

Plant communities in the proposed project / proposed action biological survey area located west of SR136 were mapped in the field onto aerial imagery at a scale of 1 inch equals 24,000 feet. Preliminary plant community boundaries were plotted in the field. This preliminary plant community map was ground-proofed in the field by Sapphos Environmental, Inc. on April 12, 2011, and updated on June 6, 2011. The plant community within the surveyed area was placed on a map on a scale of 1 inch equals 24,000 feet (Figure 3.3.3.2-1, *Plant Community Map*). The acreage of plant communities on the proposed project / proposed action study area is summarized in Table 3.3.3.2-1, *Plant Communities Present within the Proposed Project / Proposed Action Study Area*.

[33] U.S. Geological Survey. 1987. *7.5-Minute Series, Owens Lake, California, Topographic Quadrangle*. Denver, CO.

[34] U.S. Geological Survey. 1987. *7.5-Minute Series, Dolomite, California, Topographic Quadrangle*. Denver, CO.

[35] Philip A. Munz, and D.D. Keck. 1949. "California Plant Communities." *El Aliso 2*(1): 87–105.

[36] Holland, Robert F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Sacramento, CA.

[37] Sawyer, J.O., and T. Keeler-Wolf. 2009. *A Manual of California Vegetation*. 2nd Edition. Sacramento, CA: California Native Plant Society.

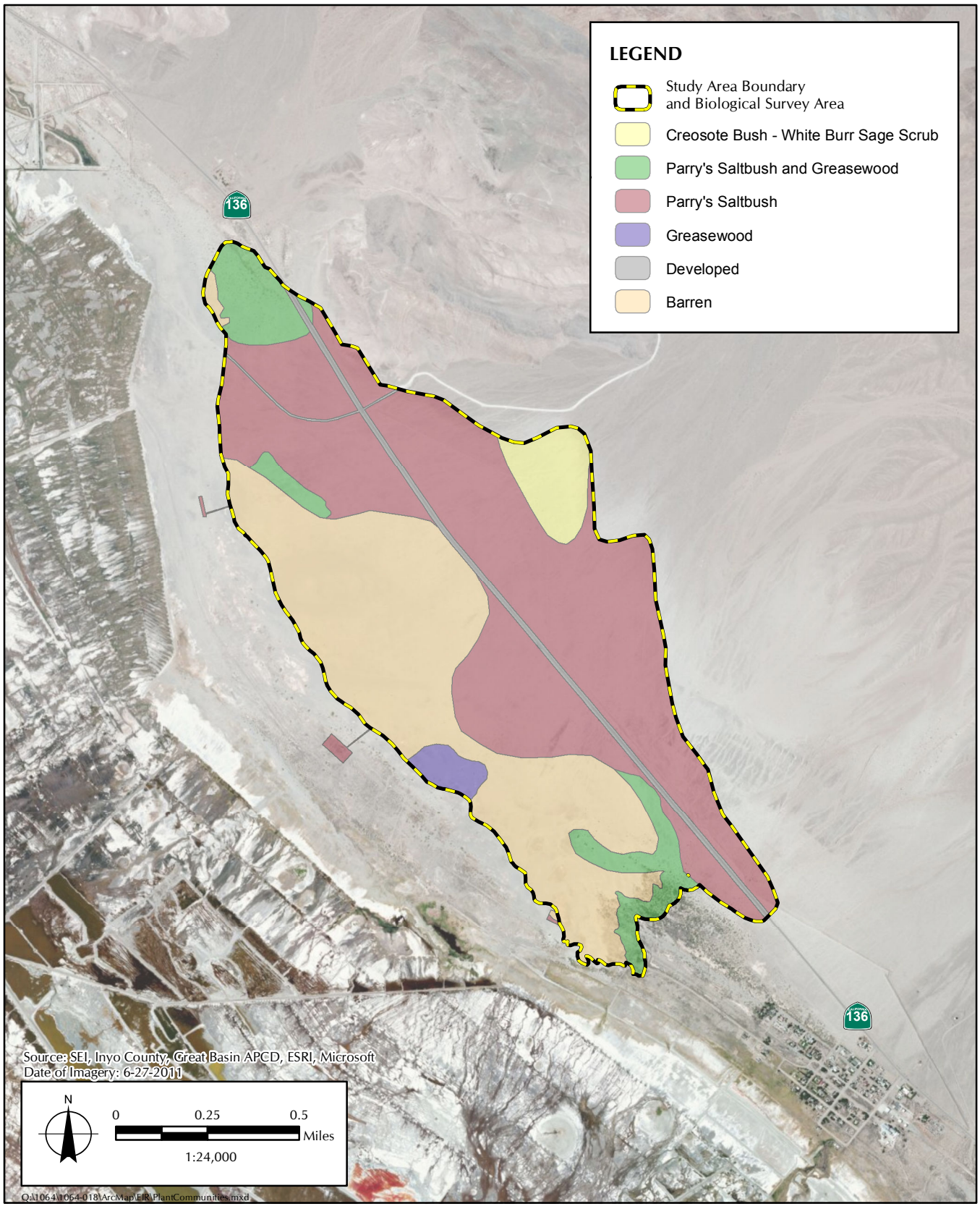

FIGURE 3.3.3.2-1

Plant Community Map

TABLE 3.3.3.2-1
PLANT COMMUNITIES PRESENT WITHIN THE PROPOSED PROJECT / PROPOSED ACTION STUDY AREA

Plant Community	Type	Element Code/Type	Current Status*	Acres (Percentage)
Shadscale scrub	Parry's Saltbush	California Natural Diversity Database Code 36.320.000	G4, S4	428 (49%)
	Parry's Saltbush and Greasewood	California Natural Diversity Database Code 36.320.000	G4, S4	12 (1%)
	Greasewood	California Natural Diversity Database Code 36.320.000	G4, S4	71 (8%)
Creosote Bush – White Burr Sage Scrub	N/A	California Natural Diversity Database Code 33.140.00	G5, S5	33 (4%)
Barren	N/A	N/A	N/A	306 (35%)
Developed	N/A	N/A	N/A	23 (3%)
			Total	873 (100%)

**Note:* Current Status:
Global Ranking: The *global rank* (G-rank) is a reflection of the overall condition of an element throughout its global range.

Species or Natural Community Level
G1 = Less than 6 viable element occurrences (EOs) OR less than 1,000 individuals OR less than 2,000 acres.
G2 = 6–20 EOs OR 1,000–3,000 individuals OR 2,000–10,000 acres.
G3 = 21–100 EOs OR 3,000–10,000 individuals OR 10,000–50,000 acres.
G4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat.
G5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world.

State Ranking: The *state rank* (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank.

S1 = Less than 6 EOs OR less than 1,000 individuals OR less than 2,000 acres
- S1.1 = very threatened
- S1.2 = threatened
- S1.3 = no current threats known

S2 = 6–20 EOs OR 1,000–3,000 individuals OR 2,000–10,000 acres
- S2.1 = very threatened
- S2.2 = threatened
- S2.3 = no current threats known

S3 = 21–100 EOs or 3,000–10,000 individuals OR 10,000–50,000 acres
- S3.1 = very threatened
- S3.2 = threatened
- S3.3 = no current threats known

S4 - Apparently secure within California; this rank is clearly lower than S3 but factors exist to cause some concern; i.e. there is some threat, or somewhat narrow habitat. NO THREAT RANK.
S5 - Demonstrably secure to ineradicable in California. NO THREAT RANK.

Source:
California Department of Fish and Wildlife. 2012. *California Natural Diversity Database, Rarefind 4*. Sacramento, CA.
Holland, Robert F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Sacramento, CA: California Department of Fish and Wildlife.

Shadscale Scrub Plant Community. Parry's saltbush (*Atriplex parryi*) is the dominant species within the biological proposed action survey area. This Shadscale community type includes a few other species, such as greasewood (*Sarcobatus vermiculatus*) and bush seepweed (*Suaeda nigra*. This community corresponds to Sawyer and Keeler-Wolf's Shadscale series (CNDDB Code 36.320.00) and Holland's Shadscale scrub (Element Code: 36140). Shadscale scrub occurs on approximately 511 acres. Shadscale scrub dominated by Parry's saltbush accounts for approximately 428 acres and is located in a wide swath spanning the length of the study area. Shadscale scrub dominated by greasewood accounts for approximately 71 acres and one patch of the plant community is located near the middle of the study area along the southern boundary. Shadscale scrub co-dominated by Parry's saltbush and greasewood accounts for approximately 12 acres of the study area and is located in the northwest corner and southeast corner of the study area with an additional patch near the northwest corner.

Creosote Bush – White Burr Sage Scrub Plant Community. Creosote bush (*Larrea tridentata*) and white burr sage (*Ambrosia dumosa*) were the dominant species within this plant community. This Creosote Bush – White Burr Sage Scrub community type includes a few other species, such as desert holly (*Atriplex hymenelytra*) and cheesebush (*Ambrosia salsola*). This community corresponds to Sawyer and Keeler-Wolf's Creosote Bush – White Burr Sage Scrub series (CNDDB Code 33.140.00] and Holland's Mojave Creosote Bush Scrub (Element Code: 34100). Creosote Bush – White Burr Sage Scrub occurs on approximately 33 acres of the study area and is located near the middle of the study area along the northern boundary.

Barren. Barren aeolian sand deposits occur on approximately 306 acres and are located along the length of the southern boundary of the study area. Very few vascular plants grow in these areas.

Developed. Developed areas include existing dirt and paved roads within the study area. Developed areas generally lack vegetation and cover approximately 23 acres of the study area.

State-Designated Sensitive Plant Communities. The Shadscale scrub and Creosote Bush – White Burr Sage Scrub plant communities that are present within the proposed project / proposed action study area are not state-designated sensitive plant communities.

3.3.3.3 General Wildlife

A. Invertebrates

The survey area contains suitable habitat for several common species of invertebrates. Darkling beetles (*Eleodes spp*.), red harvester ants (*Pogonomyrmex rugosus*), pallid-winged grasshoppers (*Trimerotropis pallidipennis*) and nocturnal lepidopteron (moth) species were observed regularly by Sapphos Environmental, Inc. biologists during summer 2011 invertebrate surveys. Additional invertebrate species were observed on the study area much less frequently than the species listed above and can be found in the BRTR compendium (Appendix C of the BRTR).

B. Amphibians

Most amphibians require moisture for at least a portion of their life cycle, with many requiring a permanent water source for habitat and reproduction. Terrestrial amphibians have adapted to more arid conditions and are not completely dependent on a perennial or standing source of water. These species avoid desiccation by burrowing beneath the soil or leaf litter during the day and during the dry

season. No amphibian species were observed in the study area during surveys conducted by Sapphos Environmental, Inc. in 2011, 2012, and 2013.

C. Reptiles

The diversity and abundance of reptile species varies with habitat type. Many reptiles are restricted to certain plant communities and soil types, although some of these species would also forage in adjacent communities. Zebra tailed lizard (*Callisaurus draconoides*), common side blotched lizard (*Uta stansburiana*), and western whiptail *(Aspidoscelis tigris*) were observed regularly by Sapphos Environmental, Inc. biologists during 2011-2013 biological surveys. Additional reptile species were observed on the study area much less frequently than the species listed above and can be found in the BRTR compendium (Appendix C of the BRTR).

D. Birds

The diversity of bird species varies with respect to the character, quality, and diversity of vegetation communities. Due to sparse vegetation and general lack of food sources for much of the habitat within the study area, bird diversity was relatively low. Mourning dove (*Zenaida macroura*), common raven (*Corvus corax*), horned lark (*Eremophila alpestris*), and white-crowned sparrow (*Zonotrichia leucophrys*) were regularly observed by Sapphos Environmental, Inc. biologists during 2011-2013 biological surveys. Additional bird species were observed on the study area much less frequently than the species listed above and can be found in the BRTR compendium (Appendix C of the BRTR).

E. Mammals

Black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), and white-tailed antelope squirrel (*Ammospermophilus leucurus*) were regularly observed in the study area through direct observation as well as burrows, tracks, and scat by Sapphos Environmental, Inc. biologists during 2011–2013 biological surveys. Additional mammal species were observed on the study area much less frequently than the species listed above and can be found in the BRTR compendium (Appendix C of the BRTR).

3.3.3.4 Sensitive Biological Resources

A. Special Status Plant Species

The BLM uses the term "Special Status Plants" to include:

1. Federal Endangered, Threatened, and Proposed plants
2. BLM Sensitive plants

Sensitive plants are those species that are not federally listed as Endangered or Threatened or Proposed for federal listing, but which are designated by the BLM State Director for special management consideration. By national policy, Federal Candidate species are automatically treated as Sensitive. The California State Director has also conferred sensitive status on California State Endangered, Threatened, and Rare species on species with a California Rare Plant Rank of 1B (plants rare, threatened, and endangered in California and elsewhere) on the Special Vascular Plants, Bryophytes,

and Lichens List maintained by the California Department of Fish and Wildlife[38] that are on BLM lands or affected by BLM actions and that are not already special status plants by virtue of being federally listed or proposed (unless specifically excluded by the State Director on a case-by-case basis), and on certain other plants the State Director believes meet the definition of Sensitive.

No special status plant species were observed on the biological proposed project / proposed action survey area in biological surveys conducted by Sapphos Environmental, Inc. biologists during 2011–2013

Federally Listed Species

As a result of the literature review, previously prepared reports, a query of the CNDDB for the topographic quadrangles for the proposed project / proposed action study area and vicinity, and consultation with experts on the area's biological resources, no federally listed threatened or endangered plant species were identified as having the potential to occur within the survey area. No federally listed threatened or endangered species were observed during biological surveys.

Directed surveys and habitat assessments were guided by information on the distribution, description, habitat requirements, and reproduction of listed plant species gathered from the following sources: CNDDB search,[39] and District's summary list of flora and fauna observed in the Keeler Dunes.

State-Listed Species

State-listed species are those species provided special legal protection under CESA. A state-listed endangered species is a species that is in danger of extinction throughout all or a significant portion of its range. A state-listed threatened species is one that is likely to become endangered in the absence of special protection or management efforts provided by the listing. A candidate species is one that is proposed by the state government for listing as endangered or threatened.

As a result of the literature review, previously prepared reports, a query of the CNDDB for the topographic quadrangles for the proposed project / proposed action study area and vicinity and consultation with experts on the area's biological resources, no state listed threatened or endangered plant species were identified as having the potential to occur within the survey area. No state listed threatened or endangered species were observed during biological surveys.

Directed surveys and habitat assessments were guided by information on the distribution, description, habitat requirements, and reproduction of listed plant species gathered from the following sources: CNDDB search,[40] and District's summary list of flora and fauna observed in the Keeler Dunes.[41]

BLM Sensitive Plant Species

Four species were determined to have the potential to occur within the proposed project / proposed action study area and were therefore targeted for directed surveys and habitat assessments: bald daisy

[38] California Department of Fish and Wildlife Natural Diversity Database. January 2014. *Special Vascular Plants, Bryophytes, and Lichens List*. Sacramento, CA.

[39] California Department of Fish and Wildlife. 2012. *California Natural Diversity Database*. Sacramento, CA.

[40] California Department of Fish and Wildlife. 2012. *California Natural Diversity Database*. Sacramento, CA.

[41] Great Basin Unified Air Pollution Control District. 2011. *A Summary of the Flora and Fauna Observed in the Keeler Dunes between 11/2007 and 5/2011*. Bishop, CA.

(*Erigeron calvus*), Inyo County star-tulip (*Calochortus excavatus*), Sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*) and Inyo phacelia (*Phacelia inyoensis*). Directed surveys and habitat assessments were guided by information on the distribution, description, habitat requirements, and reproduction of listed plant species gathered from a CNDDB search and the District's summary list of flora and fauna observed at the Keeler Dunes (Table 3.3.3.4-1, *BLM Sensitive Plant Species with the Potential to Occur in the Region of the Proposed Project / Proposed Action Study Area*).[42,43]

TABLE 3.3.3.4-1
BLM SENSITIVE PLANT SPECIES WITH THE POTENTIAL TO OCCUR IN THE REGION OF THE PROPOSED PROJECT / PROPOSED ACTION STUDY AREA

Species	Status	Habitat	Occurrence
Plants			
Creamy blazing star (*Mentzelia tridentata*)	CNPS 1B.3 BLM	Found in Mojavean desert scrub at elevation range of 2,297–3,806 feet	Not found during surveys on site. Habitat found in proposed action study area
Inyo County star-tulip (*Calochortus excavatus*)	CNPS 1B.1 BLM	Found among alkaline meadows in chenopod scrub at elevation range of 3,773–6,562 feet	Not found in 1995–1996, 1999, 2000, 2001, 2003–2004, 2007 surveys at Owens Lake bed. Not found during surveys on site. Habitat found in proposed project / proposed action study area
Sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*)	CNPS 2.2, BLM	Associated with desert dunes, Great Basin scrub of Inyo County at elevation range of 2,297–5,331 feet blooms April to May	Not found in 1999, 2001, 2003, and 2004 surveys at Owens Lake bed; Not found during surveys on site. Habitat found in proposed project / proposed action study area
Sanicle cymopterus (*Cymopterus ripleyi* var. *saniculoides*)	CNPS 1B.2 BLM	Typically associated with Joshua tree woodland, Mojavean desert scrub of Inyo County at elevation range of 3,281-5,446feet	Observed among scrub habitat near Dirty Socks well, Owens Lake basin; Not found during surveys on site. Habitat found in proposed action study area

Note:
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.

Threat ranks:
0.1: Seriously threatened in California.
0.2: Fairly threatened in California.
0.3: Not very threatened in California.

Creamy Blazing Star. Annual herb. As a result of literature review, agency coordination, consultation with experts, and directed surveys undertaken during the flowering period, creamy blazing star was determined to be absent within the proposed project / proposed action study area. Creamy blazing star is designated as a CNPS List 1B.3 plant (rare, threatened, or endangered in California and elsewhere) and BLM sensitive species. Based on the review of the CNDDB, the closest occurrence of this species is located 27 miles south of the proposed project / proposed action boundary. As a result of the habitat

[42] California Department of Fish and Wildlife. 2012. *California Natural Diversity Database, Rarefind 4*. Sacramento, CA.

[43] Great Basin Unified Air Pollution Control District. 2011. *A Summary of the Flora and Fauna Observed in the Keeler Dunes Between 11/2007 and 5/2011*. Bishop, CA.

assessment and field surveys, habitat suitable to support creamy blazing star was identified but individuals were not found within the proposed project / proposed action.

Inyo County Star-Tulip. Perennial herb. As a result of literature review, agency coordination, consultation with experts, and directed surveys undertaken during the flowering period, Inyo County star-tulip was determined to be absent within the proposed project / proposed action study area. Inyo County star-tulip is designated as a CNPS List 1B.1 plant (rare, threatened, or endangered in California and elsewhere) and BLM sensitive species. Based on the review of the CNDDB, the closest occurrence of this species is located 9.4 miles northwest of the proposed project / proposed action boundary. As a result of the habitat assessment and field surveys, habitat suitable to support Inyo County star tulip was identified but individuals were not found within the proposed project / proposed action study area.

Sagebrush Loeflingia. Annual herb. As a result of literature review, agency coordination, consultation with experts, and directed surveys undertaken during the flowering period, sagebrush loeflingia was determined to be absent within the proposed project / proposed action study area. sagebrush loeflingia is designated as a CNPS List 2.2 plant (rare, threatened, or endangered in California and elsewhere) and BLM sensitive species. Based on the review of the CNDDB, the closest occurrence of this species is located 40 miles north of the proposed project / proposed action boundary. As a result of the habitat assessment and field surveys, habitat suitable to support sagebrush loeflingia was identified, but individuals were not found within the proposed project / proposed action.

Sanicle Cymopterus. Perennial herb. As a result of literature review, agency coordination, consultation with experts, and directed surveys undertaken during the flowering period, sanicle cymopterus was determined to be absent within the proposed project / proposed action study area. Sanicle cymopterus is designated as a CNPS List 1B.2 plant (rare, threatened, or endangered in California and elsewhere) and BLM sensitive species. Based on the review of the CNDDB, the closest occurrence of this species is located 17 miles south of the proposed project / proposed action boundary. As a result of the habitat assessment and field surveys, habitat suitable to support sanicle cymopterus was identified, but individuals were not found within the proposed project / proposed action.

Priority Plant Species

Priority plant species are rare, unusual, or key species that are not identified as sensitive by BLM or listed as threatened or endangered. Priority plant species are specifically plants that are included on the CNPS Lists 2–4 (Table 3.3.3.4-2, *Priority Plant Species with the Potential to Occur in the Region of the Proposed Project / Proposed Action Study Area*).

TABLE 3.3.3.4-2
PRIORITY PLANT SPECIES WITH THE POTENTIAL TO OCCUR IN THE REGION OF THE PROPOSED PROJECT / PROPOSED ACTION STUDY AREA

Species	Status	Habitat	Occurrence
Plants			
Booth's evening primrose (*Camissonia boothii* ssp. *boothii*)	CNPS 2.3	Typically associated with Joshua tree woodland and Pinyon and Juniper woodland; observed among stabilized dunes at Owens Lake basin at elevation range of 2,953–7,874 feet; blooms April to September	Not found during surveys on site. Habitat found in proposed project / proposed action study area
Lincoln's rock cress (*Boechera lincolnensis*)	CNPS 2.3	Found on limestone among Chenopod scrub, Mohavean desert scrub in Inyo County at elevation range of 3,610–6,810 feet	Not found during 1995–1996, 1999–2001, and 2003 surveys at Owens Lake bed; Not found during surveys on site. Habitat found in proposed project / proposed action study area
Naked milk-vetch (*Astragalus serenoi* var. *shockleyi*)	CNPS 2.2	Chenopod scrub, Great Basin scrub, Pinyon and Juniper woodland; dry, alkaline soils; found on course granitic alluvium among Chenopod scrub, Great Basin scrub at elevation range of 4,921–7,382feet	Not found during 1995–1996, 1999–2001, and 2003 surveys on sites over Owens Lake bed; Not found during surveys on site. Habitat found in proposed project / proposed action study area
Nevada oryctes (*Oryctes nevadensis*)	CNPS 2.1	Found in dry, sandy soil in washes and open scrub habitat in the Owens Valley at elevation range of 3,609–8,366 feet	Not found in 1995–1996, 1999–2001, and 2003–2004 surveys at Owens Lake bed; Not found during surveys on site. Habitat found in proposed project / proposed action study area

Note:
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.
0.2: Fairly threatened in California.
0.3: Not very threatened in California.

Four plant species designated as priority plant species were identified as having the potential to occur within the region of the proposed project / proposed action study area based on literature review and analysis of habitat suitability: Booth's evening primrose (*Camissonia boothii* ssp. *boothii*), Lincoln rock cress (*Boechera lincolnensis*), naked milk-vetch (*Astragalus serenoi* var. *shockleyi*), and Nevada oryctes (*Oryctes nevadensis*). These five plant species were targeted for directed surveys and habitat assessments. Directed surveys and habitat assessments were guided by information on the distribution, description, habitat requirements, and reproduction of listed plant species gathered from a CNDDB search and the District's summary list of flora and fauna observed at the Keeler Dunes.[44,45]

Booth's Evening Primrose. As a result of directed surveys, Booth's evening primrose was determined to be absent within the proposed project / proposed action study area. Booth's evening primrose is designated as a CNPS List 2.3 plant (rare, threatened or endangered in California but more common elsewhere). Booth's evening primrose has been determined to be absent in the proposed project / proposed action study area as a result of literature review, agency coordination, consultation with experts, and detailed field surveys. Based on the review of the CNDDB, the closest occurrence of this species is located 10.8 miles west of the proposed project / proposed action boundary. As a result of the habitat assessment and field surveys, habitat suitable to support Booth's evening primrose was identified, but individuals were not found within the proposed project / proposed action.

Lincoln Rock Cress. As a result of directed surveys, Lincoln rock cress was determined to be absent within the proposed project / proposed action study area. Lincoln rock cress is designated as a CNPS List 2.3 plant (rare, threatened or endangered in California but more common elsewhere). Lincoln rock cress has been determined to be absent in the proposed project / proposed action study area as a result of literature review, agency coordination, consultation with experts, and detailed field surveys. Based on the review of the CNDDB, the closest occurrence of this species is located 9.4 miles northeast of the proposed project / proposed action boundary. As a result of the habitat assessment and field surveys, habitat suitable to support Lincoln rock cress was identified, but individuals were not found within the proposed project / proposed action.

Naked Milk-Vetch. As a result of directed surveys, naked milk-vetch was determined to be absent within the proposed project / proposed action study area. Naked milk-vetch is designated as a CNPS List 2.2 plant (rare, threatened or endangered in California but more common elsewhere). naked milk-vetch has been determined to be absent in the proposed project / proposed action study area as a result of literature review, agency coordination, consultation with experts, and detailed field surveys. Based on the review of the CNDDB, the closest occurrence of this species is located 3.1 miles north of the proposed project / proposed action boundary. As a result of the habitat assessment and field surveys, habitat suitable to support naked milk-vetch was identified, but individuals were not found within the proposed project / proposed action.

Nevada Oryctes. As a result of directed surveys, Nevada oryctes was determined to be absent within the proposed project / proposed action study area. Nevada oryctes is designated as a CNPS List 2.1 plant (rare, threatened or endangered in California but more common elsewhere). Nevada oryctes has been determined to be absent in the proposed project / proposed action study area as a result of literature review, agency coordination, consultation with experts, and detailed field surveys. Based on the review of the CNDDB, the closest occurrence of this species is located 6.7 miles northwest of the proposed project / proposed action boundary. As a result of the habitat assessment and field surveys,

[44] California Department of Fish and Wildlife. 2012. *California Natural Diversity Database, Rarefind 4*. Sacramento, CA.

[45] Great Basin Unified Air Pollution Control District. 2011. *A Summary of the Flora and Fauna Observed in the Keeler Dunes Between 11/2007 and 5/2011*. Bishop, CA.

habitat suitable to support Nevada oryctes was identified, but individuals were not found within the proposed project / proposed action.

B. Special Status Wildlife Species

Federally Listed Species

No wildlife species listed as proposed, candidate, threatened or endangered under the federal ESA were identified as having the potential to occur within the survey area and none were identified during biological surveys. This was based on the literature review, previously prepared reports, a query of the CNDDB for the topographic quadrangles for the proposed project / proposed action study area and vicinity, consultation with experts on the area's biological resources, and biological surveys.

Directed surveys and habitat assessments were guided by information on the distribution, description, habitat requirements, and reproduction of listed plant species gathered from the following sources: CNDDB search,[46] and District's summary list of flora and fauna observed in the Keeler Dunes

State-Listed Species

State listed species are those species provided special legal protection under CESA. A state-listed endangered species is a species that is in danger of extinction throughout all or a significant portion of its range. A state-listed threatened species is one that is likely to become endangered in the absence of special protection or management efforts provided by the listing. A candidate species is one that is proposed by the state government for listing as endangered or threatened.

The literature review, previously prepared reports, a query of the CNDDB for the USGS 7.5-minute series topographic quadrangles for the proposed project / proposed action study area and vicinity, and consultation with experts on the area's biological resources identified one wildlife species state-designated as rare, threatened, or endangered as having the potential to occur in the region of the proposed project / proposed action study area: Mohave ground squirrel (*Xerospermophilus mohavensis*) (Table 3.3.3.4-3, *State-Listed Species with the Potential to Occur in the Region of the Proposed Project / Proposed Action Study Area*).[47,]

[46] California Department of Fish and Wildlife. 2012. *California Natural Diversity Database*. Sacramento, CA.

[47] California Department of Fish and Wildlife. 2012. *California Natural Diversity Database, Rarefind 4: Database*. Sacramento, CA.

TABLE 3.3.3.4-3
STATE-LISTED SPECIES WITH THE POTENTIAL TO OCCUR IN THE REGION OF THE PROPOSED PROJECT / PROPOSED ACTION STUDY AREA

Species	Status	Habitat	Occurrence
Wildlife			
Mohave ground squirrel (*Spermophilus mohavensis*)	ST	Prefers sandy gravelly soils in open desert scrub, alkali scrub and Joshua tree woodland	Not found during 1995–1996 and 2004 surveys proposed project / proposed action study area; record of occurrence from south of Keeler Dunes along State Highway 136 less than 1 mile from the proposed project / proposed action study area; there is limited suitable habitat in proposed project / proposed action study area north of Highway 136. Species not observed during general wildlife surveys.

Key:
SE = Listed as a candidate by the State of California
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

There is one State-listed endangered, threatened or candidate wildlife species determined to have the potential to occur within the proposed project / proposed action study area. This species was targeted for directed surveys and habitat assessments (Appendix D). The directed surveys and habitat assessments were guided by information on the distribution, description, habitat requirements, and reproduction of listed species gathered from the CNDDB search and District's summary list of flora and fauna observed in the Keeler Dunes.[48,49]

Mohave Ground Squirrel. The proposed project / proposed action study area contains a small portion of marginally suitable habitat to support the species. The Mohave ground squirrel is a state-threatened species that occurs in desert scrub, alkali scrub, and Joshua tree woodland habitats. Although desert scrub habitat (creosote bush – white burr sage scrub) does occur in the proposed project / proposed action study area north of Highway 136, desert scrub habitat will be avoided since project activities are limited to the area south of Highway 136. Mohave ground squirrel was not observed during plant community mapping, habitat assessment, and presence/absence surveys. This species was determined unlikely to occur at the proposed project / proposed action study area due to the limited presence of suitable habitat, lack of vegetation and location of the proposed project / proposed study area outside of the species' known range.

[48] California Department of Fish and Wildlife. 2012. *California Natural Diversity Database*. Sacramento, CA.

[49] Great Basin Unified Air Pollution Control District. 2011. *A Summary of the Flora and Fauna Observed in the Keeler Dunes Between 11/2007 and 5/2011*. Bishop, CA.

BLM Sensitive Species

BLM sensitive wildlife species include all species currently designated by the California BLM State Director.

There is are three BLM sensitive wildlife species determined to have the potential to occur within the proposed project / proposed action study area (Table 3.3.3.4-6, *BLM Sensitive Wildlife Species with the Potential to Occur in the Region of the Proposed Project / Proposed Action Study Area*). This species was targeted for directed surveys and habitat assessments (Appendix D). The directed surveys and habitat assessments were guided by information on the distribution, description, habitat requirements, and reproduction of listed species gathered from the CNDDB search and District's summary list of flora and fauna observed in the Keeler Dunes.[50,51]

TABLE 3.3.3.4-4
BLM SENSITIVE WILDLIFE SPECIES WITH THE POTENTIAL TO OCCUR IN THE REGION OF THE PROPOSED PROJECT / PROPOSED ACTION STUDY ARE

Species	Status	Habitat	Occurrence
Wildlife			
Golden eagle (*Aquila chrysaetos*)	BLM, FPS	Nests on steep cliff faces or atop tall species of trees with snags	Present in Owens Lake area in previous surveys; Limited potential for utilization at proposed project / proposed action study area are due to low prey base and no habitat for breeding, but low numbers of black-tailed jack rabbits (*Lepus californicus)* do occur on site.
Mohave ground squirrel (*Spermophilus mohavensis*)	BLM	Prefers sandy gravelly soils in open desert scrub, alkali scrub and Joshua tree woodland	Not found during 1995–1996 and 2004 surveys proposed project / proposed action study area; record of occurrence from south of Keeler Dunes along State Highway 136 less than 1 mile from the proposed project / proposed action study area; there is limited suitable habitat in proposed project / proposed action study area north of Highway 136. Species not observed during general wildlife surveys.
Owens Valley vole (*Microtus californicus vallicola*)	BLM	Found in friable soils of wetlands and lush grassy ground in the Owens Valley	There is no suitable habitat in proposed project / proposed action study area. Species not observed during general wildlife surveys.

Key:
BLM = Bureau of Land Management sensitive species
CSC = California species of special concern
FPS = Federally protected species

[50] California Department of Fish and Wildlife. 2012. *California Natural Diversity Database*. Sacramento, CA.

[51] Great Basin Unified Air Pollution Control District. 2011. *A Summary of the Flora and Fauna Observed in the Keeler Dunes Between 11/2007 and 5/2011*. Bishop, CA.

Golden Eagle. The proposed project / proposed action study area contains limited foraging habitat to support the species. The golden eagle is a BLM sensitive wildlife species and federal protected species that occurs in many habitats and nests on steep cliff faces or atop tall trees with snags. Although foraging habitat is present, a low prey base occurs on the proposed project/ proposed action study area. No breeding habitat occurs within the proposed project / proposed action study area. Golden eagle was not observed during plant community mapping, habitat assessment, and presence/absence surveys. This species was determined unlikely to occur at the proposed project / proposed action study area due to the presence of limited foraging habitat. The nearest CNDDB occurrence of a golden eagle nest is located approximately 16 miles to the south of the proposed project / proposed action study area in the Coso Mountains.

California Species of Special Concern

California species of special concern include all species designated as such by CDFW and exclude species which are listed under the federal ESA or CESA.

The above-described review identified 10 sensitive wildlife species as having the potential to occur within the region of the proposed project / proposed action study area. These 10 species were therefore targeted for directed surveys and habitat assessments: American peregrine falcon (*Falco peregrinus anatum*), California horned lark (*Eremophila alpestris actia*), Le Conte's thrasher *(Toxostoma lecontei*), Loggerhead shrike (*Lanius ludovicianus*), merlin (*Falco columbarius*), northern harrier (*Circus cyaneus*), prairie falcon (*Falco mexicanus*), American badger (*Taxidea taxus*), Owens Valley vole (*Microtus californicus vallicola*), and Southern grasshopper mouse (*Onychomys torridus ramona*) (Table 3.3.3.4-5, *California Species of Special Concern and Fully Protected Species with the Potential to Occur in the Region of the Proposed Project / Proposed Action Study Area*).

TABLE 3.3.3.4-5
CALIFORNIA SPECIES OF SPECIAL CONCERN WITH THE POTENTIAL TO OCCUR IN THE REGION OF THE PROPOSED PROJECT / PROPOSED ACTION STUDY AREA

Species	Status	Habitat	Occurrence
Wildlife			
American peregrine falcon (*Falco peregrinus anatum*)	CSC	Scarce migrants may occur at sites in the desert where suitable avian prey is concentrated, such as shorebird populations at flooded areas on Owens Lake	Not observed on the proposed project / proposed action study area. Very limited potential for utilization at proposed project / proposed action study area due to low prey base and absence of suitable habitat.
California horned lark (*Eremophila alpestris actia*)	CSC	Nests on open grassland areas with exposed surfaces	Observed in proposed project / proposed action area. There is suitable habitat in the proposed project / proposed action area.
Le Conte's thrasher (*Toxostoma lecontei*)	CSC	Resides in desert habitats; primarily in open desert wash, desert scrub, alkali desert scrub, desert succulent scrub	Limited/low-grade suitable habitat in proposed project / proposed action study area. Observed breeding on the proposed project / proposed action study area.
Loggerhead shrike (*Lanius ludovicianus*)	CSC	Nests and resides in desert scrub and savannah woodland habitats	Good potential for utilization at proposed project / proposed action study area due to adequate

TABLE 3.3.3.4-5
CALIFORNIA SPECIES OF SPECIAL CONCERN WITH THE POTENTIAL TO OCCUR IN THE REGION OF THE PROPOSED PROJECT / PROPOSED ACTION STUDY AREA, *CONTINUED*

Species	Status	Habitat	Occurrence
			perches for hunting and moderate prey base, but no habitat for breeding. Observed foraging on the western portion of the proposed project / proposed action study area.
Merlin (*Falco columbarius*) (wintering)	CSC	Migrant and winter visitor found in areas in the desert where suitable avian prey is concentrated, such as shorebirds	Not observed on the proposed project / proposed action study area. Very limited potential for utilization at proposed project / proposed action study area due to low prey base and absence of suitable habitat.
Northern harrier (*Circus cyaneus*) (Nesting)	CSC	Nests in riparian habitats and forages over open grasslands, marshes, and wetland areas	Observed foraging over the western portion of the proposed project / proposed action study area. Very limited potential for utilization at proposed project / proposed action study area due to low prey base and absence of suitable habitat.
Prairie falcon (*Falco mexicanus*)	CSC	Regular visitor to Owens Valley, nests on cliff faces	Limited potential for utilization at proposed project / proposed action study area are due to low prey base and little suitable habitat. Observed flying over the western portion of the proposed project / proposed action study area.
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	Foraging habitat found in proposed project / proposed action study area. Occasional badger sign in proposed project / proposed action study area; no den sites observed during on-site surveys, one previous visual observation in proposed project / proposed action study area.
Owens Valley vole (*Microtus californicus vallicola*)	BLM, CSC	Found in friable soils of wetlands and lush grassy ground in the Owens Valley	There is no suitable habitat in proposed project / proposed action study area. Species not observed during general wildlife surveys.
Southern grasshopper mouse (*Onychomys torridus ramona*)	CSC	Present in prairies and deserts in grass, sagebrush, greasewood with sandy or gravelly soil	Limited potential habitat found in proposed project / proposed action study area.

Key: BLM = Bureau of Land Management sensitive species
CSC = California species of special concern
FPS = federally protected species

American Peregrine Falcon. The habitat assessment and plant community mapping found low-grade suitable foraging habitat for American peregrine falcon throughout the proposed project / proposed action study area, primarily in the western areas closer to marsh habitats and shallow flooding areas of the Owens Lake bed. American peregrine falcon is a California species of special concern. CNDDB records for this species are suppressed. The American peregrine falcon was listed as endangered under CESA. The entire proposed project / proposed action study area was determined to be of very limited use for foraging by the American peregrine falcon.

California Horned Lark. California horned lark has been determined to be present in the proposed project / proposed action study area as a result of detailed field surveys and literature review. Observations of the California horned lark were made during Sapphos Environmental, Inc. conducted surveys, in the proposed project / proposed action study area. Suitable habitat for the species is present on the proposed project / proposed action site.

Le Conte's Thrasher. Le Conte's thrasher has been determined to be present in the proposed project / proposed action study area as a result of detailed field surveys and literature review. Observations of the Le Conte's thrasher and their nests were made during Sapphos Environmental, Inc. conducted surveys in the proposed project / proposed action study area. Suitable habitat for the species is present on the proposed project / proposed action site.

Loggerhead Shrike. Loggerhead shrike has been determined to be present in the proposed project / proposed action study area as a result of detailed field surveys and literature review. Observations of loggerhead shrike on the western portion of the proposed project / proposed action study area have been made. Suitable habitat for the species is present on the proposed project / proposed action site.

Merlin. The habitat assessment and plant community mapping found low-grade suitable foraging habitat for merlin throughout the proposed project / proposed action study area, primarily in the western areas closer to marsh habitats and shallow flooding areas of the Owens Lake bed. Merlin is a California species of special concern. CNDDB records for this species are suppressed. The entire proposed project / proposed action study area was determined to be of very limited use for foraging by merlin.

Northern Harrier. Directed surveys identified no suitable breeding habitat for northern harrier breeding within the proposed project / proposed action study area. The proposed project / proposed action study area lacks riparian habitats and open grasslands. Northern harriers, California species of special concern, have occasionally been seen foraging on the western portion of the proposed project / proposed action study area. Northern harriers nest on the ground in well-concealed locations, often near low shrubs or in tall clumps of vegetation. Nesting locations are usually in abandoned fields, wet meadows, and coastal and inland marshes. CNDDB records for this species are suppressed. Northern harriers were not observed during plant community mapping, habitat assessment, and presence/absence surveys. This species was determined unlikely to occur at the proposed project / proposed action study area due to the absence of habitat suitable to support this species.

Prairie Falcon. Prairie falcon is a California species of special concern that is frequently been seen foraging to the west the proposed project / proposed action study area over the bed of Owens Lake and may utilize the proposed project / proposed action study area for hunting. CNDDB records for this species are suppressed. Prairie falcon is a desert and grassland species that nests in cliffs and preys mainly on birds and squirrels. The entire proposed project / proposed action study area was determined to be of limited use for foraging by the prairie falcon.

American Badger. American Badger is a California species of special concern. As a result of directed field investigations, the American badger was determined to be present in the proposed project / proposed action study area. Although no dens or evidence of on-site breeding was recorded, American badger is known to occasionally frequent the proposed project / proposed action site, most likely for foraging. The American badger is a wide-ranging species that occurs throughout most of the western United States, except for humid coastal plains. Reduction in numbers is primarily attributed to the conversion of grassland habitats to farmland.

Owens Valley Vole. Owens Valley vole is a California species of special concern that is found in friable soils of wetlands and lush grassy ground in the Owens Valley. Based on the review of the CNDDB, four of the closest occurrences are located approximately 500 feet east of Highway 395 in Olancha. Marginally suitable habitat occurs in the Owens Lake bed, but not within the boundary of the proposed project / proposed action study area due to the lack of friable soils. Owens Valley vole has been found during focused surveys in other parts of the Owens Lake bed.

Southern Grasshopper Mouse. Southern grasshopper mouse is a California species of special concern that is found in in prairies and deserts in grass, sagebrush, and greasewood with sandy or gravelly soil. Based on the review of the CNDDB, there are no occurrences located within Inyo County. Suitable habitat occurs within the boundary of the proposed project / proposed action study area. Southern grasshopper mouse has been found during focused surveys in other parts of the Owens Lake bed.

Locally Important Species

Locally important species are rare, unusual, or key species that are not listed as threatened or endangered under the federal or state ESA, are not designated as a sensitive by BLM or a species of special concern by CDFW.

Seven locally important wildlife species were determined to have the potential to occur within the proposed project / proposed action study area and therefore were targeted for directed surveys and habitat assessments: *Tescalsia gulianiata*, alkali flats tiger beetle (*Cicindela willistoni pseudosenilis*), alkali skipper (*Pseudocopaeodes eunus*), Owens dune weevil (*Trigonoscuta owensii*), Owens Valley tiger beetle (*Cicindela tranquebarica inyo*), slender girdled tiger beetle (*Cicindla tenuicincta*), and Bell's sparrow (*Amphispiza belli canensis*). Directed surveys and habitat assessments were guided by information on the distribution, description, habitat requirements, and reproduction of listed plant species gathered from the CNDDB and the District's summary list of flora and fauna observed in the Keeler Dunes[52,53] (Table 3.3.3.4-6, *Locally Important Species with the Potential to Occur in the Region of the Proposed Project / Proposed Action Study Area*).

[52] California Department of Fish and Wildlife. 2012. *California Natural Diversity Database*. Sacramento, CA.

[53] Great Basin Unified Air Pollution Control District. 2011. *A Summary of the Flora and Fauna Observed in the Keeler Dunes between 11/2007 and 5/2011*. Bishop, CA.

TABLE 3.3.3.4-6
LOCALLY IMPORTANT SPECIES WITH THE POTENTIAL TO OCCUR IN THE REGION OF THE PROPOSED PROJECT / PROPOSED ACTION STUDY AREA

Species	Status	Habitat	Occurrence
Wildlife			
Alkali flats tiger beetle (*Cicindela willistoni pseudosenilis*)	Locally rare	Dune and alkali meadow habitats	There is suitable habitat in proposed project / proposed action study area. Species not observed during directed surveys in 2011/2012.
Alkali skipper (*Pseudocopaeodes eunus*)	Locally rare	Dune and alkali meadow habitats	There is suitable habitat in proposed project / proposed action study area. Species not observed during directed surveys in 2011/2012.
Moth (no common name) (*Tescalsia guilianata*)	Locally rare	Dune and alkali meadow habitats	Suitable habitat found in dunes and sand hummocks present within proposed project / proposed action study area. Species not observed during directed surveys in 2011/2012.
Owens dune weevil (*Trigonoscuta owensii*)	Locally rare	Dune and alkali meadow habitats	Found at Olancha Dunes and dunes northwest of Keeler during 1995–1996 surveys; found during 2003 surveys in the Owens Lake area; potential habitat found within dunes; determined present as a result of presence/absence surveys in 2011 and 2012.
Owens Valley tiger beetle (*Cicindela tranquebarica inyo*)	Locally rare	Dune and alkali meadow habitats	There is suitable habitat in proposed project / proposed action study area. Species not observed during directed surveys in 2011/2012.
Slender-girdled tiger beetle (*Cicindla tenuicincta*)	Locally rare	Dune and alkali meadow habitats	There is suitable habitat in proposed project / proposed action study area. Species not observed during directed surveys in 2011/2012.
Bell's sparrow (*Amphispiza belli canensis*) (desert populations only)	BCC, WL	Found in sagebrush, arid bushland, and chaparral habitats; desert populations breed during winter in the Owens Valley	There is no suitable breeding habitat, observed as a result of general wildlife surveys in 2011 or 2012.

Key:
BCC = Designated as birds of conservation concern by the USFWS.
WL = Designated as species on the CDFW watch list.
Locally rare = Designated as locally important by Inyo County, the Audubon Society, CDFW, and/or the 1997 Environmental Impact Report.
Source: ^ Martinson, Sharon J. May 2012. *Summary of Services Provided & Results*.

Tescalsia Gulianiata. Literature review, agency coordination, consultation with experts, and detailed field surveys determined *Tescalsia giulianiata* to be potentially present in the proposed project / proposed action study area. *Tescalsia giulianiata* have only been recorded from a few locations, with most of the insects collected around dunes at Deep Spring, within the Alabama Hills, and around Owens Lake. However, the proposed project / proposed action study area has suitable habitat for *Tescalsia giulianiata*, and the entomology collection at the Essig Museum has a specimen collected 9 miles northwest of Keeler. This species is very cryptic and has not been well described. For example,

the larval food plant for *Tescalsia giulianiata* is unknown. It is best to assume that this species is potentially present at the proposed project / proposed action study area because of the absence of detailed habitat-related information for this species, its limited flight period each year, and the known records of occurrence around Owens Lake.[54]

Owens Dune Weevil. Detailed field surveys determined Owens dune weevil, also known as the Owens sand dune snout beetle, to be present in the proposed project / proposed action study area. Owens dune weevil was observed seven times during May 2011 surveys and once during May 2012 surveys. These individuals were observed in sandy, barren areas (two individuals), and in Parry's Saltbush (three individuals) and Parry's Saltbush/Greasewood (one individual) vegetation type areas. Prior to May 2011, two additional incidental observations of the species were made in sandy, barren areas along the dunes.

The genus *Trigonoscuta* is a valid classification, and the individuals observed were of this genus; however, the scientific validity of the species *owensii* is unconfirmed, and the entire *Trigonoscuta* genus needs taxonomic reclassification and revision. It is possible that species within individual dune groupings represent different species or subspecies because many *Trigonoscuta* weevils have limited mobility, are mainly confined to patchy dunes, and may have evolved within different populations despite proximity to other dunes. Review of the insect collection at the Southern Inyo Museum in the town of Lone Pine revealed that *Trigonoscuta owensii* has been collected from many locations in and around Lone Pine, suggesting that this weevil species may be a generalist and is found in many places in the Owens Valley.[55]

Alkali Flats Tiger Beetle, Alkali Skipper, Owens Valley Tiger Beetle, and Slender-Girdled Tiger Beetle. Literature review, agency coordination, consultation with experts, and detailed field surveys determined Alkali Flats Tiger Beetle, Alkali Skipper, Owens Valley Tiger Beetle, and Slender-Girdled Tiger Beetle to be potentially present in the proposed project / proposed action study area. Suitable habitat for the four species is described as dune and alkali meadow habitats and is present for all four species on the proposed project / proposed action study area. However, these species were not observed during detailed field surveys in the proposed project / proposed action study area.

Bell's Sparrow. Bell's sparrow has been determined to be present in the proposed project / proposed action study area as a result of detailed field surveys and literature review. Observations of Bell's sparrow on the proposed project / proposed action study area have been made. Suitable foraging habitat for the species is present on the proposed project / proposed action site.

C. Riparian Habitat or Sensitive Natural Communities

There are no wetlands, riparian habitat, or any other state-designated sensitive habitats present within the proposed project / proposed action area. There is a main, active drainage in the proposed project / proposed action study area brings water that is captured by the southern diversion berm and directs it through a series of channels that cross through the Keeler Dunes. Neither the main active drainage nor its series of channels contain riparian habitat. Additionally, the drainage and channels occur outside proposed project / proposed action impact areas.

[54] Martinson, Sharon J. May 2012. "Summary of Services Provided & Results." Prepared for: Sapphos Environmental, Inc., Pasadena, CA.

[55] Martinson, Sharon J. May 2012. "Summary of Services Provided & Results." Prepared for: Sapphos Environmental, Inc., Pasadena, CA.

D. Jurisdictional Waters

USACOE Jurisdictional Waters

The NWI map was reviewed for the proposed project / proposed action study area.[56] One wetland area was identified within the proposed project / proposed action study area as potentially subject to the regulatory jurisdiction of the USACOE pursuant to Section 404 of the federal Clean Water Act (Figure 3.3.1.2-1). According to the NWI, the identified wetland area is classified as freshwater emergent wetland. However, no federally protected wetlands were identified in proposed project / proposed action study area. Subsequent wetlands mapping conducted by Jones and Stokes Associates, Inc. in this area in 1995 identified a wetland located at the 3,600 feet above mean sea level regulatory shoreline.[57] The District has indicated that this area was a former wetland that has been covered by sand migration.[58]

The determination of absence of federally protected wetlands within impact areas of the proposed project / proposed action was based on ground-truthing and review of the NWI and Jones and Stokes maps. The southeast corner of the proposed project / proposed action study area was indicated as a wetland on the most recent (circa 1980s) NWI map and the subsequent 1995 wetlands delineation[59,60] (Figure 3.3.1.2-1). However, no apparent wetland features were identified where the NWI record exists.

Although both species of commonly occurring plants on site, Parry's saltbush (*Atriplex parryi*) and greasewood *(Sarcobatus vermiculatus*), can occur as a hydrophyte, they are facultative species that can either occur as an uplands species or wetlands species.[61] The proposed project / proposed action study area does not appear to exhibit wetlands hydrology, as much of the site is sandy and will not hold water. No direct indications of wetlands were noted during surveys based on the absence of the three key criteria at any given point in the proposed project / proposed action study area: hydrophytic vegetation, hydric soils, and wetland hydrology.

CDFW Jurisdictional Waters

CDFW generally takes jurisdiction of all stream features including drains and canals. The CDFW jurisdiction extends from the top of bank to the opposite top of bank on these features or the limits of riparian vegetation if this vegetation extends beyond the top of the banks. Wetlands need to only fulfill one of the three aforementioned USACOE criteria (hydrology, hydric soils, wetland vegetation) to be considered CDFW jurisdictional wetlands.

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[56] U.S. Fish and Wildlife Service. 2012. *National Wetlands Inventory*. Available at: http://www.fws.gov/wetlands/index.html

[57] Jones & Stokes Associates, Inc. 1996. *Delineation of Waters of the United States for the Owens Lake Playa* (JSA 95-330). Prepared for: U.S. Army Corps of Engineers, Los Angeles District, Ventura, CA. Prepared by: Jones & Stokes Associates, Inc., Sacramento, CA; and Great Basin Unified Air Pollution Control District, Bishop, CA.

[58] Holder, G., Great Basin Unified Air Pollution Control District, Bishop, CA. 28 September 2011. Email to D. Grotzinger, Sapphos Environmental, Inc., Pasadena, CA.

[59] Jones & Stokes Associates, Inc. 1996. *Delineation of Waters of the United States for the Owens Lake Playa* (JSA 95-330). Prepared for: U.S. Army Corps of Engineers, Los Angeles District, Ventura, CA. Prepared by: Jones & Stokes Associates, Inc., Sacramento, CA, and Great Basin Unified Air Pollution Control District, Bishop, CA.

[60] U.S. Fish and Wildlife Service. 2012. *National Wetlands Inventory*. Available at: http://www.fws.gov/wetlands/index.html

[61] U.S. Department of Agriculture Natural Resources Conservation Service. 2012. *2012 National Wetland Plant List*. Available at: http://plants.usda.gov/wetland.html

Under Section 1600 of the State Fish and Game Code, CDFW jurisdiction includes "bed, channel or bank of any river, stream or lake designated by the department in which there is any time an existing fish or wildlife resource or from which these resources derive benefit." Canals, aqueducts, irrigation ditches, and other means of water conveyance can also be considered streams if they support aquatic life, riparian vegetation or stream dependent terrestrial benefit.

One wetland area, as described in USACOE Jurisdictional Waters, was identified within the proposed project / proposed action study area as potentially subject to the regulatory jurisdiction of the CDFW pursuant to Section 1600 of the State Fish and Game Code. No direct indications of wetlands were noted during surveys as indicated above due to the lack of vegetation and presence of sand migration.

E. Habitat Connectivity and Wildlife Corridors

Wildlife movement corridors and habitat linkages are areas that connect suitable wildlife habitat areas in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance. Corridors are generally local pathways connecting short distances usually covering one or two main types of vegetation communities. Linkages are landscape level connections between very large core areas and generally span several thousand feet and cover multiple habitat types. Natural features such as canyon drainages, ridgelines, or areas with vegetation cover provide corridors and linkages for wildlife travel. The habitat connectivity provided by corridors and linkages is important in providing access to mates, food, and water, allowing the dispersal of individuals away from high-density areas, and facilitating the exchange of genetic traits between populations.

The Owens Valley is a known wildlife corridor for avifauna. As a result of the studies documented in the Biological Resources Technical Report, the following resources were reviewed with regards to habitat connectivity and wildlife corridors: the USGS 7.5-minute, Dolomite, California, topographic quadrangle, and consultation with local experts on biological resources. Documented, known, or potential wildlife corridors or breeding areas were determined to be absent within the proposed project / proposed action study area. Additionally, wildlife species are able to move freely throughout the survey area and are not restricted to a specific corridor or linkage.

F. Fisheries

As a result of the studies documented in the Biological Resources Technical Report; review of the USGS 7.5-minute, Dolomite, California, topographic quadrangle; and consultation with local experts on biological resources within the region of the Keeler Dunes, no documented, known, or potential fisheries or essential fish habitat were determined to be present within or adjacent to the proposed project / proposed action study area. Essential fish habitat is defined as those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity. The proposed project / proposed action study area lacks aquatic habitat. The nearest habitat capable of sustaining fish populations is located at the Owens River approximately 4 miles to the west of the proposed project / proposed action site.

3.4 CULTURAL RESOURCES

This section provides a background discussion of the regulatory framework and the affected environment that govern cultural resources. The regulatory framework discussion focuses on the federal, state, and local regulations. The affected environment discussion focuses on the Area of Potential Effect (APE), the cultural setting, records search results, field survey results, and Native American cultural and religious concerns.

The information that is presented in this section is based on the cultural resource records searches, inventories, and Native American scoping conducted by Sapphos Environmental, Inc. and as discussed in the proposed project / proposed action's Cultural Resources Technical Report in August 2013, which is included as Appendix E of this document. This section also includes data that have resulted from extensive fieldwork, research, and monitoring conducted by the BLM within the proposed project / proposed action area between 2005 and 2013, as well as information related to formal Native American consultation conducted by BLM pursuant to Section 106 of the National Historic Preservation Act (NHPA). Due to the confidential nature of the location of cultural resources, this report does not include maps or location descriptions.

3.4.1 REGULATORY FRAMEWORK

The EIR/EA was prepared as a joint state/federal environmental document. The EIR portion of the document has been prepared pursuant to CEQA[1] and the CEQA Guidelines.[2] The EA portion of this joint EIR/EA has been prepared pursuant to NEPA[3] and the Council on Environmental Quality's NEPA regulations[4] and reflects coordination with Section 106 of the NHPA. As such, both federal and state regulatory frameworks with regard to cultural resources are relevant to the proposed project / proposed action; additional explanation of the joint nature of this document is provided in Subsection 1.6.

3.4.1.1 FEDERAL

National Historic Preservation Act[5]

Enacted in 1966 and amended most recently in 2006, the NHPA declared a national policy of historic preservation and instituted a multifaceted program, administered by the Secretary of the Interior, to encourage the achievement of preservation goals at the federal, state, and local levels. The NHPA authorized the expansion and maintenance of the NRHP, established the position of State Historic Preservation Officer (SHPO) and provided for the designation of State Review Boards, set up a mechanism to certify local governments to carry out the purposes of the NHRA, assisted Native American tribes to preserve their cultural heritage, and created the Advisory Council on Historic Preservation (ACHP). Its implementing regulations, 36 CFR 800, are described below as Section 106.

1 California Public Resources Code Section 21000 et seq.

2 California Code of Regulations, Title 14, Section 15000 et seq.

3 42 U.S.C.§ 4321 et seq.

4 40 CFR § 1500-1508.

5 *United States Code*, Title 16, Section 470: "National Historic Preservation Act."

Section 106

Section 106 of the NHPA requires that federal agencies with direct or indirect jurisdiction over federally funded, assisted, or licensed undertakings "take into account the effects of their undertakings on historic properties" (i.e., any property that is included in, or eligible for inclusion in, the NRHP; see below).[6] The ACHP may choose to participate in the Section 106 process if the undertaking would have adverse impacts on important historic properties, presents important questions of policy or interpretation, has the potential for presenting procedural problems, or presents issues of concern to Native American tribes.[7] The Section 106 process involves establishing if the project constitutes an undertaking; identification of historic properties within an APE; determination if the undertaking will cause an adverse effect on historic resources; and resolution of those adverse effects through consultation, avoidance, project redesign, and the execution of a Memorandum of Agreement or Programmatic Agreement.

In addition to the ACHP, the California Office of Historic Preservation (OHP), federally recognized Native American Tribes, and applicants for federal permits/leases/funds participate in the process with the federal agency. Other interested members of the public—including individuals, organizations, and state-recognized Native American Tribes—are provided with opportunities to participate in the process. It should be noted that the Section 106 process has been streamlined for undertakings under the statutory or regulatory authority of the California BLM. Section 106 compliance for the proposed project / proposed action follows the process outlined in the *State Protocol Agreement among the California State Director of the Bureau of Land Management and the California State Historic Preservation Officer and the Nevada State Historic Preservation Officer*,[8] which was executed in 2007, extended in 2012, and revised in 2014, BLM is authorized to act on the SHPO's behalf on undertakings that culminate in "no historic properties affected" (36 CFR 800.4(d)(1)) and "no adverse effect" findings (36 CFR 800.5(b)).

National Register of Historic Places

The National Register of Historic Places (NRHP) was established by the NHPA of 1966 as "an authoritative guide to be used by Federal, State, and local governments, private groups and citizens to identify the Nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment."[9] The NRHP recognizes properties that are significant at the national, state, and local levels. To be eligible for listing in the NRHP, a resource must be significant in American or regional/local history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must also possess integrity of location, design, setting, materials, workmanship, feeling, and association. A property is eligible

[6] 36 CFR Part 800.1(a)

[7] Appendix A to 36 CFR Part 800

[8] USDI Bureau of Land Management. 2012 *State Protocol Agreement among the California State Director of the Bureau of Land Management and the California State Historic Preservation Officer and the Nevada State Historic Preservation Officer Regarding the Manner in which the Bureau of Land Management will meet its Responsibilities under the National Historic Preservation Act and the National Programmatic Agreement among the BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers.* Agreement Document on file, California State Office, Bureau of Land Management, Sacramento, California.

[9] *Code of Federal Regulations*, Title 36, Part 60.2: "Effects of Listing under Federal Law."

for the NRHP if it meets one or more of the four established criteria and possesses integrity of location, design, setting, materials, workmanship, feeling, and association:[10]

(A) It is associated with events that have made a significant contribution to the broad patterns of our history;

(B) It is associated with the lives of persons who are significant in our past;

(C) It embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction; and/or

(D) It has yielded, or may be likely to yield, information important in prehistory or history.

Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, and properties that are primarily commemorative in nature are not considered eligible for the NRHP unless they satisfy certain conditions. In general, a resource must be 50 years of age to be considered for the NRHP, unless it satisfies a standard of exceptional importance.[11]

National Environmental Policy Act

NEPA requires federal agencies to consider and report the potential environmental impacts of proposed federal actions. Projects likely to have major effects on the environment require the sponsoring agency to develop an Environmental Impact Statement that considers the environmental consequences of alternative project designs; projects likely to have minor effects require Environmental Assessments. "Environment" is defined broadly, and includes cultural resources, social values, and various aspects of the natural environment. Compliance with Section 106 of the NHPA is interlinked with NEPA compliance with respect to historic properties (i.e., historic structures, archaeological sites, traditional cultural properties). The BLM's regulations regarding NEPA are set forth in the NEPA BLM Handbook H-1790-1.[12] Treatment of cultural resources by the BLM is detailed in its Manual Series 8100, *et seq.*[13]

Native American Graves Protection and Repatriation Act of 1990

The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 sets provisions for the intentional removal and inadvertent discovery of human remains and other cultural items from federal and tribal lands. It clarifies the ownership of human remains and sets forth a process for repatriation of human remains and associated funerary objects and sacred religious objects to the Native American groups claiming to be lineal descendants or culturally affiliated with the remains

[10] *Code of Federal Regulations*, Title 36, Part 60.4: "Criteria for Evaluation."

[11] U.S. Department of the Interior, National Park Service. 2002. *How to Apply the National Register Criteria for Evaluation*. National Register Bulletin 15. Washington, DC.

[12] Bureau of Land Management. 25 October 1988. *National Environmental Policy Act BLM Handbook H-1790-1*. Available at: http://www.blm.gov/nhp/efoia/wo/handbook/h1790-1.pdf

[13] Bureau of Land Management. 3 December 2004. *Manual Series 8100*. Available at: www.blm.gov

or objects. It requires any federally funded institution housing Native American remains or artifacts to compile an inventory of all cultural items within the museum or with its agency, and to provide a summary to any Native American tribe claiming affiliation.

American Indian Religious Freedom Act

The American Indian Religious Freedom Act (AIRFA) of 1978 was enacted to protect and preserve the traditional religious rights and cultural practices of Native Americans. These rights include, but are not limited to, access of sacred sites, freedom to worship through ceremonial and traditional rights and use, and possession of objects considered sacred. The AIFRA requires that federal agencies evaluate their actions and policies to determine if changes are needed to ensure that Native American religious rights and practices are not disrupted by agency practices. Such evaluations are made in consultation with native traditional religious leaders.

Executive Order 13007 (Indian Sacred Sites)

In managing federal lands, agencies shall, to the extent practicable, permitted by law, and not inconsistent with agency functions, accommodate Indian religious practitioners' access to and ceremonial use of Indian sacred sites. Agencies are to avoid adversely affecting the physical integrity of these sites, maintaining the confidentiality of such sites, and informing tribes of any proposed project / proposed actions that could restrict access to, ceremonial use of, or adversely affect the physical integrity of, sacred sites.

Federal Land Policy and Management Act of 1976

Legislation establishes public land policy and guidelines for the administration, management, protection, development, and enhancement of public lands. Regulations under the Federal Land Policy and Management Act (FLPMA) (43 USC 1701 *et seq.*) established the procedures that the BLM follows in managing public lands. These lands are to be managed in a manner that protects the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, archaeological, and paleontological values that, where appropriate, will preserve and protect certain public lands in their natural conditions, provide food and habitat for fish and wildlife and domestic animals, and provide for outdoor recreation and human occupancy and use by encouraging collaboration and public participation throughout the planning process.

3.4.1.2 STATE

California Environmental Quality Act

CEQA, encoded in Sections 21000 et seq. of the Public Resources Code with Guidelines for implementation codified in the California Code of Regulations, Title 14, Chapter 3, Sections 15000 et seq., requires state and local public agencies to identify the environmental impacts of proposed discretionary activities or projects to determine if the impacts will be significant and identify alternatives and mitigation measures that will substantially reduce or eliminate significant impacts to the environment. In this instance, the matter under consideration involves the implementation, operation, and maintenance of the proposed dust control project for the purpose of attaining the state and federal air quality standards for PM_{10}. Attainment is compulsory under the requirements of the Federal Clean Air Act. The project components associated with implementing this mandatory action to achieve attainment, including issuance of a Federal Right of Way permit, constitute

discretionary actions pursuant to NEPA and CEQA. In this instance, all feasible solutions to achieve attainment of the air quality standards would require issuance of a Right of Way permit by the BLM. Failure to attain the standards may trigger federal sanctions that can include withholding California's federal highway funds.

Pursuant to CEQA, a historical resource is a resource listed in, or eligible for listing in, the CRHR. In addition, resources included in a local register of historical resources or identified as significant in a local survey conducted in accordance with state guidelines are also considered historical resources under CEQA, unless a preponderance of the facts demonstrates otherwise. According to CEQA, the fact that a resource is not listed in or determined eligible for listing in the CRHR or is not included in a local register or survey shall not preclude a lead agency, as defined by CEQA, from determining that the resource may be an historical resource as defined in California Public Resources Code (PRC) Section 5024.1.[14] Pursuant to CEQA, a project with an effect that may cause a substantial adverse change in the significance of an historical resource may have a significant effect on the environment.[15]

CEQA also applies to effects on archaeological sites. Archaeological sites may be eligible for the CRHR, and thus would qualify as historical resources under CEQA. If an archaeological site does not satisfy the criteria as an historical resource, but does meet the definition of a "unique archaeological resource," it is also subject to CEQA. A unique archaeological resource is defined as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:[16]

(1) It contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information

(2) It has a special and particular quality such as being the oldest of its type or the best available example of its type

(3) It is directly associated with a scientifically recognized important prehistoric or historic event or person

California Register of Historical Resources

Created in 1992 and implemented in 1998, the CRHR is "an authoritative guide in California to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change."[17] Certain properties, including those listed in or formally determined eligible for listing in the NRHP and California Historical Landmarks numbered 770 and higher, are automatically included in the CRHR. Other properties recognized under the California Points of Historical Interest program, identified as significant in historical resources surveys, or designated by local landmarks programs may be nominated for inclusion in the CRHR. A resource, either an individual property or a contributor to a historic district, may be listed in the CRHR if the

[14] *California Code of Regulations*, Title 14, Chapter 3, CEQA Guidelines, Section 15064.5(a).

[15] *California Code of Regulations*, Title 14, Chapter 3, CEQA Guidelines, Section 15064.5(b).

[16] *California Public Resources Code*, Section 21083.2(g).

[17] *California Public Resources Code*, Section 5024.1(a).

State Historical Resources Commission determines that it meets one or more of the following criteria, which are modeled on NRHP criteria:[18]

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

(2) It is associated with the lives of persons important in our past

(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

(4) It has yielded, or may be likely to yield, information important in history or prehistory

Resources nominated to the CRHR must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance.[19] It is possible that a resource whose integrity does not satisfy NRHP criteria may still be eligible for listing in the CRHP. Similarly, resources that have achieved significance within the last 50 years may be eligible for inclusion in the CRHR provided that enough time has lapsed to obtain a scholarly perspective on the events or individuals associated with the resource.[20]

Native American Heritage Commission

Section 5097.91 of the PRC established the Native American Heritage Commission (NAHC), whose duties include the inventory of places of religious or social significance to Native Americans and the identification of known graves and cemeteries of Native Americans on private lands. Section 5097.98 of the PRC specifies a protocol to be followed when the NAHC receives notification of a discovery of Native American human remains from a county coroner.

Health and Safety Code, Sections 7050 and 7052

Health and Safety Code, Section 7050.5 declares that, in the event of the discovery of human remains outside of a dedicated cemetery, all ground disturbance must cease and the county coroner must be notified. Section 7052 establishes a felony penalty for mutilating, disinterring, or otherwise disturbing human remains, except by relatives.

Penal Code, Section 622.5

Penal Code, Section 622.5 provides misdemeanor penalties for injuring or destroying objects of historic or archaeological interest located on public or private lands, but specifically excludes the landowner.

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[18] *California Public Resources Code*, Section 5024.1(c).

[19] Office of Historic Preservation. n.d. "Technical Assistance Bulletin 6: California Register and National Register, A Comparison (for Purposes of Determining Eligibility for the California Register)." Available at: www.ohp.parks.ca.gov

[20] Office of Historic Preservation. n.d. "Technical Assistance Bulletin 6: California Register and National Register, A Comparison (for Purposes of Determining Eligibility for the California Register)." Available at: www.ohp.parks.ca.gov

Public Resources Code, Section 5097.5

Public Resources Code, Section 5097.5 defines as a misdemeanor the unauthorized disturbance or removal of archaeological, historic, or paleontological resources located on public lands.

3.3.1.3 LOCAL

County of Inyo General Plan

The Land Use Element and Conservation and Open Space Element of the Inyo County General Plan set forth the following goal in relation to cultural resources: "Preserve and promote the historic and prehistoric cultural heritage of the County."[21] They include the following policies related to the preservation and promotion of Inyo County's cultural heritage that have relevance to the proposed project / proposed action:

> *Policy CUL-1.3, Protection of Cultural Resources:* 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.
>
> *Policy CUL-1.4, Regulatory Compliance:* Development and/or demolition shall be reviewed in accordance with the requirements of CEQA and the National Historic Preservation Act.

3.4.2 AFFECTED ENVIRONMENT

The affected environment addressed in this portion of the analysis includes the area defined by the District for the possible implementation of dust control measures (DCMs). The proposed project / proposed action study area measures approximately 870.6 acres and is located on BLM- and LADWP-administered lands in Inyo County, California. Not all portions of the proposed project / proposed action study area will be subjected to DCMs.

3.4.2.1 AREA OF POTENTIAL EFFECT

The APE for cultural resources measures 295.4 acres and consists of the portions of the proposed project / proposed action area that have been designated for DCMs, staging areas, and temporary access routes (Figure 3.4.2.1-1, *Area of Potential Effects for Cultural Resources*). These areas have the potential to be subjected to direct effects, such as ground disturbance resulting from the planting and establishment of native vegetation, construction of temporary access routes, and a temporary water delivery system. The APE includes a 100-foot buffer area surrounding the areas that are subject to direct ground disturbance that will account for indirect effects such as dust, foot traffic, and so forth.

[21] Inyo County Planning Department. December 2001. *Inyo County General Plan*. Independence, CA.

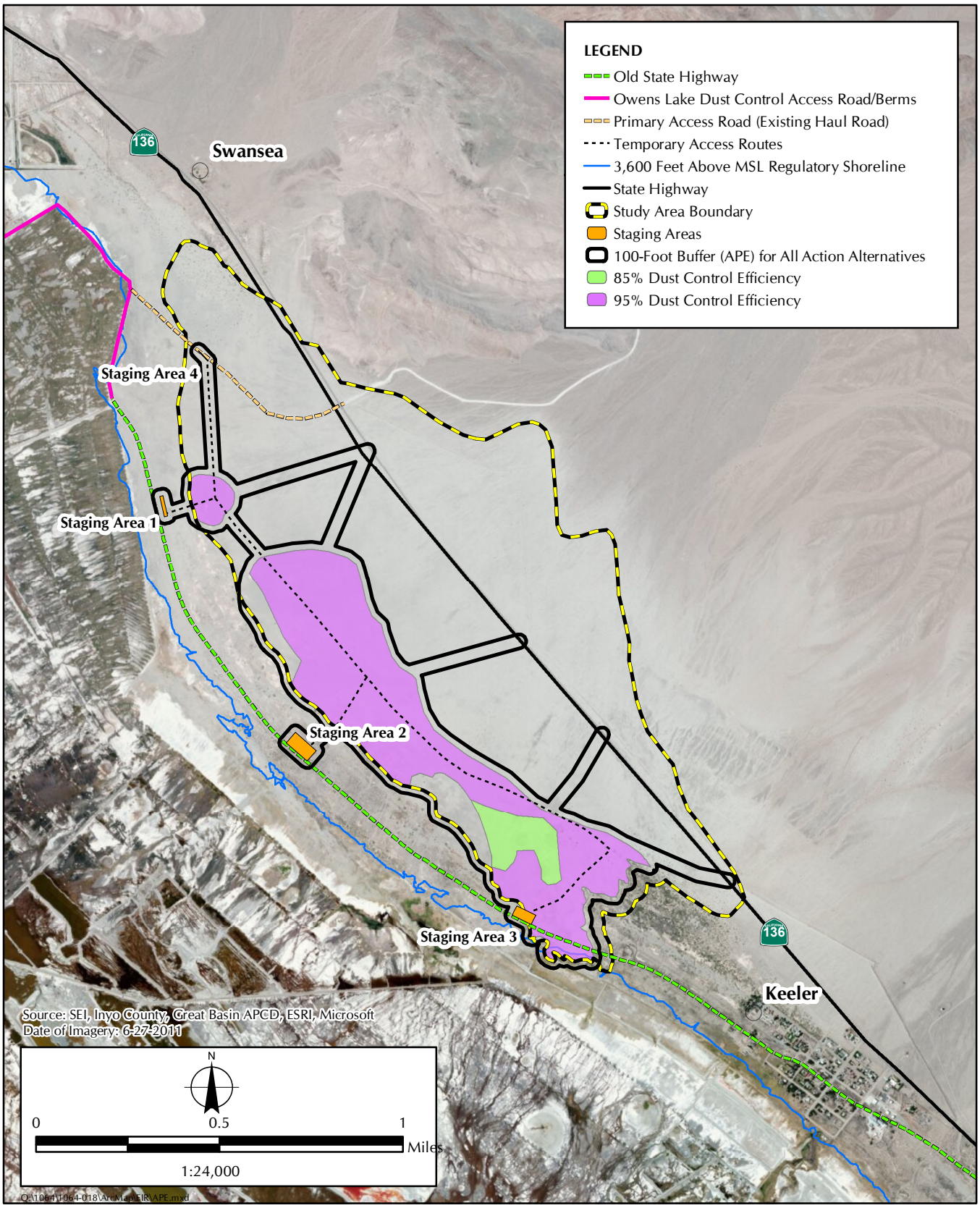

FIGURE 3.4.2.1-1
Area of Potential Effects for
Cultural Resources for All Action Alternatives

3.4.2.2 CULTURAL SETTING

A. Prehistoric Context

Archaeological data indicate that the Owens Valley has been inhabited for at least 11,000 years. The earliest sites in the area date to the Paleoindian Period (circa 12,000 years before present [BP] to 10,000 BP) and are largely recognized by the presence of fluted projectile points. Several examples of fluted Paleoindian projectile points have been found at Owens Lake.[22]

The quantity of archaeological sites and associated materials within the Owens Valley increased throughout the Holocene, beginning about 10,000 years BP, suggesting a growth in population of prehistoric people in the area. The Holocene can be divided into five major time periods including: Lake Mojave (circa 10,000 BP to 7,000 BP), Little Lake (7,000 BP to 3,500 BP), Newberry (circa 3,150 BP to 1,350 BP), Haiwee (circa 1,350 BP to 650 BP), and Marana (circa 650 BP to Contact AD 1770). Each period is characterized by a series of temporally distinct projectile point types.

Archaeological evidence indicates that during the Lake Mojave period, settlement in the Owens Valley was concentrated along the shorelines of inland lakes or playas. Little is known about the subsistence strategies during this period, although it is assumed that hunting was a primary focus. The presence of projectile points and the relative lack of ground stone tools indicative of plant processing lend credence to this view. Faunal assemblages at several sites of this period have also supported this assumption, with evidence for both small (e.g., lagomorph) and large (e.g., artiodactyl) animal exploitation.[23,24] As with the Paleoindian period, however, the presence of Lake Mojave period sites near Pleistocene and Early Holocene lakes suggest a diverse range of plant and animal resources may have been utilized.

Dramatic environmental changes occurred in the region in the following Little Lake period. Owens Lake cores and surface data indicate that drought conditions were prevalent in the Owens Lake basin during this period and the lake itself was shallow and saline.[25] The few Little Lake period sites that have been recorded in the Owens Valley indicate temporary or seasonal occupations by small groups of people that practiced a more generalized subsistence strategy focused on the hunting of large and small game and the collection on plant resources.

Use of the Owens Valley area by prehistoric peoples intensified in the Newberry and Haiwee periods. Archaeological data indicate the establishment of large seasonally occupied villages in the Newberry period, with a corresponding increase in population and social complexity. Although

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[22] Dillon, B.D. 2002. "California Palaeoindians: Lack of Evidence, or Evidence of a Lack?" In *Essays in California Archaeology: A Memorial to Franklin Fenenga*, ed. W.J. Wallace and F.A. Riddell, pp. 110–128. Berkeley, CA: Contributions of the University of California Archaeological Research Facility No. 60, Table 1.

[23] Basgall, M.E. 2000. "The Structure of Archaeological Landscapes in the North-Central Mojave Desert." In *Archaeological Passages: A Volume in Honor of Claude Nelson Warren*, ed. J.S. Schneider, R.M. Yohe II, and J.K. Gardner. Hemet, CA: Western Center for Archaeology and Paleontology, Publications in Archaeology.

[24] Basgall, M.E., and M.C. Hall. 1994. "Perspectives on the Early Holocene Archaeological Record of the Mojave Desert." In *Kelso Conference Papers 1987–1992, A Collection of Papers and Abstracts from the First Five Kelso Conferences on the Prehistory of the Mojave Desert*, ed. G. Dicken Everson and Joan S. Schneider. Occasional Papers in Anthropology 4. Bakersfield, CA: California State University, Bakersfield, Museum of Anthropology.

[25] Bacon, S, N., R. M. Burke, S. K. Pezzopane, and A. S. Jayko. 2006. Last Glacial Maximum and Holocene Lake Levels of Owens Lake, eastern California, U.S.A. *Quaternary Science Reviews* 25:1264-1282.

hunting continued to be an important economic pursuit, the proliferation in the occurrence and diversity of ground stone artifacts at Newberry and Haiwee period sites suggest the more intensive use and processing of plant foods.[26,27] Introduction of the bow and arrow occurred during the Haiwee period around AD 500,[28] which may also mark the expansion of the Numic-speaking groups emanating from southeastern California. Finally, the Marana period is marked by a decrease in the size of annual foraging ranges, with the inhabitants of the Owens Valley adopting a more sedentary way of life. This is evidenced by the appearance of continuously occupied, valley-floor villages; these are often associated with satellite villages that served as bases for the procurement of specific resources such as pinyon, ricegrass, or alpine plants.[29]

B. Historic Context

The earliest Euro-Americans to visit the Owens Valley were probably mountain men and prospectors. Peter Skene Ogden, a Canadian fur trapper, traveled into Owens Valley and south along the eastern edge of the Sierra Nevada Mountains while exploring for the Hudson's Bay Company in 1829.[30] Joseph Reddeford Walker, also a fur trapper, traveled to the Owens Valley in 1834. During a later expedition through California in 1845, John Fremont named the Owens Valley after his traveling companion, Dick Owens.[31] One of the earliest surveys of the Owens Valley was conducted in 1855–1856 by Henry Washington and A.W. von Schmidt, who were sent by the United States Land Office and the State of California Surveyors Office.[32]

Substantial settlement of the Owens Lake region by Euro-Americans began in 1861 when Barton and Alney McGee introduced a small herd of cattle and built a log cabin in the area that would later become the town of Lone Pine.[33] In the following decade, the establishment of mining and soda extraction industries caused a number of towns, including Keeler, to spring up around Owens Lake. Silver mining was one of the earliest industries established in the Owens Valley. By the turn of the century, however, precious metal mining had given way to the large-scale commercial production and extraction of mineral resources from Owens Lake. In 1885, the Inyo Development Company established a soda ash plant in an area located approximately 1 mile northwest of the

[26] Basgall, M.E., and K.R. McGuire. 1988. *The Archaeology of CA-INY-30: Prehistoric Culture Change in the Southern Owens Valley, California*. Prepared by: Far Western Anthropological Research Group, Inc., Davis, CA. Prepared for: California Department of Transportation, Bishop, CA.

[27] Bettinger, Robert L. 1999. From traveler to processor: Regional trajectories of hunter–gatherer sedentism in the Inyo-Mono region, California. In *Settlement Pattern Studies in the Americas, Fifty Years Since Viru,* ed. Billman, B. R., and Feinman, G. M. Smithsonian Institution Press, Washington, DC, pp. 39–55.

[28] Yohe, R.M. 1998. "The Introduction of the Bow and Arrow and Lithic Resource Use at Rose Spring (CA-INY-372)." *Journal of California and Great Basin Anthropology*, *20*: 26–52.

[29] Bettinger, Robert L. 1999. From traveler to processor: Regional trajectories of hunter–gatherer sedentism in the Inyo-Mono region, California. In *Settlement Pattern Studies in the Americas, Fifty Years Since Viru,* ed. Billman, B. R., and Feinman, G. M. Smithsonian Institution Press, Washington, DC, pp. 39–55.

[30] Dictionary of Canadian Biography. 2013. Peter Skene Ogden. Accessed online on September 4, 2013 at: http://www.biographi.ca/en/bio.php?id_nbr=4109

[31] Wilke, P.J., and H.W. Lawton, eds. 1976. *The Expedition of Capt. J. W. Davidson from Fort Tejon to the Owens Valley in 1859*. Socorro, NM: Ballena.

[32] Wilke, P.J., and H.W. Lawton, eds. 1976. *The Expedition of Capt. J. W. Davidson from Fort Tejon to the Owens Valley in 1859*. Socorro, NM: Ballena.

[33] Jones and Stokes. 2007. *Cultural Resources Inventory of Two Parcels in the Moat and Row Testing Area, Owens Lake Dust Mitigation Program, Inyo County, California*, pp. 12. Prepared for: City of Los Angeles Department of Water and Power.

town of Keeler.[34] At their height, the facilities produced 20 tons of soda ash per day. The company was dissolved in 1920, with the plant sold to the California Alkali Company.[35]

In 1865, a Mexican-American named Pablo Flores discovered the largest silver strike in California at Cerro Gordo (Fat Hill). The Cerro Gordo mines were located on the western slope of Buena Vista Peak in the southern Inyo Mountains, overlooking the eastern shore of Owens Lake.[36] In 1866, Mortimer W. Belshaw, a mining engineer, and his partner Adbner B. Elder came from San Francisco and started the Union Mining Company by staking claims at Cerro Gordo.[37] Ultimately, the Cerro Gordo mines produced over 15 million dollars' worth of silver ore.

Several distinct transportation industries, including trams, mule teams, boats, and railroads, played important roles in the industrial and economic histories of the Owens Lake region. The first three modes of transportation were needed to efficiently move raw ore from the silver mines in the Inyo Mountains to smelting facilities situated along the lakeshore. The fourth mode included the Southern Pacific and Carson & Colorado railroads, which served to transport silver bullion and other mining products from the Owens Valley to commercial centers in California and Nevada.[38,39] The construction of the Carson & Colorado Railroad was completed in 1883 with the rail line running from Mound House, Nevada to Keeler. The Carson & Colorado Railroad Company controlled the line until its sale to the Southern Pacific Railroad in 1900.

Salt was also an important resource in the history of the region. Extensive salt deposits were located in the Saline Valley east of the Inyo Mountains, approximately 13 miles northeast of the community of Swansea and 50 miles by dirt road from the community of Keeler. The property was originally operated by the Saline Salt Company, formed in 1911 by White Smith, and continued to operate under that name until 1913. From 1915 to 1919, the deposit was operated by the Owens Valley Salt Company. From 1926 through 1930, the property was operated by Sierra Salt Corporation with G.W. Russell as president and A.S. Henderson as the company's secretary.[40]
The salt was transported from the Saline Valley to the mill by an aerial tramway. The tramway was completed in 1913 and, in 1929, the tramway was refurbished by the Sierra Salt Corporation and extended 13 miles to the Tramway Station.[41] The Tramway Station was located northwest of Keeler adjacent to the Carson & Colorado Railroad siding, later operated by the Southern Pacific Railroad. The station included employee housing and a mill, which contained driers, vibrating screens,

[34] Jones and Stokes. 2007. *Cultural Resources Inventory of Two Parcels in the Moat and Row Testing Area, Owens Lake Dust Mitigation Program, Inyo County, California*, Figure 8. Prepared for: City of Los Angeles Department of Water and Power, Los Angeles, CA.

[35] Hamilton, F. 1920. *Seventeenth Annual Report of the State Mineralogist*. Volume XVII. Sacramento, CA: California State Mining Bureau.

36 DeDecker, M. 1966. *Mines of Eastern Sierra*, pp. 57. Glendale, CA: La Siesta Press.

37 Nadeau, R. 1958. *Ghost Towns and Mining Camps of California*, pp. 88. Los Angeles, CA: The Ward Ritchie Press.

[38] Kahrl, W. 1982. *Water and Power*. Berkeley, CA: University of California Press.

[39] Due, J. 1951. "The Carson and Colorado Railroad." *Economic Geography*, *27*(3): 251–267.

40 Bradey, W. 1938 *Thirty-fourth Annual Report of the State Mineralogist*. Volume XXXIV. California State Mining Bureau, Sacramento, CA.

41 Bradey, W. 1938 *Thirty-fourth Annual Report of the State Mineralogist*. Volume XXXIV. California State Mining Bureau, Sacramento, CA.

packing equipment and automated weight scales.[42] Due to high operating costs, the tramway ceased operations in 1933.[43]

Another important development in the history of the Owens Valley area was the construction of the Los Angeles Aqueduct. In the early 1900s, city leaders recognized that the water needs of the growing population of Los Angeles had exceeded the capacity of local sources. In 1904, the Owens Valley was identified as a likely source for additional water. After obtaining necessary water and land rights and approving a bond measure to fund construction, the City of Los Angeles began work in 1908 on the 233-mile-long aqueduct. Becoming the country's largest municipal water system at the time, the Los Angeles Aqueduct was completed in 1913. In order to divert the full amount of authorized water, the City of Los Angeles later constructed a second aqueduct, completed in 1970, which largely parallels the course of the First Los Angeles Aqueduct.

The diversion of water from the Owens River and other tributary creeks by the Los Angeles Aqueduct caused a rapid drop in the water level of Owens Lake. By 1924, the lake was virtually dry, resulting in the exposure of large deposits of solids salts, brines, and other minerals on the playa.

C. Regional Ethnography

The Owens Valley area was primarily inhabited by the Owens Valley Paiute during prehistoric times; by the time of Euro-American contact, Western Shoshone populations were also present in the area. Currently, descendants of both groups still live in the valley, mostly within the reservations. Four reservations are located in the Owens Valley north of Owens Lake—Lone Pine, Big Pine, Fort Independence, and Bishop. One of the earliest references to the Owens Valley Paiute and the Shoshone is that by Kroeber;[44] however, later ethnographic works by Steward[45,46,47] and Driver[48] have become the standard reference for these groups.

3.4.2.3 RECORDS SEARCH

A. Prior Research

A search for previously recorded cultural resources and investigations was conducted within a one mile buffer of the APE. The search included a literature review and a records search at the Eastern

42 Bradey, W. 1938 *Thirty-fourth Annual Report of the State Mineralogist*. Volume XXXIV. California State Mining Bureau, Sacramento, CA.

43 Jones and Stokes. 1997. *Cultural Resources Inventory and Evaluation of Historic Resources on the Eastern Side of Owens Lake for the Great Basin Unified Air Pollution Control District*. Prepared by: Jones and Stokes, Sacramento, CA, pp. 19. Prepared for: Great Basin Unified Air Pollution Control District.

44 Kroeber, A.L. 1925. *Handbook of the Indians of California*. New York, NY: Dover, p. 556.

45 Steward, J.H. 1934. "Two Paiute Ethnographies." *University of California Publications in American Archaeology and Ethnology*, *33*(5): 423–438.

46 Steward, J.H. 1937. "Linguistic Distributions and Political Groups of the Great Basin Shoshoneans." *American Anthropologist*, *39*(4): 625–634.

47 Steward, J.H. 1938. "Basin Plateau Aboriginal Sociopolitical Groups." *Bureau of American Ethnology Bulletin*, *120*. Washington, DC.

48 Driver, H.E. 1937. "Cultural Element Distributions, VI: Southern Sierra Nevada." *University of California Anthropological Records*, *1*(2): 53–154.

Information Center (EIC) records search. Additional research was completed by BLM archaeologist Mr. Greg Haverstock, who conducted a search of the site files housed at the BLM Bishop Field Office and provided information on the cultural resources on BLM-administered portions of the proposed project / proposed action study area. Results of the record searches indicate that nine cultural resource inventories and one Phase II testing project have been previously undertaken within the project study area. A summary of each of these work efforts is provided below (Table 3.4.2.3-1, *Cultural Resources Investigations within the Study Area*).

TABLE 3.4.2.3-1
CULTURAL RESOURCES INVESTIGATIONS WITHIN THE STUDY AREA

Report No.	Year	Report Title	Author
IN-00063	1978	California Desert Program – Archaeological Sample Unit Records for Owens Valley Planning Unit	BLM
IN-00293	2003	Cultural Resource Survey for 2003 Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan, Vols. I and II	Wells, Helen, Ancient Enterprises, Inc., Santa Monica, CA, for Sapphos Environmental, Inc., Pasadena, CA
IN-00563	1997	Cultural Resources Inventory and Evaluation of the Historic Resources on the Eastern Side of Owens Lake for the Great Basin Unified Air Pollution Control District	Jones and Stokes Associates
IN-00592	2002	Inventory and Evaluation of 18 Sites on the Eastern Margin of the Owens Lake Playa, Inyo County, California	Jones and Stokes Associates
IN-00639	2004	Cultural Resources Inventory Report	McCormick, Erica D., BLM, Bishop, CA
IN-00641	2002	Archaeological Survey Report for a Monument on State Route 136, Inyo County, California	Jones and Stokes Associates
IN-00642	2005	Cultural Resources Inventory of a Proposed Temporary Road at Swansea, Inyo County, California	Burton, Jeffry F., Trans-Sierran Archaeological Research
IN-00658	2003	Research Design for Limited Phase II Testing at the Keeler Dunes Sites, Owens Valley, California	Halford, F. Kirk, BLM, Bishop, CA
IN-00735	2005	Results of Limited Phase II Testing at the Keeler Dunes Sites, Owens Valley, California	Halford, F. Kirk, and Kim Carpenter, Far Western Anthropological Research Group, Inc.
IN-00834	2008	Cultural Resources Inventory Report	Haverstock, Greg, BLM, Bishop, CA
IN-00928	2010	Cultural Resources Inventory of Caltrans District 9 Rural Conventional Highways in Inyo, Eastern Kern, Mono, and Northern San Bernardino Counties	Seil, Libby, Bryan Larson, Joseph Freeman, Jill Braden, Lindsay Hartman, Laura Leach-Palm, Paul Brandy, and Jay King, Far Western Anthropological Research Group, Inc.

Note: IN-00658 and IN-00735 reports are part of the same Phase II testing project.

B. Previously Recorded Resources

A total of 39 cultural resources were previously identified within the study area. These include 27 archaeological sites, 10 archaeological isolates, and 2 buildings/structures (Table 3.4.2.3-2, *Previously Recorded Cultural Resources Located within the Proposed Project / Proposed Action Study Area*). Only two of these cultural resources—P-14-7840/CA-INY-6503 and P-14-7841/CA-INY-6502—are located within the APE of the proposed project / proposed action. Recorded in 2003 as part of a cultural resource survey for the LADWP Keeler Dunes Mining project, the remains consist of concentrations of rock cairns surrounded by a diffuse flaked stone scatter; several cairns had associated artifact assemblages that contained flaked and ground stone tools, pottery, shells, and animal bone.[49] A small number of historic artifacts were also noted, including a bullet, bottle glass fragments, clothing debris, and butchered animal bone; these remains range in date from the late 1800s to modern times.

Limited Phase II testing was completed on the cairn features at CA-INY-6502 and CA-INY-6503 by BLM and Far Western Anthropological Research Group, Inc.[50] Given the form of the cairns and associated artifacts, it was originally postulated that the features may mark human burials. To determine if the cairns were used as grave markers, seven rock piles were excavated at the sites (six at CA-INY-6502 and one at CA-INY-6503). Only one cairn at CA-INY-6503 was found to be in direct association with human remains. Archaeological work at the sites was halted in response to the discovery of the human remains and concerns by local Native American groups. Due to their cultural and archaeological value, both sites were determined as eligible for listing on the NRHP.[51]

Sand movement within the Keeler Dunes area since 2003 has revealed additional archaeological deposits associated with CA-INY-6502 and CA-INY-6503. Exposure of these previously undocumented cultural remains prompted a revisit in 2009 by BLM archaeologist Mr. Greg Haverstock.[52] An additional 63 cairn features, which were concentrated in several discrete loci, were identified in the dune complex during the revisit. As a result, the site boundaries of CA-INY-6502 and CA-INY-6503 were expanded and merged into one large site (referred to as CA-INY-6502). During subsequent visits to the site, Mr. Haverstock noted cremated and articulated human skeletal remains eroding out of the dune complex, suggesting that the site was used as a prehistoric mortuary location. Mr. Haverstock has hypothesized that CA-INY-6502 may be part of a series of such mortuary sites that line the prehistoric shore of Owens Lake, collectively referred to as the Southern Owens Valley Mortuary Complex.[53] This complex also includes the site of P-14-7843/CA-INY-6505, which is located just outside of the proposed project / proposed action study area.

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[49] Halford, F. Kirk, and Kim Carpenter. 2005. *Results of Limited Phase II Testing at the Keeler Dunes Sites, Owens Valley, California*. Cultural Resource Project CA-170-03-11. Prepared by: Far Western Anthropological Research Group, Inc., Davis, CA.

[50] Halford, F. Kirk, and Kim Carpenter. 2005. *Results of Limited Phase II Testing at the Keeler Dunes Sites, Owens Valley, California*. Cultural Resource Project CA-170-03-11. Prepared by: Far Western Anthropological Research Group, Inc., Davis, CA.

[51] Halford, F. Kirk, and Kim Carpenter. 2005. *Results of Limited Phase II Testing at the Keeler Dunes Sites, Owens Valley, California*. Cultural Resource Project CA-170-03-11. Prepared by: Far Western Anthropological Research Group, Inc., Davis, CA.

[52] Primary Site Record for CA-INY-6502 and CA-INY-6503 (Update). n.d. Record on file at the Bureau of Land Management, Bishop Field Office, Bishop, CA.

[53] Haverstock, Greg. 17–20 March 2010. "Stones and Bones: The Southern Owens Valley Mortuary Complex." Paper presented at the Society for California Archaeology, 2010 annual meeting, Riverside, CA.

TABLE 3.4.2.3-2
PREVIOUSLY RECORDED CULTURAL RESOURCES LOCATED WITHIN THE PROPOSED PROJECT / PROPOSED ACTION STUDY AREA

Primary No.	Trinomial	Resource Type	Description	Within APE	Within Project Area	Within 1 Mile
P-14-273	CA-INY-273	Site	Prehistoric artifact scatter			X
P-14-320	CA-INY-320	Site	Prehistoric ceramic and lithic scatter			X
P-14-321	CA-INY-321	Site	Prehistoric artifact scatter			X
P-14-432	CA-INY-432	Site	Prehistoric petroglyph with bedrock mortar			X
P-14-451	CA-INY-451	Site	Prehistoric artifact scatter			X
P-14-452	CA-INY-452	Site	Prehistoric flaked and ground stone scatter			X
P-14-4820	CA-INY-4820H	Building	Historic Sierra Talc Mill			X
P-14-8421	CA-INY-6661H	Site	Historic Owens Lake Silver-Lead Company mill and smelter		X	
P-14-4822	CA-INY-4822H	Structure (Furnace)	Historic Owens Lake Silver-Lead Company furnace			X
P-14-5194	CA-INY-5058H	Site	Historic "End of Line" of the Carson & Colorado Railroad			X
P-14-5926		Isolate	Historic section of pipeline			X
P-14-5927		Isolate	Prehistoric lithic flakes			X
P-14-7147	CA-INY-6076	Site	Prehistoric lithic scatter			X
P-14-7148	CA-INY-6077	Site	Prehistoric lithic scatter			X
P-14-7567	CA-INY-6361	Site	Prehistoric lithic and ground stone scatter			X
P-14-7568	CA-INY-6362	Site	Prehistoric basalt quarry complex			X
P-14-7569	CA-INY-6363H	Site	Historic utility line			X
P-14-7570	CA-INY-6364	Site	Prehistoric lithic scatter			X
P-14-7571	CA-INY-6365	Site	Prehistoric lithic scatter and rock ring feature			X
P-14-7572	CA-INY-6366	Site	Prehistoric lithic and ground stone scatter			X
P-14-7573	CA-INY-6367	Site	Prehistoric lithic scatter			X
P-14-7603		Isolate	Prehistoric small lithic scatter			X
P-14-7604		Isolate	Prehistoric obsidian scraper			X
P-14-7605		Isolate	Prehistoric obsidian scraper			X
P-14-7606		Isolate	Three pieces of prehistoric obsidian debitage			X
P-14-7608		Isolate	Historic glass bottle fragment			X
P-14-7640		Isolate	Historic metal horseshoe			X

TABLE 3.4.2.3-2
PREVIOUSLY RECORDED CULTURAL RESOURCES LOCATED WITHIN THE PROJECT STUDY AREA,
CONTINUED

Primary No.	Trinomial	Resource Type	Description	Within APE	Within Project Area	Within 1 Mile
P-14-7641		Isolate	Historic ceramic fragment			X
P-14-7840	CA-INY-6503	Site	Rock cairns with associated prehistoric and historic artifact scatters	X	X	
P-14-7841	CA-INY-6502	Site	Rock cairns with associated prehistoric and historic artifact scatters	X	X	
P-14-7842	CA-INY-6504	Site	Prehistoric lithic and ground stone scatter			X
P-14-7843	CA-INY-6505	Site	Rock cairns with associated prehistoric and historic artifact scatters			X
P-14-7851	CA-INY-6513H	Site	Historic Carson & Colorado Railroad			X
P-14-7852		Isolate	Historic glass bottle		X	
P-14-8281	CA-INY-6599	Site	Prehistoric lithic scatter			X
P-14-8385	CA-INY-6658H	Site	Historic Swansea Pier			X
P-14-8419	CA-INY-6659	Site	Prehistoric lithic scatter			X
P-14-8420	CA-INY-6660	Site	Prehistoric lithic scatter			X
P-14-10344		Site	Prehistoric lithic scatter			X

Note: P-15-7840/CA-INY-6503 and P-14-7841/CA-INY-6502 are now considered one cultural resource (CA-INY-6502).

3.4.2.4 FIELD SURVEY AND SITE RECORDATION RESULTS

The archaeological field investigations resulted in the recording of four archaeological sites and 17 isolates within the APE. These include a multicomponent site (KD Site 1), a section of the Old State Highway (KD Site 2), a small lithic scatter (BLM Site 1), and a previously undocumented section of the Carson & Colorado Railroad (P-14-7851/CA-INY-6513H). Additionally, Site CA-INY-6502 was recently updated in 2009 by BLM and was confirmed during the pedestrian survey. Additionally, the 17 isolates and one prehistoric lithic scatter site were also recorded by BLM Archaeologist (Mr. Greg Haverstock) during the February 2014 survey. Descriptions of each of these cultural resources are provided to support the characterization of the existing conditions and facilitate avoidance and minimization of impacts.

A. KD Site 1

KD Site 1 is a multicomponent site that measures 775 feet by 400 feet in area. The site consists of six historic period artifact concentrations, a historic road alignment, and two possible prehistoric cairns. The artifact concentrations are dominated by culinary artifacts with structural- and industrial-related items comprising relatively small proportions of the total artifact counts. Temporally diagnostic materials recovered from the concentrations indicate that the area was used as a trash dump beginning in the late 1800s with continued use into the 1960s. A 550-foot-long

section of an abandoned dirt road was located in the western and central portions of KD Site 1. While an exact date of construction is not known, examination of historic maps of the area indicates that the road was likely built sometime between 1941 and 1951.[54,55]

The lack of evidence of residential structures in the immediate vicinity, as well as proximity of the area to historic roads, indicates that the historic period remains were the product of secondary dumping, in which accumulated trash from residential loci were transported to another location for deposition. The large quantity of artifacts found at the site suggests that the accumulated refuse was the result of multiple dumping episodes that took place over a relatively long period of time. Based on the potential of KD Site 1 to contribute important information about early-20th century life in the Owens Valley, KD Site 1 is recommended as eligible for inclusion on the NRHP under Criterion D.

The possible prehistoric cairn features consist of small clusters of rock, each of which contained at least one piece of ground stone. Although no other artifacts were associated with these features, a basalt core was found in close proximity. Based on the cultural and archaeological value of the possible cairn features, the prehistoric component of the site is also recommended as eligible for inclusion on the National Register under Criterion D.

B. KD Site 2

KD Site 2 consists of a section of the Old State Highway that runs from a point south of Keeler to a point north of Swansea along the northwestern edge of Owens Lake. Although most of the alignment is located outside of the proposed project / proposed action area, a short section of the road traverses the southwestern portion of the APE. The historic road segment is aligned in the southwest-to-northwest direction and measures appropriately 5.0 miles in length with an average width of 18 feet. An exact date of the construction of the road could not be ascertained. However, a historic map of the area dating to 1913 depicts a road running along this portion of the lakeshore between Lone Pine and Keeler just west of the Carson & Colorado Railroad line.[56]

Within the proposed project / proposed action area, the site is largely covered by active sand dunes and is no longer visible on the ground surface. Farther to the north, portions of the road have also been severely damaged by flooding that has resulted in the deposition of silt over the roadbed. Finally, a 0.5-mile-long section of the original road north of the proposed project / proposed action study area has been incorporated into the dust control measures on the lake bed.

The Old State Highway was once a significant transportation corridor within the Owens Valley. As such, it may be eligible for inclusion on the National Register under Criterion A, for its association with important events and trends that have contributed to the broad patterns of our history. However, the site's integrity has been significantly compromised by erosional processes and the realignment of portions of the roadway. Due to the loss of integrity of KD Site 2, the portion of this cultural resource within the proposed project / proposed action property is recommended ineligible for listing on the NRHP or CRHR.

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[54] Automobile Club of Southern California. 1941. *US395 US6 Map Section from Automobile Club of Southern California Mojave & Colorado Deserts*. Available at: http://www.historicalroadmaps.com/CaliforniaPage/DeathValleyPage/image2.html

[55] U.S. Geological Survey. 1951. *15-Minute Topographic Map of Keeler, CA*. Denver, CO.

[56] U.S. Geological Survey. 1913 (reprinted 1921) 1:250,000 Series Ballarat, California, Topographic Quadrangle.

C. BLM Site 1

This site consists of a small lithic scatter that measure roughly 3 meters in diameter. The cultural constituents of this site include several pieces of cryptocrystalline silicate lithic materials (two cores, flakes, and shatter). This site is contained entirely within the buffer of Staging Area 3. Due to the limited data potential this site provides, this cultural resource within the proposed project / proposed action property is recommended as ineligible for listing on the NRHP or CRHR.

D. P-14-7851/CA-INY-6513H

The update to this historic archaeological Department of Parks and Recreations (DPR) site form consists of a previously unrecorded segment of the Carson & Colorado Railroad located in the southwestern portion of the proposed project / proposed action area and APE. A 706-foot-long segment of the railroad berm was initially recorded in 2005 in the area southeast of Swansea.[57] Three additional segments of the Carson & Colorado Railroad, totaling 669 feet in length, were recorded in the proposed project / proposed action area and APE. While the railroad line was, in the past, a continuous alignment the surrounding dunes have now covered portions of the alignment and buried segments under several feet of sand. The portions of CA-INY-6513H located within the project area consist of a raised rail bed covered with gravel and small cobbles. The berm in these areas measures approximately 14 feet in width with a height ranging from 1 to 2 feet above the surrounding ground surface. Associated artifacts include rusted railroad spikes, metal ties, and fragments of wooden rail ties.

The Carson & Colorado narrow gauge railway was constructed between 1880 and 1883 and ran from Mound House, Nevada to Keeler. Although the railway was primarily built for ore transport, other cargo was also hauled on the line including timber, fuel, and agricultural goods.[58] The Carson & Colorado Railroad Company controlled the line until its sale to the Southern Pacific Railroad in 1900. The railroad saw regular use until 1920s, when the construction of the Los Angeles Aqueduct and diversion of water from Owens Lake took a significant toll on agricultural production in the area and salt mining on Owens Lake. Use of the rail line steadily decreased in the following decades until the line was abandoned and the rails were pulled in 1960.[59]

A previous evaluation of CA-INY-6513H conducted in 2006 by JRP Historical Consulting determined that the site did not meet the criteria for listing either on the NRHP or the CRHR due to a lack of integrity.[60] The three segments of the railroad recorded by Sapphos Environmental, Inc. within the proposed project / proposed action area exhibit a similar level of integrity as the previously documented sections of the railroad alignment. Given this, the portion of the site located within the proposed project / proposed action area is recommended not eligible for listing on the NHRP or CRHR.

[57] Burton, Jeffery F. 2005. *Cultural Resources Inventory of a Proposed Temporary Road at Swansea, Inyo County, California*. Manuscript on file, Barnard Construction, Inc., Bozeman, Montana.

[58] California Department of Parks and Recreation. 2006. Update to Primary Record for CA-INY-6513H. Site form on file at the Eastern Information Center, University of California, Riverside, CA.

[59] Turner, George. 1965. *Narrow Gauge Nostalgia*. Harbor City, CA: J-H Publications.

[60] California Department of Parks and Recreation. 2006. Update to Primary Record for CA-INY-6513H. Site form on file at the Eastern Information Center, University of California, Riverside, CA.

E. P-14-7841/CA-INY-6502 and P-14-7841/6502

The sites were recorded in 2003 as part of a cultural resource survey for the LADWP Keeler Dunes Mining project. The remains consist of concentrations of rock cairns that are surrounded by a diffuse flaked stone scatter; several cairns had associated artifact assemblages that contained flaked and ground stone tools, pottery, shell, and animal bone.[61] A small number of historic artifacts were also noted at the two sites including a bullet, bottle glass fragments, clothing debris, and butchered animal bone; these remains range in date from the late 1800s to modern times. Subsurface testing has been conducted at CA-INY-6502 and CA-INY-6503 by BLM and Far Western Anthropological Research Group, Inc. (Far Western).[62] One cairn at CA-INY-6503 was found to be in direct association with sensitive cultural materials. Due to their cultural and archaeological value, both sites were determined to be eligible for listing under Criterion D on the NRHP.[63]

Sand movement within the Keeler Dunes area since 2003 has revealed additional archaeological deposits associated with CA-INY-6502 and CA-INY-6503. The exposure of these previously undocumented cultural remains prompted a revisit to the sites in 2009 by BLM archaeologist Mr. Greg Haverstock.[64] At which time, an additional 63 cairn features, which were concentrated in several discrete loci, were identified in the dune complex during the revisit. As a result of these findings, the site boundaries of CA-INY-6502 and CA-INY-6503 were expanded and merged into one large site (therein referred to as CA-INY-6502). During subsequent visits to the site, Mr. Haverstock sensitive cultural materials eroding out of the dune complex, suggesting that the site was used as a prehistoric mortuary location. Mr. Haverstock has hypothesized that CA-INY-6502 may be part of a series of such mortuary sites that line the prehistoric shore of Owens Lake, collectively referred to as the Southern Owens Valley Mortuary Complex.[65] This complex also includes the site of P-14-7843/CA-INY-6505, which is located just outside of the proposed project / proposed action area.

F. ISOLATES

Seventeen (17) archaeological isolates were identified during field surveys conducted under the supervision of BLM Archaeologist (Mr. Greg Haverstock). Sixteen (16) historic isolates were recorded within the area of Staging Area 3 and one prehistoric isolate was recorded in a proposed access route to Staging Area 2. Mr. Greg Haverstock recorded all resources in the field and copies of his findings are on file at the BLM Bishop Field Office. The 16 historical isolated listed below are associated with the railroad, which has been determined ineligible through Section 106 (per Mr. Greg Haverstock). As a result, these 16 historical isolates are ineligible for NRHP and CRHR.

[61] Halford, F. Kirk and Kim Carpenter. 2005. *Results of Limited Phase II Testing at the Keeler Dunes Sites, Owens Valley, California*. Cultural Resource Project: CA-170-03-11. Report prepared by Far Western Anthropological Research Group, Inc., Davis, CA.

[62] Halford, F. Kirk and Kim Carpenter. 2005. *Results of Limited Phase II Testing at the Keeler Dunes Sites, Owens Valley, California*. Cultural Resource Project: CA-170-03-11. Report prepared by Far Western Anthropological Research Group, Inc., Davis, CA.

[63] Halford, F. Kirk and Kim Carpenter. 2005. *Results of Limited Phase II Testing at the Keeler Dunes Sites, Owens Valley, California*, pp. 1. Cultural Resource Project: CA-170-03-11. Report prepared by Far Western Anthropological Research Group, Inc., Davis, CA.

[64] Primary Site Record for CA-INY-6502 and CA-INY-6503 (Update). Record on file at the Bureau of Land Management, Bishop Field Office, Bishop, California.

[65] Haverstock, Greg. March 17-20, 2010. Stones and Bones: The Southern Owens Valley Mortuary Complex. Paper presented at the Society for California Archaeology, 2010 Annual Meeting. Riverside, CA.

ISO-017 is an elongated rock feature, which is recommended ineligible for NRHP and CRHR. A summary of the isolates is provided below in Table 3.4.2.4-1

TABLE 3.4.2.4-1
BLM RECORDED ARCHAEOLOGICAL ISOLATES WITHIN THE APE

Resource ID	Period	Description	Eligibility Recommendations
BLM ISO-1	Historic	Brown colored, thick walled, mold blown bottle	Recommended Not Eligible
BLM ISO-2	Historic	2 fragments of broken ceramic electrical insulator	Recommended Not Eligible
BLM ISO-3	Historic	Metal fragments, log bolt, large bolt	Recommended Not Eligible
BLM ISO-4	Historic	Sheet metal	Recommended Not Eligible
BLM ISO- 5	Historic	Steel pipe, 6 fragments,	Recommended Not Eligible
BLM ISO-6	Historic	2 fragments of broken ceramic electrical insulator	Recommended Not Eligible
BLM ISO-7	Historic	Steel sheet with bolt holes and opening, riveted	Recommended Not Eligible
BLM ISO- 8	Historic	Steel wire, 2 gauges, fragments, 9 segments	Recommended Not Eligible
BLM ISO-9	Historic	Ceramic electrical insulator fragments	Recommended Not Eligible
BLM ISO-10	Historic	Telephone pole cross member with insulated post	Recommended Not Eligible
BLM ISO-11	Historic	Karo syrup bottle fragment, clear glass (1968-present)	Recommended Not Eligible
BLM ISO-12	Historic	Gallon and 1/2 gallon wine jugs clear glass	Recommended Not Eligible
BLM ISO-13	Historic	Solarized brown Clorox bottle neck and rim (1958-present), and glass ketchup bottle, octagonal with solarized clear glass	Recommended Not Eligible
BLM ISO-14	Historic	Brown Duraglas been bottle(1947)	Recommended Not Eligible
BLM ISO-15	Historic	Brown Duraglas been bottle(1941)	Recommended Not Eligible
BLM ISO-16	Historic	Wire sand fence (8 strands)	Recommended Not Eligible
BLM ISO-17	Prehistoric	Elongated rock cairn	Recommended Not Eligible

3.4.2.5 NATIVE AMERICAN COORDINATION

Native American coordination was undertaken to fulfill the District's requirements, pursuant to CEQA, for consideration of Native American cultural resources. Records searches for the proposed project / proposed action included a request for a search of the Sacred Lands File maintained by the NAHC. This request was made of the NAHC early in the planning process in August 2011.[66] The results of the search would be an indication of the presence of known Native American cultural resources in the proposed project / proposed action's study area. A written response to the District's inquiry was received by Sapphos Environmental, Inc. on August 31, 2011, advising that the Sacred Lands File indicated that no Native American cultural resources have been identified within one mile of the proposed project / proposed action area.[67] However, the NAHC did indicate that the Keeler Dunes locale is known as a culturally sensitive area and recommended that additional coordination be undertaken with local Native American groups and individuals on the matter. As a result of this recommendation, Sapphos Environmental, Inc., acting on behalf of the District, sent letters to 10 Native American contacts classified by the NAHC as potential sources of information related to the presence of sacred sites or human remains in the vicinity of the project study area. This outreach resulted in responses from Matthew Nelson, a Tribal Historic Preservation Officer and NAGPRA Coordinator of the Bishop Paiute Tribe, who noted that the Keeler Dunes and foothills of the Inyo Mountains east of Owens Lake contained extremely culturally sensitive areas.[68] A second response was received from Kathy Fabunan, a tribal administer for the Lone Pine Paiute-Shoshone Tribe, who forwarded the request for information to the tribe's Cultural Committee for comment. Sapphos Environmental, Inc. Native American Coordination efforts was completed at this stage and transferred to BLM, who is responsible for formal Section 106 consultation with the Tribes. Refer to Section 3.4.2.6, *Native American Consultation* (below), for details regarding the Section 106 consultation process to date.

Although a review of the available historic maps for the area indicate that no formal cemeteries are located within the proposed project / proposed action study area,[69,70,71,72] documentation on file at the EIC and at the BLM Bishop Field Office indicate Native American burials are present in the proposed project / proposed action study area at archaeological site P-14-7841/CA-INY-6502 (originally recorded as P-14-7841/CA-INY-6502 and P-14-7840/CA-INY-6503).

As stated previously, limited Phase II testing of the rock cairns at CA-INY-6502 identified one feature that was associated with human remains.[73] The results of the archaeological investigation conducted at CA-INY-6502 suggest that the site was used as a prehistoric burial locale and could

[66] Backes, Clarus, Sapphos Environmental, Inc., Pasadena CA. 24 August 2011. Letter to Larry Myers, Native American Heritage Commission, Sacramento, CA.

[67] Singleton, Dave, Native American Heritage Commission, Sacramento, CA. 31 August 2011. Letter response to Clarus Backes, Sapphos Environmental, Inc., Pasadena, CA

[68] Nelson, Matthew, Tribal Historic Preservation Officer and NAGPRA Coordinator, Bishop Paiute Tribe, Bishop, CA. 8 December 2011. Email response to Clarus Backes, Sapphos Environmental, Inc., Pasadena, CA.

[69] U.S. Geological Survey. 1987. *7.5-Minute Series, Dolomite, California, Topographic Quadrangle*. Denver, CO.

[70] U.S. Geological Survey. 1987. *7.5-Minute Series, Owens Lake, California, Topographic Quadrangle*. Denver, CO.

[71] U.S. Geological Survey. 1987. *7.5-Minute Series, Keeler, California, Topographic Quadrangle*. Denver, CO.

[72] U.S. Geological Survey. 1987. *7.5-Minute Series, Cerro Gordo Peak, California, Topographic Quadrangle*. Denver, CO.

[73] Halford, F. Kirk, and Kim Carpenter. 2005. *Results of Limited Phase II Testing at the Keeler Dunes Sites, Owens Valley, California*. Cultural Resource Project: CA-170-03-11. Prepared by: Far Western Anthropological Research Group, Inc., Davis, CA.

be part of a larger mortuary complex that lined the prehistoric shore of Owens Lake. According to BLM (Mr. Greg Haverstock) there have been two other discoveries (on file with BLM), in which human remains were identified, and found to be eroding out of the dunes, within this site.[74] See Section 3.4.2.3 B *Previously Recorded Resources* for more details regarding the investigation efforts and results.

3.4.2.6 NATIVE AMERICAN CONSULTATION

The BLM is responsible for formal consultation with interested Native American tribes and individuals pursuant to Section 106, consistent with the requirements of NEPA. The Section 106 consultation process was initiated by the BLM in October 2011, and at that time included BLM, SHPO, and Tribal representatives as consulting parties. In November 2013, new irrigation alternatives were identified by the District and discussed with BLM. As a result of these discussions, the BLM reinitiated the Section 106 consultation process (December 2013) to then include the BLM, SHPO, Tribal representatives, and the District. Alternatives 4 and 5 were developed as a result of the second Section 106 consultation efforts. Alternative 4 was added to eliminate the need for water tanks and provide direct delivery of water to the temporary irrigation system. Alternative 5 was added to eliminate water tanks and water trucks, by providing water delivery directly from the Keeler Community Service District well via pipeline. Alternatives 3, 4, and 5 provide for hand watering areas with cultural sensitivity (less 15 percent). Additionally, the proposed project / proposed action description was revised to include Native American participation in vegetation planting within cultural sensitive areas. As part of the Section 106 consultation process, the BLM sent letters and organized meetings and field visits with tribal representatives to discuss the proposed project / proposed action and alternatives to obtain their comments and concerns about the proposed project / proposed action and alternatives. A summary of the tribal consultation efforts undertaken by the BLM is provided in Table 3.4.2.6-1, *Summary of Native American Consultation Efforts for the Proposed Project / Proposed Action*).

[74] Haverstock, Greg, Bureau of Land Management Bishop Field Office, Bishop, CA. 14 March 2014. Comment at galley proof meeting with Sapphos Environmental, Inc. and the Great Basin Unified Air Pollution Control District, Pasadena, CA, and Bishop, CA.

TABLE 3.4.2.6-1
SUMMARY OF NATIVE AMERICAN CONSULTATION EFFORTS FOR THE PROPOSED PROJECT / PROPOSED ACTION

Native American Group	Point of Contact	Date	Method of Consultation	Topic of Consultation
Lone Pine	Chair: Joseph	10/24/11	Cert letter	Keeler Dunes—District proposal for dust control
Independence	Chair: Naylor	10/24/11	Cert letter	Keeler Dunes–District proposal for dust control
Big Pine	Chair: Moose	10/24/11	Cert letter	Keeler Dunes—District proposal for dust control
Timbisha	Chair; Gholson	10/18/11	Phone	Keeler Dunes—District proposal for dust control
Timbisha	Chair; Gholson	10/17/11	Letter	Keeler Dunes—District proposal for dust control
Lone Pine	THPO, CR Committee	11/5/2011	Meeting	Keeler Dunes—District proposal for dust control, DRECP
Lone Pine	Acting Chair, Mary Wuester, Kathy Bancroft, THPO	1/20/2012	Meeting and Field Trip to ODL cairns	DRECP, Keeler Dunes—District proposal for dust control
Big Pine	Bill Helmer, THPO; Danielle Gutteriez, T. Sec. The rest of the council did not attend.	2/21/2012	Meeting	Solar PEIS, DRECP, CASSP, Digital 395, Keeler Dunes Test, Owens Lake Planning, Bodie Vegetation Update
Lone Pine	Acting Chair, Mary Wuester, Kathy Bancroft, THPO	2/5/2014	Meeting	Keeler Dunes–District and BLM to discuss the proposed irrigation alternatives
Big Pine	Bill Helmer, THPO, Danelle Gutierrez, Vice Chair, Sally Manning, Environmental Director, Jacklyn Velazquez,	2/11/2014	Meeting	Keeler Dunes–District and BLM to discuss the proposed irrigation alternatives

Key: District = Great Basin Unified Air Pollution Control District

3.5 GEOLOGY AND SOILS

The analysis of geology and soils consists of a summary of the regulatory framework that guides the decision-making process and a description of the existing conditions at the proposed project / proposed action study area.

3.5.1 REGULATORY FRAMEWORK

3.5.1.1 FEDERAL

A. Federal Land Policy and Management Act

The Federal Land Policy and Management Act (FLPMA) provides the mandate to the BLM for the management of public lands and resources under its stewardship. The FLPMA authorizes the BLM to manage public lands to protect the quality of scientific, scenic, historical, archeological, and other values, and to develop "regulations and plans for the protection of public land areas of critical environmental concern." The FLPMA also charges the BLM with protecting "life and safety from natural hazards."

B. Bishop Resource Management Plan

The BLM is the predominant land owner in the Keeler Dunes area. The Keeler Dunes are located within the Owens Lake Management Area and South Inyo Management Area, two of nine management areas managed by the BLM pursuant to the Bishop Resource Management Plan (RMP).[1] The proposed DCMs would be implemented within the Owens Lake Management Area, with the exception of the KCSD well tank (Alternative 5), which is located within the South Inyo Management Area. The RMP provides planning direction for the future use of land in the Bishop Resource Area.

The BLM has standard operating procedures, consisting of specific guidelines that apply to soil resources:

- Limit vegetation removal and other surface disturbing activities to minimum required for project implementation. Require soil retaining structures or other special methods as needed to control erosion on steep slopes and unstable soils.
- Avoid the use of soil disturbing equipment or vehicles on wet, poorly drained or erosive soils.

3.5.1.2 STATE

The State of California Geological Survey (CGS; formerly California Division of Mines and Geology [CDMG]) identifies several earth resource issues that should be taken into consideration when evaluating whether the proposed project / proposed action would likely be subject to geologic hazards, particularly related to earthquake damage. These considerations include both the potential for existing geologic and soil conditions to pose a risk to the proposed project / proposed action and the

[1] U.S. Department of the Interior, Bureau of Land Management, Bakersfield District. 1993. *Bishop Resource Management Plan Record of Decision*. Bakersfield, CA.

potential for the proposed project / proposed action to result in an impact to the existing geologic and soils conditions by creating or exacerbating a geologic hazard.

The CGS establishes regulations related to geologic hazards (e.g., faulting, liquefaction, seismically induced landslides, and ground shaking) as they affect people and structures. These regulations include the Alquist-Priolo Earthquake Fault Zone (APEFZ) Act and Seismic Hazards Mapping Program (SHMP).

A. Alquist-Priolo Earthquake Fault Zoning Act of 1972

The CGS has delineated special study zones along known active or potentially active faults in California pursuant to the APEFZ Act of 1972.[2] The APEFZ Act (Chapter 7.5, Division 2, Public Resources Code, State of California, effective May 4, 1975) provides a statewide mechanism for reducing losses from surface fault rupture. The APEFZ Act promotes public safety by prohibiting siting of most structures for human occupancy across traces of active faults that constitute a hazard to structures from surface faulting or fault creep. In accordance with the APEFZ Act, the Office of State Geologist delineated Special Study Zones that encompass potentially and recently active. The state delegates the authority to local government to regulate development within APEFZs. Construction of habitable structures is not permitted over potential rupture zones. The proposed project / proposed action is not located within an identified APEFZ. There are three APEFZs within the Owens Lake area (Bartlett Quadrangle,[3] Lone Pine Quadrangle,[4] and Olancha Quadrangle[5]), all of which are located along the Owens Valley Fault Zone along the western side of Owens Lake. The closest APEFZ is over 5 miles from the proposed project / proposed action study area.

B. Seismic Hazards Mapping Act of 1990, PRC Section 2690–2699

The CGS has also identified Seismic Hazard Zones that are delineated in accordance with the SHMP of the Seismic Hazards Act of 1990.[6] The Seismic Hazards Mapping Act is "to provide for a statewide seismic hazard mapping and technical advisory program to assist cities and counties in fulfilling their responsibilities for protecting the public health and safety from the effects of strong ground shaking, liquefaction, landslides, or other ground failure and other seismic hazards caused by earthquakes." The proposed project / proposed action is not included on any existing Seismic Hazard Zone Maps.[7]

3.5.1.3 LOCAL

A. Inyo County General Plan

One of the five policies related to Geologic and Seismic Hazards in the Public Safety Element in the Inyo County General Plan and one policy from the Conservation / Open Space Element are applicable to the proposed project / proposed action:

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[2] *California Public Resources Code*, § 2621 et seq.: "Alquist-Priolo Earthquake Fault Zoning Act."

[3] State of California Special Studies Map. 1 January 1990. *Bartlett Quadrangle*. Revised Official Map. Sacramento, CA.

[4] State of California Special Studies Map. 1 January 1990. *Lone Pine Quadrangle*. Revised Official Map. Sacramento, CA.

[5] State of California Special Studies Map. 1 January 1990. *Olancha Quadrangle*. Revised Official Map. Sacramento, CA.

[6] *California Public Resources Code*, § 2690 et seq.: "Seismic Hazards Mapping Act."

[7] California Department of Conservation. Accessed 16 December 2011. *Seismic Hazards Zonation Program*. Available at: http://www.conservation.ca.gov/cgs/shzp/Pages/Index.aspx

- Policy S-2.1 Soil Erosion. Minimize soil erosion from wind and water related to new development

3.5.2 AFFECTED ENVIRONMENT

3.5.2.1 GEOLOGY

Inyo County is characterized by large mountain ranges and deep basins formed by successive tectonic episodes of uplift and downward movements. One of the prominent basins, the Owens Valley is a pull-apart, strike-slip basin formed by the relative uplift of the surrounding mountains and subsidence of the valley floor.[8] There are four major fault zones present in the southern portion of the Owens Valley: two of the fault systems underlie the Owens Valley floor, while the other two systems are generally located along the base of the Sierra Nevada and Inyo-White Mountains.[9] Movement along these faults can result in hazards such as liquefaction, ground shaking, landslides, and unstable soils. The Owens Valley forms the westernmost basin of the Great Basin physiographic province and collects a variety of sediments transported from the Sierra Nevada Mountains to the west and the Inyo Mountains to the east.[10]

Owens Lake has had a dynamic geologic history with open basin conditions and basin overflow prevalent during much of the Late Pleistocene with high stands reaching between approximately 3,756 feet (1,145 meters) and 3,805 feet (1,160 meters) above mean sea level (MSL).[11] Lower lake levels and closed-basin conditions have prevailed throughout most of the lake's past 15,000 years, such that there has been no natural transport of material out of the basin, either water or sediment, except through evaporation or wind transport.[12]

Geological research indicates that Owens Lake had a number of natural oscillations between approximately 27,000 calibrated years before present (cal yr BP) to the late 1800s resulting from climate changes.[13] Studies indicate the lake reached high stands between 24,000 and 23,730 cal yr BP; 15,700 and 15,000 cal yr BP; and 7,860 and 7,650 cal yr BP.[14,15] Drier periods were recorded between approximately 18,920 and 15,590 cal yr BP; at 11,200 cal yr BP; and between 6,500 and 4,400 cal yr BP.[16] Lake oscillations continued throughout the Late Holocene, and between 350 and 230 cal yr BP,

[8] Johnson et al. June 1999. *Characterization of the Owens Lake Basin Hydrology System Inyo County, California*. Prepared for: Great Basin Unified Air Pollution Control District. Bishop, CA. Available at: ftp://gbuapcd.org/HydroReports/Hydrology%20Summary%20Report.pdf

[9] Slemmons, D.B., Vittori, E., Jayko, A.S., Carver, G.A., Bacon, S.N. 2008. *Quaternary Fault and Lineament Map of Owens Valley, Inyo County, Eastern California*. Geological Society of America. Boulder, Colorado.

[10] Hunt, C.B. 1967. *Physiography of the United States*. San Francisco, CA: W.H. Freeman and Company.

[11] Bacon, S.N., R.M. Burke, S.K. Pezzopane, and A.S. Jayko. 2006. "Last Glacial Maximum and Holocene Lake Levels of Owens Lake, Eastern California, USA." *Quaternary Science Reviews*, 1–19.

[12] Soil and Water West, Inc. 25 September 2001. *Owens Lakebed Survey (Revised).* Prepared by: Soil and Water West, Inc., P.O. Box 44666, Rio Rancho, NM. Prepared for: Great Basin Unified Air Pollution Control District, Bishop, CA.

[13] Bacon, S.N., R.M. Burke, S.K. Pezzopane, and A.S. Jayko. 2006. "Last Glacial Maximum and Holocene Lake Levels of Owens Lake, Eastern California, USA." *Quaternary Science Reviews*, 1–19.

[14] Bacon, S.N., R.M. Burke, S.K. Pezzopane, and A.S. Jayko. 2006. "Last Glacial Maximum and Holocene Lake Levels of Owens Lake, Eastern California, USA." *Quaternary Science Reviews*, 1–19.

[15] Orme, A.R, and A.J. Orme. 1993. "Late Pleistocene Oscillations of Lake Owens, Eastern California." *Geological Society of America Abstracts with Programs*, *25*: 129–130.

[16] Benson, L., Kashgarian, M., Rye, R., Lund, S., Paillet, F., and Smoot, J. 2002. "Holocene Multidecadal and Multicentennial Droughts Affecting Northern California and Nevada." *Quaternary Science Review*, *21*: 659–682.

records indicate that the lake may have dried into a playa.[17] The lake began its most recent desiccation period in the late 1800s due to water diversions within the Owens Valley and then complete desiccation by 1924 associated with diversion of the entire flow of the Owens River and its tributaries in to the Los Angeles Aqueduct.[18] By the mid-1920s, Owens Lake had become a dry playa, only to receive water intermittently from 1938 through 1986.[19]

The geomorphology of the proposed project / proposed action is characterized by aeolian, alluvial, lacustrine, and anthropogenic features (Figure 2.1.5.1-3, *Geomorphic Map of the Keeler Dunes Area*). The proposed project / proposed action study area consists mainly of active aeolian sand sheets and dunes and coppice and vegetated dunes overlying alluvial surfaces. Many of the geomorphologic features are modern, with aeolian and alluvial features formed as recent as the late 20th century.[20]

3.5.2.2 SEISMICITY

The proposed project / proposed action is located within a seismically active region. Potential hazards that can result from seismic activities include surface rupture, ground shaking, liquefaction, and landslides. According to surveys of the region, numerous faults cut across near-surface and surface material and are considered active or potentially active. Of the four national earthquake zones, ranging from 1 to 4 with 4 posing the largest danger, the Owens Valley is classified as a Seismic Zone 4.[21]

Four major fault zones occur in the Owens Lake area, trending roughly north-south to northwest-southeast. The Sierra Nevada Frontal Fault System, the westernmost fault zone, exists along the east side of the Sierra Nevada Mountains and includes the Keough, Birch Creek, Shepard Creek, Whitney Portal, Olancha, and Haiwee Sections.[22] This fault zone is not continuous along the entire length of the Sierra front, but is a complex system of faults and down-dropped blocks.

The second fault zone (from west to east) is the Owens Valley Fault Zone, in the middle of the Owens Valley north of the Alabama Hills, extending south along the west side of Owens Lake and terminating near the town of Olancha.[23] The third fault system, the Owens River Fault, is largely a strike-slip fault

[17] Li, H-C., Bischoff, J.L., Ku, T.L., Lund, S.P., and Stott, L.D. 2000. "Climate Variability in East Central California during the Past 1000 Years Reflected by High Resolution Geochemical and Isotopic Records from Owens Lake Sediments." *Quaternary Research*, *54*: 189–197.

[18] Smith, G.I., and Bischoff, J.L., Editors. 1993. "Core O.L. 92 from Owens Lake, Southeast California." U.S. Department of the Interior, U.S. Geological Survey, Open File Report 93-683. Menlo Park, CA.

[19] Stine, S. 1994. *Late Holocene Fluctuations of Owens Lake, Inyo County, California*. Prepared for: Far Western Anthropological Research Group, Inc., Davis, CA.

[20] Bacon, S, and N. Lancaster. November 2012. Late Holocene Stratigraphy and Chronology of Keeler Dunes Area Final Report by the Desert Research institute to the Great Basin Unified Air Pollution Control District. Available at: http://www.gbuapcd.org/keelerdunes/originanddevelopment/finalstaffreport/Attachment%20E%20-%20Stratigraphy%20Chronology%20and%20Sand%20Source%20Analysis/Lancaster%20and%20Bacon%202012a_Late%20Holocene%20stratigraphy%20and%20chronology_Final20121116.pdf

[21] California Seismic Safety Commission. 2005. *Homeowner's Guide to Earthquake Safety*. Sacramento, CA. Available at: http://www.seismic.ca.gov/pub/CSSC_2005-01_HOG.pdf

[22] Slemmons, D.B., Vittori, E., Jayko, A.S., Carver, G.A., Bacon, S.N. 2008. *Quaternary Fault and Lineament Map of Owens Valley, Inyo County, Eastern California*. Geological Society of America. Boulder, Colorado.

[23] Slemmons, D.B., Vittori, E., Jayko, A.S., Carver, G.A., Bacon, S.N. 2008. *Quaternary Fault and Lineament Map of Owens Valley, Inyo County, Eastern California*. Geological Society of America. Boulder, Colorado.

zone that extends south-southeast along the Owens River north of Owens Lake through the Owens River delta and the center of Owens Lake Bed.[24]

The eastern side of Owens Valley is bounded by the Inyo-White Mountain Fault Zones along the western margin of the Inyo and White Mountains.[25] Both the Sierra Nevada and Owens Valley Fault Zones are capable of generating earthquakes with a magnitude of 8.0 or greater, which would impact the proposed project / proposed action study area. Historic earthquakes in this region include the 1872 Owens Valley earthquake along the Owens Valley Fault, with a magnitude of 7.6–8.0,[26] and the earthquake swarms of May 1980 in the Long Valley Caldera, which resulted in four magnitude 6.0 earthquakes in quick succession.[27,28]

Although there are three APFEZs designated along the western side of Owens Lake, there are no APEFZ faults mapped within the proposed project / proposed action study area.[29,30,31] Furthermore, the proposed project / proposed action study area is not delineated by the CGS under the Seismic Hazards Zonation Program (SHZP). This program assesses the effects of strong ground shaking, liquefaction, landslides, or other ground failure to provide a statewide program to assist cities and counties in fulfilling their responsibilities for protecting the public health and safety from the effects of strong seismic shaking and related ground failure.

3.5.2.3 Ground Shaking

Ground shaking is a potential seismic danger resulting from earthquakes that may occur in the region. Several factors contribute to the significance of ground shaking during an earthquake, including the proximity of the area to a fault or fault system, the depth of earthquake, the location of the epicenter, the magnitude of the earthquake, and the geologic substrate. Movement along any of the four fault zones in the region could result in ground shaking within the proposed project / proposed action study area. The study area is closest to the Inyo Mountain and Owens River Fault Zones, approximately 1.5 miles west of the Inyo Mountain Fault Zone and 3 miles east of the Owens River Fault Zone.[32]

All of California is at risk from seismic ground shaking, and as described previously, the Sierra Nevada and Owens Valley Fault Zones are both capable of generating earthquakes with a magnitude of 8.0 or greater. Despite this, the proposed project / proposed action study area is not delineated by the CGS as

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[24] Johnson et al. June, 1999. *Characterization of the Owens Lake Basin Hydrology System Inyo County, California*. Prepared for: Great Basin Unified Air Pollution Control District. Bishop, CA. Available at: ftp://gbuapcd.org/HydroReports/Hydrology%20Summary%20Report.pdf

[25] Slemmons, D.B., Vittori, E., Jayko, A.S., Carver, G.A., Bacon, S.N. 2008. *Quaternary Fault and Lineament Map of Owens Valley, Inyo County, Eastern California*. Geological Society of America. Boulder, Colorado.

[26] The true magnitude of the 1872 earthquake is not known but based on reports of the damage caused in buildings and landforms near the epicenter and the geographic extent of displacement along the fault strands and noticeable ground movement, the Richter scale magnitude is estimated to be between 7.6 to 8.0.

[27] Hill, D.P., Bailey, R.A., Sorey, M.L., Hendley, J.W., Stauffer, P.H. "Living With a Restless Caldera—Long Valley, California" U.S. *Geological Survey Fact Sheet 108-96*. Revised May 2000. Available at: http://pubs.usgs.gov/fs/fs108-96/

[28] California Seismic Safety Commission. 2005. *Homeowner's Guide to Earthquake Safety*. Sacramento, CA. Available at: http://www.seismic.ca.gov/pub/CSSC_2005-01_HOG.pdf

[29] State of California Special Studies Map. 1 January 1990. *Bartlett Quadrangle*. Revised Official Map. Sacramento, CA.

[30] State of California Special Studies Map. 1 January 1990. *Lone Pine Quadrangle*. Revised Official Map. Sacramento, CA.

[31] State of California Special Studies Map. 1 January 1990. *Olancha Quadrangle*. Revised Official Map. Sacramento, CA.

[32] Slemmons, D.B., Vittori, E., Jayko, A.S., Carver, G.A., Bacon, S.N. 2008. *Quaternary Fault and Lineament Map of Owens Valley, Inyo County, Eastern California*. Boulder, CO: Geological Society of America.

an APEFZ.[33] The proposed project / proposed action study area is not delineated by the CGS under the SHZP.[34]

3.5.2.4 SURFACE RUPTURE

Where earthquakes are large enough, or shallow enough, surface rupture can occur along the fault plane where it intersects the earth's surface. Geophysical surveys have revealed numerous fault strands on the bed of Owens Lake and surrounding areas, with most roughly following a northwest-southeast trend.[35] Despite the presence of faults in the region, the proposed project / proposed action study area is not delineated by the CGS as an APEFZ.[36] There are no recorded fault scarps in the proposed project / proposed action study area.[37]

3.5.2.5 LIQUEFACTION

Liquefaction occurs when saturated, cohesionless (low relative density) materials (usually sand or silty sand) are transformed from a solid to a near liquid state due to the increase in pore water pressure that can be caused by moderate to severe seismic ground shaking. In order for liquefaction to occur, the groundwater table must be close to the surface, the soil must be loosely packed, and ground shaking needs to be powerful enough to cause the soil to liquefy. The depth to groundwater in the proposed project / proposed action study area ranges from approximately 196 feet on the eastern border, east of SR 136, to within a few feet of the surface along the southwestern study area border. The soils in the proposed project / proposed action study area vary from loose gravels and sands to compact clays.[38] The conditions for liquefaction may be present along the historic shoreline, in the extreme southern portion of the proposed project / proposed action study area where the soils are finer texture and the groundwater is close to the surface. Due to the presence of coarse alluvial material over most of the rest of the proposed project / proposed action study area and the overall depth of the groundwater, the conditions for liquefaction over the rest of the proposed project / proposed action study area is considered to be low.

3.5.2.6 SUBSIDENCE

Subsidence is the gradual sinking of the earth's surface in a particular region. The ground in the Owens Valley is naturally subsiding through tectonic processes, but subsiding may also result from subsurface

[33] California Department of Conservation, California Geological Survey. Accessed 24 September 2012. Alquist-Priolo Earthquake Fault Zone Maps. Available at: http://www.quake.ca.gov/gmaps/ap/ap_maps.htm

[34] California Department of Conservation, California Geological Survey. Accessed 24 September 2012. Seismic Hazard Zonation Program. Available at: http://www.conservation.ca.gov/cgs/shzp/Pages/index.aspx

[35] Neponset Geophysical and Aquilla Geosciences, 1997, Final Report, Phase 3 and 4Seismic Program, Owens Lake, Inyo County, California, prepared for the Great Basin Unified Air Pollution Control District. Bishop, CA.

[36] California Department of Conservation, California Geological Survey. Accessed 24 September 2012. Alquist-Priolo Earthquake Fault Zone Maps. Available at: http://www.quake.ca.gov/gmaps/ap/ap_maps.htm

[37] Slemmons, D.B., Vittori, E., Jayko, A.S., Carver, G.A., Bacon, S.N. 2008. *Quaternary Fault and Lineament Map of Owens Valley, Inyo County, Eastern California*. Geological Society of America. Boulder, Colorado.

[38] Bacon and Lancaster, 2012. Geomorphic Mapping of the Keeler Dunefield and Surrounding Areas Final Report. Available at: http://www.gbuapcd.org/keelerdunes/originanddevelopment/finalstaffreport/Attachment%20D%20-%20Geomorphology/Bacon%20and%20Lancaster%202012_FINAL_REPORT_Geomorphic_Mapping_of_the_Keeler_Dunefield_and_Surrounding_Areas20121114.pdf

resource extraction, such as gas or water extraction.[39] The depressurizing and dewatering of the clays resulting from possible groundwater extraction in the Owens Lake area are considered to be the primary mechanism for potential ground surface subsidence.[40] Subsidence may occur on the lake bed with large-scale groundwater development but not within the proposed project / proposed action study area.

3.5.2.7 GROUNDWATER

The District has conducted an analysis of groundwater beneath the Keeler Dunes utilizing available data from the existing groundwater wells in the area and ground surface elevation data.[41] The groundwater elevation is approximately 3,614 feet above MSL within the proposed project / proposed action study area. Depth to groundwater from the ground surface across the proposed project / proposed action study area ranges from approximately 196 feet on the eastern border, east of SR 136, to within a few feet of the surface along the southwestern border. The depth to groundwater in the dust control areas is estimated to range from less than 70 feet to less than 10 feet. There are no surface water bodies within the proposed project / proposed action study area.

Regional confined artesian aquifers are present under the lake bed, west of the proposed project / proposed action study area, and display an overall upward movement of water. Groundwater from the alluvial fans along the Inyo Mountains flows to the west toward Owens Lake and supplies many of the springs and seeps near the historic shoreline.[42]

3.5.2.8 LANDSLIDES

Landslides result from unstable slopes that loose cohesion and collapse. Contributing factors to landslides include weakened bedrock, soil erosion, heavy and consistent rainfall, ground shaking from earthquake activity, and fire, as well as by human alteration of the surrounding environment. The proposed project / proposed action study area will not be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the proposed project / proposed action, potentially resulting in on- or off-site landslides or lateral spreading. Although the Sierra Nevada Mountain front and White Mountains have slopes steep enough to initiate a landslide in seismic events, the proposed project / proposed action study area is located on relatively flat land well away from the mountain slopes.

3.5.2.9 SOIL MAP UNITS

The soils in the proposed project / proposed action study area are primarily coarse gravels and silts to sands formed from alluvium from the Inyo Mountains and aeolian sand deposits, respectively.[43] Soil

[39] Johnson, K., Eliason, J., Maddox, G., Brooks, T. June 1999. *Characterization of the Owens Lake Basin Hydrology System, Inyo County, California*. Bishop, CA. Available at: ftp://gbuapcd.org/HydroReports/Hydrology%20Summary%20Report.pdf

[40] Johnson, K., Eliason, J., Maddox, G., Brooks, T. June 1999. *Characterization of the Owens Lake Basin Hydrology System, Inyo County, California*. Bishop, CA. Available at: ftp://gbuapcd.org/HydroReports/Hydrology%20Summary%20Report.pdf

[41] Great Basin Unified Air Pollution Control District, unpublished data analysis, 2012.

[42] Conway, C, 1997.Observation of Ephemeral Flows and Estimation of Recharge from the Inyo and Coso Mountains, Owens Dry Lake, California, Master of Science Thesis, University of Nevada, Reno, Desert Research Institute,

[43] Bacon and Lancaster, 2012. Geomorphic Mapping of the Keeler Dunefield and Surrounding Areas Final Report. Available at: http://www.gbuapcd.org/keelerdunes/originanddevelopment/finalstaffreport/Attachment%20D%20-

composition varies with depth and can include gravels and silts. Over most of the proposed project / proposed action study area, aeolian sand deposits form thin sand sheets to distinct dune forms. Some of the large dunes in the southern portion of the area can reach heights of 15–20 feet and are actively mobile.

Four geomorphic feature types have been previously mapped for the Keeler Dunefield and Surrounding Areas study, which also overlap with the proposed project / proposed action area and APE: aeolian, alluvial, lacustrine, and anthropogenic (Figure 2.1.5.1-3).[44]

Aeolian features make up the majority (51.3 percent) of the Keeler dune field area and include active dune, active sand sheet, sand sheet with coppice dunes, and vegetated dune landform units.[45] The active sand dunes are generally low in height (2–3 meters; 6–10 feet) and are concentrated in the southwest portion of the proposed project / proposed action area.[46] Active sand sheets are generally flat planar features of sand less than 4 feet (1.2 meters) thick that move across and cover older alluvial surfaces and shoreline features.[47] Sand sheets with coppice dunes are areas of active sand that form low, vegetated sand mounds generally under 3 feet (1 meter) high.[48] Vegetated mounds may reach 10 feet (3 meters) in height, and are found along the western portion of the proposed project / proposed action area.[49] The aeolian sands are typically medium-coarse grained and poorly to moderately sorted.

%20Geomorphology/Bacon%20and%20Lancaster%202012_FINAL_REPORT_Geomorphic_Mapping_of_the_Keeler_Dunefield_and_Surrounding_Areas20121114.pdf

[44] Bacon and Lancaster, Desert Research Institute. November 2012. Geomorphic Mapping of the Keeler Dunefield and Surrounding Areas Final Report. Available at: http://www.gbuapcd.org/keelerdunes/originanddevelopment/finalstaffreport/Attachment%20D%20-%20Geomorphology/Bacon%20and%20Lancaster%202012_FINAL_REPORT_Geomorphic_Mapping_of_the_Keeler_Dunefield_and_Surrounding_Areas20121114.pdf

[45] Bacon and Lancaster, Desert Research Institute. November 2012. Geomorphic Mapping of the Keeler Dunefield and Surrounding Areas Final Report. Available at: http://www.gbuapcd.org/keelerdunes/originanddevelopment/finalstaffreport/Attachment%20D%20-%20Geomorphology/Bacon%20and%20Lancaster%202012_FINAL_REPORT_Geomorphic_Mapping_of_the_Keeler_Dunfield_and_Surrounding_Areas20121114.pdf

[46] Lancaster and Bacon, Desert Research Institute. November 2012. Late Holocene *S*tratigraphy and *C*hronology of Keeler Dunes *A*rea FinalReport. Available at: http://www.gbuapcd.org/keelerdunes/originanddevelopment/finalstaffreport/Attachment%20E%20-%20Stratigraphy%20Chronology%20and%20Sand%20Source%20Analysis/Lancaster%20and%20Bacon%202012a_Late%20Holocene%20stratigraphy%20and%20chronology_Final20121116.pdf

[47] Lancaster and Bacon,Desert Research Institute. November 2012. Late Holocene *S*tratigraphy and *C*hronology of Keeler Dunes *A*rea FinalReport. Available at: http://www.gbuapcd.org/keelerdunes/originanddevelopment/finalstaffreport/Attachment%20E%20-%20Stratigraphy%20Chronology%20and%20Sand%20Source%20Analysis/Lancaster%20and%20Bacon%202012a_Late%20Holocene%20stratigraphy%20and%20chronology_Final20121116.pdf

[48] Lancaster and Bacon, Desert Research Institute. November 2012. Late Holocene *S*tratigraphy and *C*hronology of Keeler Dunes *A*rea FinalReport. Available at: http://www.gbuapcd.org/keelerdunes/originanddevelopment/finalstaffreport/Attachment%20E%20-%20Stratigraphy%20Chronology%20and%20Sand%20Source%20Analysis/Lancaster%20and%20Bacon%202012a_Late%20Holocene%20stratigraphy%20and%20chronology_Final20121116.pdf

[49] Lancaster and Bacon, Desert Research Institute. November 2012. Late Holocene *S*tratigraphy and *C*hronology of Keeler Dunes *A*rea FinalReport. Available at: http://www.gbuapcd.org/keelerdunes/originanddevelopment/finalstaffreport/Attachment%20E%20-%20Stratigraphy%20Chronology%20and%20Sand%20Source%20Analysis/Lancaster%20and%20Bacon%202012a_Late%20Holocene%20stratigraphy%20and%20chronology_Final20121116.pdf

The ***alluvial features*** mapped in the Keeler dune field area include four alluvial fan units of varying age and a flood deposit unit. Generally, the alluvial fans consist of coarse-grained poorly sorted sedimentary deposits that are overlain by younger aeolian units throughout the Keeler dune field area.[50] Flood deposits are mostly composed of silt and fine sand sediments deposited as laterally restricted units along the base of the alluvial fan.[51]

The ***lacustrine features*** mapped in the Keeler dune field area include four lake plain units, two beach ridge units, and two terrace units of varying form and age. The lake plain units are found primarily along the western portion of the area and are sediments deposited on the former lake bottoms with surface cover ranging from a gravely desert pavement to tufa.[52] Beach ridges are sandy ridges parallel to former shorelines that formed through wave action.[53] The terrace units are the oldest units mapped in the Keeler dune field area and consist of well-developed ridges reaching heights of 6–10 feet (2–3 meters).[54] These older unites are found along the southeastern portion of the area outside of the proposed project / proposed action study area.

Anthropomorphic features are areas of significant human disturbance to the natural landscape, such as those that result from road construction.[55] These features are mainly present on the northeastern edge of the Keeler dune field area.

The active dune field deposits overlay older sediment. The northern part of the dune field overlies early to late Holocene (approximately 12,000 years ago to present) alluvial fan deposits, while the southern part of the dune field also overlies late Holocene deposits, alluvial fan deposits, as well as Holocene lacustrine (lake) deposits associated with ancient Owens Lake. Between the dune field and

[50] Bacon and Lancaster, Desert Research Institute. November 2012. Geomorphic Mapping of the Keeler Dunefield and Surrounding Areas Final Report. Available at: http://www.gbuapcd.org/keelerdunes/originanddevelopment/finalstaffreport/Attachment%20D%20-%20Geomorphology/Bacon%20and%20Lancaster%202012_FINAL_REPORT_Geomorphic_Mapping_of_the_Keeler_Dunfield_and_Surrounding_Areas20121114.pdf

[51] Bacon and Lancaster, Desert Research Institute. November 2012. Geomorphic Mapping of the Keeler Dunefield and Surrounding Areas Final Report. Available at: http://www.gbuapcd.org/keelerdunes/originanddevelopment/finalstaffreport/Attachment%20D%20-%20Geomorphology/Bacon%20and%20Lancaster%202012_FINAL_REPORT_Geomorphic_Mapping_of_the_Keeler_Dunfield_and_Surrounding_Areas20121114.pdf

[52] Bacon and Lancaster, Desert Research Institute. November 2012. Geomorphic Mapping of the Keeler Dunefield and Surrounding Areas Final Report. Available at: http://www.gbuapcd.org/keelerdunes/originanddevelopment/finalstaffreport/Attachment%20D%20-%20Geomorphology/Bacon%20and%20Lancaster%202012_FINAL_REPORT_Geomorphic_Mapping_of_the_Keeler_Dunfield_and_Surrounding_Areas20121114.pdf

[53] Bacon and Lancaster, Desert Research Institute. November 2012. Geomorphic Mapping of the Keeler Dunefield and Surrounding Areas Final Report. Available at: http://www.gbuapcd.org/keelerdunes/originanddevelopment/finalstaffreport/Attachment%20D%20-%20Geomorphology/Bacon%20and%20Lancaster%202012_FINAL_REPORT_Geomorphic_Mapping_of_the_Keeler_Dunfield_and_Surrounding_Areas20121114.pdf

[54] Bacon and Lancaster, Desert Research Institute. November 2012. Geomorphic Mapping of the Keeler Dunefield and Surrounding Areas Final Report. Available at: http://www.gbuapcd.org/keelerdunes/originanddevelopment/finalstaffreport/Attachment%20D%20-%20Geomorphology/Bacon%20and%20Lancaster%202012_FINAL_REPORT_Geomorphic_Mapping_of_the_Keeler_Dunfield_and_Surrounding_Areas20121114.pdf

[55] Bacon and Lancaster, Desert Research Institute. November 2012. Geomorphic Mapping of the Keeler Dunefield and Surrounding Areas Final Report. Available at: http://www.gbuapcd.org/keelerdunes/originanddevelopment/finalstaffreport/Attachment%20D%20-%20Geomorphology/Bacon%20and%20Lancaster%202012_FINAL_REPORT_Geomorphic_Mapping_of_the_Keeler_Dunfield_and_Surrounding_Areas20121114.pdf

the exposed historic lake bed, the surface soil is predominately clays and silts associated with Late Holocene Owens Lake. In places within the dune field, there are scattered areas of thin (up to 20 centimeters) laminated silt deposits that overlie horizontally laminated or cross-bedded sand of aeolian origin.[56] Mineralogical analyses indicate that sand that composes the dune field was derived from the Owens River system.[57] The mineral composition of the sand in the Keeler Dunes is dominated by quartz and feldspar.[58]

3.5.2.10 Expansive Soils

Soils that expand and contract in volume ("shrink-swell" pattern) are considered to be expansive and may cause damage to above ground structures as a result of density changes that shift overlying materials. Fine-grain clay sediments are most likely to exhibit shrink-swell patterns in response to changing moisture levels. As described above, the majority of soils in the proposed project / proposed action study area are gravels to coarse sands. These types of soils do not exhibit shrink-swell patterns and are not considered expansive soils.

3.5.2.11 Differential Settlement

Differential settlement is the uneven settlement of a foundation due to unequal compaction of the surrounding soil. The conditions for differential settlement may be present along the historic shoreline, in the extreme southern portion of the proposed project / proposed action study area where the soils are finer-texture and the groundwater is close to the surface. Due to the presence of coarse alluvial material over most of the rest of the proposed project / proposed action study area and the overall depth of the groundwater, the conditions for differential settlement over the rest of the proposed project / proposed action study area is considered to be low.

3.5.2.12 Mineral Resources

Inyo County is rich in mineral resources. Mineral resources identified in the Inyo Mountains east of the proposed project / proposed action study area include gold, silver, lead, zinc, tungsten, talc, and bismuth.[59] The proposed project / proposed action study area is located on an alluvial fan extending west from the Inyo Mountains. Trace amounts of valued mineral resources may have been transported into the proposed action study area through the alluvial fan, but there are no mineable mineral resources identified within the proposed project / proposed action study area since any potential material is dispersed through alluvial action.

[56] Desert Research Institute. 9 March 2012. Development of the Keeler Dunefield, Part 1 – "Analysis of Aerial Photographs and Satellite Images." Reno, NV.

[57] Desert Research Institute. 9 March 2012. Development of the Keeler Dunefield, Part 1 – "Analysis of Aerial Photographs and Satellite Images." Reno, NV.

[58] Desert Research Institute. 9 March 2012. Development of the Keeler Dunefield, Part 1 – "Analysis of Aerial Photographs and Satellite Images." Reno, NV.

[59] Conrad, J., Kilburn, J., Blakely, R. 1987. "Mineral Resources of the Southern Inyo Wilderness Study Area, Inyo County, California." *U.S. Geological Survey Bulletin 1705-B*. Washington D.C.

3.6 PALEONTOLOGICAL RESOURCES

Paleontological resources, or fossils, are the remains and/or traces of prehistoric plant and animal life (typically older than 10,000 years old). This section describes federal, state, and local regulations applicable to paleontological resources. It also describes the environmental setting with regard to geologic deposits on the proposed project / proposed action site and potential for these deposits to contain paleontological resources. Information contained in this section is summarized from the Keeler Dunes Dust Control Project Paleontological Survey Report (Appendix F of this EIR/EA).

3.6.1 REGULATORY FRAMEWORK

3.6.1.1 FEDERAL

Paleontological Resources Preservation Act (Omnibus Act)

The intent of the federal Paleontological Resources Preservation Act of 2009 (PRPA) is to regulate the collection of vertebrate fossils and other rare and scientifically significant fossils. Under the PRPA, collection should be conducted by qualified researchers who obtain a permit from the appropriate state or federal agency and agree to donate any materials recovered to recognized public institutions where they will remain accessible to the public and to other researchers. All federal land management agencies are required to develop regulations that satisfy the stipulations of the PRPA.

3.6.1.2 STATE

California Environmental Quality Act

Paleontological resources are afforded protection by environmental legislation set forth under CEQA. Appendix G (part V) of the CEQA Guidelines provides guidance relative to significant impacts on paleontological resources, indicating that a proposed project would have a significant impact on paleontological resources if it will disturb or destroy a unique paleontological resource or site or unique geologic feature. Section 5097.5 of the California Public Resources Code specifies that any unauthorized removal of paleontological remains is a misdemeanor. Furthermore, California Penal Code Section 622.5 sets the penalties for damage or removal of paleontological resources.

Public Resources Code, Section 5097.5

Public Resources Code, Section 5097.5 defines as a misdemeanor the unauthorized disturbance or removal of archaeological, historic, or paleontological resources located on public lands.

3.6.2 AFFECTED ENVIRONMENT

The affected environment addressed in this portion of the analysis is defined as the proposed project / proposed action study area. The proposed project / proposed action study area, measuring approximately 870.6 acres, is located on BLM- and LADWP-owned and administered lands in Inyo

County, California. Not all portions of the proposed project / proposed action study area will be subjected to DCM implementation.

3.6.2.1 Area of Potential Effect

The Area of Potential Effect (APE) for paleontological resources measures 295.4 acres and consists of the portions of the proposed project / proposed action study area that have been designated for DCM implementation, staging areas, and temporary access routes (see Figure 3.4.2.1-1, *Area of Potential Effects for Cultural Resources*). The APE has the potential to be subjected to direct effects, such as minimal ground disturbance resulting from the planting and establishment of native vegetation, construction of temporary access routes, and a temporary water delivery system. The APE includes a 100-foot buffer area surrounding the area of dust control implementation that will account for indirect effects such as dust, foot traffic, and so forth.

3.6.2.2 Paleontological Setting

Paleontological Context

The geologic stratigraphy of the White-Inyo Range encompasses a period of approximately 700 million years, with deposits dating from the Precambian to the Holocene.[1] The Owens Valley forms the westernmost basin of the Great Basin physiographic province and collects a variety of sediments transported from the Sierra Nevada Mountains to the west and the White and Inyo Mountains to the east.[2]

During most of the Late Pleistocene, Owens Lake was an open-basin lake reaching high stands between approximately 3,756 feet (1,145 meters) and 3,805 feet (1,160 meters) above mean sea level. The Owens Lake basin has been closed from about 15,000 years ago through the Holocene to the present.[3] During closed-basin conditions there is no transport of material, either water or sediment, except through evaporation or wind transport.[4] The closed-basin conditions and multiple lake level oscillations at Owens Lake combined with tectonic subsidence of the valley floor make for a unique lacustrine paleontological environment.

Paleoenvironmental analyses indicate that the level of Owens Lake has varied substantially (oscillated) over the past approximately 27,000 calibrated years before present (cal yr BP).[5] Studies indicate the lake reached high stands between about 24,000 and 23,730 cal yr BP, 15,700 and 15,000 cal yr BP, and 7860 and 7650 cal yr BP.[6,7] Period of low lake level were recorded between

[1] Nelson, Clemens A., Clarence A. Hall, Jr., and W.G. Ernst. 1991. Geologic History of the White-Inyo Range. In *Natural History of the White Inyo-Range Eastern California*, edited by Clarence A. Hall, Jr., pp. 42-74. University of California Press, Berkeley.

[2] Hunt, C.B. 1967. *Physiography of the United States*. San Francisco, CA: W.H. Freeman and Company.

[3] Bacon, S.N., R.M. Burke, S.K. Pezzopane, and A.S. Jayko. 2006. "Last Glacial Maximum and Holocene Lake Levels of Owens Lake, Eastern California, USA." *Quaternary Science Reviews*, 1–19.

[4] Soil and Water West, Inc. 25 September 2001. *Owens Lakebed Survey (Revised).* Prepared by: Soil and Water West, Inc., P.O. Box 44666, Rio Rancho, NM. Prepared for: Great Basin Unified Air Pollution Control District, Bishop, CA.

[5] Bacon, S.N., R.M. Burke, S.K. Pezzopane, and A.S. Jayko. 2006. "Last Glacial Maximum and Holocene Lake Levels of Owens Lake, Eastern California, USA." *Quaternary Science Reviews*, 1–19.

[6] Bacon, S.N., R.M. Burke, S.K. Pezzopane, and A.S. Jayko. 2006. "Last Glacial Maximum and Holocene Lake Levels of Owens Lake, Eastern California, USA." *Quaternary Science Reviews*, 1–19.

approximately 18,920 and 15,590 cal yr BP, at 11,200 cal yr BP, and between 6500 and 4400 cal yr BP.[8] Lake oscillations continued throughout the Holocene.[9]

3.6.2.3 RECORDS SEARCH

A. Prior Research

The potential for paleontological resources within the proposed project / proposed action study area was assessed using data obtained from record searches at the Natural History Museum of Los Angeles County (NHMLAC)[10] and the San Bernardino County Museum (SBCM).[11] The NHMLAC and the SBCM conducted thorough searches of their respective paleontology collection records for the locality and specimen data for the proposed project / proposed action study area. A detailed geomorphic map of Keeler Dunes was also reviewed to identify the geomorphic units that underlay the proposed project / proposed action study area.[12] The record searches indicate that there are no known vertebrate fossil localities recorded within the proposed project / proposed action study area; however, there are an abundance of known vertebrate fossil localities within the vicinity of the proposed project / proposed action study area.

The areas within the proposed project / proposed action area were evaluated for paleontological resources using the BLM's Potential Fossil Yield Classification System (PFYC).[13] In the PFYC system, geologic units are classified based on the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts, with a higher class number indicating a higher sensitivity. Five classes comprise the PFYC system and include: Class 1 – Very Low, Class 2 – Low, Class 3 – Moderate or Unknown, Class 4 – High, and Class 5 – Very High. This classification is applied to the geologic formation, member, or other distinguishable unit, preferably at the most detailed mappable level.

The results of the records searches and map review indicate that the surface geology of the study area primarily consists of aeolian, alluvium, and lacustrine units dating to the Quaternary Period (Pleistocene and Holocene Epochs). Most of the proposed project / proposed action area is characterized by recent aeolian deposits composed of active sand sheets and dunes interspersed

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[7] Orme, A.R, and A.J. Orme. 1993. "Late Pleistocene Oscillations of Lake Owens, Eastern California." *Geological Society of America Abstracts with Programs*, *25*: 129–130.

[8] Benson, L., Kashgarian, M., Rye, R., Lund, S., Paillet, F., and Smoot, J. 2002. "Holocene Multidecadal and Multicentennial Droughts Affecting Northern California and Nevada." *Quaternary Science Review*, *21*: 659–682.

[9] Li, H-C., Bischoff, J.L., Ku, T.L., Lund, S.P., and Stott, L.D. 2000. "Climate Variability in East Central California during the Past 1000 Years Reflected by High Resolution Geochemical and Isotopic Records from Owens Lake Sediments." *Quaternary Research*, *54*: 189–197.

[10] McLeod, Samuel, Natural History Museum of Los Angeles County, Los Angeles, CA. 11 October 2011. Letter response to Clarus Backes, Sapphos Environmental, Inc., Pasadena, CA.

[11] Scott, Eric, San Bernardino County Museum, Redlands, CA. 28 February 2012. Letter response to Tiffany Clark, Sapphos Environmental, Inc., Pasadena, CA.

[12] Bacon, S, and N. Lancaster. November 2012. Late Holocene Stratigraphy and Chronology of Keeler Dunes Area Final Report by the Desert Research institute to the Great Basin Unified Air Pollution Control District. Available at: http://www.gbuapcd.org/keelerdunes/originanddevelopment/finalstaffreport/Attachment%20E%20-%20Stratigraphy%20Chronology%20and%20Sand%20Source%20Analysis/Lancaster%20and%20Bacon%202012a_Late%20Holocene%20stratigraphy%20and%20chronology_Final20121116.pdf

[13] Bureau of Land Management. 2008–2009. *Guidelines for Determining Paleontological Significance*. Available at: http://www.blm.gov/pgdata/etc/medialib/blm/wo/Information_Resources_Management/policy/im_attachments/2008.Par.69083.File.dat/IM2008-009_att1.pdf

with coarse quaternary alluvial fan sediments; these alluvial deposits originate from the adjacent Inyo Mountains and typically do not contain significant vertebrate fossils.[14] These geologic units exhibit a Class 2 – Low sensitivity in the PFYC system due to their young age (less than 10,000 years BP). Surficial lacustrine sediments dating to the late Holocene are also located along the western edge of the proposed project / proposed action study area. The Holocene lake sediments were deposited during high stands of Owens Lake during the Holocene and are therefore more likely to contain the fossil remains of vertebrates and invertebrates dating to that epoch.[15] Paleontological resources surveys conducted along the lake margin immediately northwest of Keeler Dunes in 2003 and 2008 identified a number of Late Pleistocene and recent faunal remains in the lacustrine deposits located along the base of the quaternary alluvial fan on the bed of Owens Lake.[16,17] In summary, the surface of the proposed project / proposed action area and APE consist of Class 2 – Low sensitivity dune sand and alluvium and small areas of Class 4 – High sensitive lacustrine deposits. The Class 4 – High sensitive lacustrine deposits generally occur at much greater depths below the Class 2 Low sensitivity surface. However, portions of Staging Area 1, Staging Area 2, and temporary access the Staging Area 3 may be within lacustrine deposits near the surface. Given the known presence of paleontological resource localities associated with lacustrine deposits in the vicinity of the proposed project / proposed action, these areas of the APE have a Class 4 – High paleontological sensitivity.

B. Previously Recorded Resources

Recent paleontological resources surveys conducted along the lake margin immediately northwest of Keeler Dunes have identified a number of Late Pleistocene and recent faunal remains in the lacustrine deposits located along the base of the Keeler alluvial fan.[18,19] Vertebrate fossil specimens identified during this work include artiodactyl, rodent, pocket gopher (*Thomomys bottae*), duck (*Aythya affinis*), and western meadowlark (*Sturnella neglecta*); Holocene shells, consisting of California floater (*Anodonta californiensis*), Ram's horn (*Helisoma newberryi*), and physa (*Physella*), were also found during this work.[20] Located approximately 3 miles northwest of the Keeler Dunes area, fossil localities have been discovered in Quaternary alluvium that contained extinct horse (*Equus*), camel (*Camelops*), and bison (*Bison*).[21] The fossil remains of mammoth

[14] McLeod, Samuel, Natural History Museum of Los Angeles County, Los Angeles, CA. 11 October 2011. Letter response to Clarus Backes, Sapphos Environmental, Inc., Pasadena, CA.

[15] Scott, Eric, San Bernardino County Museum, Redlands, CA. 28 February 2012. Letter response to Tiffany Clark, Sapphos Environmental, Inc., Pasadena, CA.

[16] Gust, S. May 2003. *Paleontological Assessment Report and Mitigation Plan for the Owens Valley Project, Inyo County, California*. Prepared for: Sapphos Environmental, Inc., Pasadena, CA. Prepared by: Cogstone Resource Management, Inc., Santa Ana, CA.

[17] Gust, S., and K. Scott. 2008. *Paleontological Evaluation of 2008 Supplemental Control Requirements for the Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan, Inyo County, California*. Prepared for: Sapphos Environmental, Inc., Pasadena, CA. Prepared by: Cogstone Research Management, Inc., Santa Ana, CA.

[18] Gust, Sherri. 2003. Paleontological Assessment Report and Mitigation Plan for the Owens Valley Project, Inyo County, California. Report prepared for Sapphos Environmental, Inc., Pasadena, CA. Cogstone Resource Management Inc., Santa Ana, CA.

[19] Gust, Sherri, and Kim Scott. 2008. Paleontological Evaluation of 2008 Supplemental Control Requirements for the Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan, Inyo County, California. Report prepared for Sapphos Environmental, Inc., Pasadena, CA. Cogstone Resource Management Inc., Santa Ana, CA.

[20] Gust, Sherri. 2003. *Paleontological Assessment Report and Mitigation Plan for the Owens Valley Project, Inyo County, California*. Prepared by Cogstone Resource Management Inc., Santa Ana, CA.

[21] Streitz, R. and M.C. Stinson. 1974. Geologic Map of California: Death Valley Sheet. Los Angeles, CA: California

(*Mammuthus*) and mountain lion (*Felis concolor*) have also been identified in the Lone Pine region north of Owens Lake along the Owens River.[22,23,24] Finally, a core sample of lake bed sediments taken in the southwestern portion of Owens Lake recovered paleofaunal remains and fossil fish identified as the Owens chub (*Gila bicolor snyderi*) and the Owens sucker (*Catostomus fumeiventris*).[25]

3.6.2.4 FIELD SURVEY AND SITE RECORDATION RESULTS

No paleontological resources were identified during the paleontological surveys of the APE in areas that are subject to ground disturbance by operations of the proposed project / proposed action. However, results of the field visit confirmed the presence of lacustrine deposits in portions the staging areas and along the access routes. These geological units have a high paleontological sensitivity. As a result, should ground disturbances exceed one foot, spot checking / monitoring by a qualified paleontologist is recommended; however, the project is not anticipated to exceed over a foot of ground disturbance. As a result, no further mitigation measures are recommended for this proposed project / proposed action.

[22] Hayes, OP. 1927. The Pleistocene of the western region of North American and its vertebrate animals. Carnegie Institute of Washington Publication 322(B):1-346.

[23] Jefferson, G.T. 1989. Late Pleistocene and earliest Holocene fossil localities and vertebrate taxa from the western Mojave Desert. In *The West-central Mojave Desert: Quaternary Studies between Kramer and Afton Canyon*, edited by G.T. Jefferson, pp. 27-40. SBCM Association Special Publication, Redlands, CA.

[24] Jefferson, G.T. *A Catalogue of late Quaternary Vertebrates from California: Part Two, Mammals*. Technical Reports No. 7. Natural History Museum of Los Angeles County, Los Angeles.

[25] Sapphos Environmental, Inc. 2008. *2008 Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan Final Subsequent Environmental Impact Report*, p.3.3-9. Prepared for Great Basin Unified Air Pollution Control District. Prepared by: Sapphos Environmental, Inc., Pasadena, CA.

3.7 GREENHOUSE GAS EMISSIONS AND GLOBAL CLIMATE CHANGE

Gases that absorb and reemit infrared radiation in the atmosphere are called greenhouse gases (GHGs), in reference to the fact that greenhouses retain heat. Common GHGs include carbon dioxide (CO_2), water vapor (H_2O), methane (CH_4), nitrous oxide (N_2O), fluorinated gases, and ozone (O_3). Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associates with agricultural practices and landfills. Man-made GHGs, many of which have greater heat-absorption potential than CO_2, include fluorinated gases such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6).

The accumulation of GHGs in the atmosphere regulates Earth's temperature. Without the natural heat-trapping effect of GHGs, Earth's surface would be about 34°C (degrees Celsius) cooler. However, it is believed that emissions from human activities, particularly the consumption of fossil fuels for electricity production and transportation, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations. This phenomenon is commonly referred to as climate change.

3.7.1 REGULATORY FRAMEWORK

3.7.1.1 FEDERAL

In 1988, the United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change (IPCC) to assess "the scientific, technical and socioeconomic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation." The most recent reports of the IPCC have emphasized the scientific consensus that real and measurable changes to the climate are occurring; that they are caused by human activity; and that significant adverse impacts on the environment, the economy, and human health and welfare are unavoidable.

The United States joined other countries around the world in signing the United Nations Framework Convention on Climate Change (UNFCCC). The UNFCCC was entered on March 21, 1994. Under the convention, governments gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change.

On December 7, 2009, the U.S. Environmental Protection Agency (EPA) Administrator signed two distinct findings regarding GHG under Section 202(a) of the Federal Clean Air Act:

- Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed GHG (CO_2, CH_4, N_2O, hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], and SF6) in the atmosphere threaten the public health and welfare of current and future generations.

- Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed GHG from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which, threatens public health and welfare.

A. Bureau of Land Management Guidance on Greenhouse Gases

On September 14, 2009, Secretary of the Interior Ken Salazar issued Order No. 3289, addressing the impacts of climate change on domestic water, land, and other natural and cultural resources. The Order establishes an approach for increasing understanding of climate change and responding to potential climate change related impacts as relevant to the resources that the Department of the Interior (DOI) manages. The document specifically identifies potential impact areas including potential changes in flood risk and water supply, sea level rise, changes in wildlife and habitat populations and their migration patterns, new invasions of exotic species, and increased threat of wildland fire. The Order includes Climate Change Response Planning Requirements, which require each bureau and office within the DOI (including BLM) to consider and analyze potential climate change impacts when undertaking long-range planning exercises, setting priorities for scientific research and investigations, developing multiyear management plans, and making major decisions regarding potential use of resources under DOI's purview.

B. Draft National Environmental Policy Act Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions

On February 18, 2010, the White House Council on Environmental Quality (CEQ) released, for public review and comment, a draft Guidance Memorandum for Heads of Federal Departments and Agencies on the consideration of GHG emissions and climate change impacts as part of compliance with NEPA.[1] All federal agency actions requiring NEPA review, except federal land and resource management activities, are covered by this Guidance. The draft Guidance provides formal guidance from CEQ to the federal agencies on the treatment of GHG emissions within NEPA: (1) the treatment of GHG emissions that may directly or indirectly result from a proposed federal action and (2) the analysis of potential climate change impacts upon a proposed federal action. In addition, the draft Guidance proposes several key elements for the examination of GHG emissions and climate change impacts:

- A "reference point" of 25,000 metric tons of direct CO_2-equivalent GHG emissions is proposed as an "indicator" to determine if a proposed federal action's anticipated GHG emissions warrant detailed consideration in a NEPA review. However, for indirect GHG emissions, there is no proposed reference point.

3.7.1.2 STATE

A. Executive Order S-3-05

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. Recognizing that California is particularly vulnerable to the impacts of climate change, Executive Order S-3-05 establishes statewide climate change emission reduction targets to reduce $CO_{2equivalent}$ (CO_{2e}) to the 2000 level (473 million metric tons) by 2010, to the 1990 level (427 million metric tons of CO_{2e}) by 2020, and to 80 percent below the 1990 level (85 million metric tons of CO_{2e}) by 2050 (Table 3.7.1.2-1, *California Greenhouse Gas Business-as-Usual Emissions and Targets*). In addition, the Cal/EPA

[1] The White House Council on Environmental Quality. 18 February 2010. *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*. Available at: http://www.whitehouse.gov/sites/default/files/microsites/ceq/20100218-nepa-consideration-effects-ghg-draft-guidance.pdf

Secretary is responsible for submitting biannual reports to the governor and state legislature that outline: (1) progress made toward reaching the emission targets, (2) impacts of global warming on California's resources, and (3) measures and adaptation plans to mitigate these impacts. To further ensure accomplishment of the targets, the California EPA Secretary created a Climate Action Team composed of representatives from the aforementioned agencies to implement global warming emission reduction programs and report on the progress made toward meeting the statewide GHG targets established in this executive order. In December 2005, the first report was released, which stated, "the climate change emission reduction targets [could] be met without adversely affecting the California economy," and "when all [the] strategies are implemented, those underway and those needed to meet the Governor's targets, the economy will benefit."[2]

TABLE 3.7.1.2-1
CALIFORNIA GREENHOUSE GAS BUSINESS-AS-USUAL EMISSIONS AND TARGETS

Year	1990	2000	2010	2020
Business-as-usual emissions* (million metric tons of CO_{2e})	427	473	532	596
Target emissions (million metric tons of CO_{2e})	—	—	473	427

Note: * Business-as-usual emissions reflect the projected emissions under a scenario without GHG control measures, where California would continue to emit GHGs at the same per capita rate. The California Air Resources Board (CARB) has not yet projected 2050 emissions under a business-as-usual scenario

B. Assembly Bill 32

Assembly Bill 32 (AB 32), also known as the Global Warming Solutions Act of 2006, is a California State Law that addresses climate change by establishing a comprehensive program to reduce greenhouse gas (GHG) emissions from all sources throughout the state. AB 32 requires that the California Air Resources Board (CARB) develop regulations and market mechanisms to reduce California's GHG emissions to 1990 levels by 2020. To achieve this goal, AB 32 mandates that CARB establish a quantified emissions cap; institute a schedule to meet the cap; implement regulations to reduce statewide GHG emissions from stationary sources; and develop tracking, reporting, and enforcement mechanisms to ensure that reductions are achieved.

C. Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California Recommended for Board Consideration

In October 2007, CARB published a list of 44 early action measures to reduce GHG emissions in California pursuant to AB 32. The early action measures identified by the CARB included previously approved discrete early action items, such as low carbon fuel standard, restriction on high global warming potential refrigerants, and landfill methane capture. Additional early actions such as smartway truck efficiency, tire inflation program, and anti-idling enforcement were recommended. This list reflected state guidance on GHG emission reduction measures that warrants consideration by the District.

[2] California Climate Action Team. 3 April 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature*. Sacramento, CA.

D. California Air Pollution Control Officers Association

In August 2010, the California Air Pollution Control Officers Association (CAPCOA) published guidance on quantifying GHG emissions mitigation measures. The guidance was a resource tool for local government to assess emission reductions from GHG mitigation measures. The guidance listed various purposes for quantifying GHG emission reduction, including voluntary reductions of GHG emissions, reductions to mitigate current or future GHG emissions at a project level, reductions for regulatory compliance with command and control regulations, permitting programs, cap-and-trade programs, mandatory reporting rule for specified stationary sources, and reductions to obtaining GHG emission credits. In addition, the guidance listed quantification concepts, approaches, and methodologies. Quantification methodologies for a selection of GHG emission reduction measures such as vegetation (including trees), construction equipment, and transportation were discussed. This guidance demonstrated state-recommended methods on how to quantify GHG emission mitigation measures that warrants consideration by the District.

3.7.2 AFFECTED ENVIRONMENT

Information in this section provides a summary of the effects and sources of GHGs and global climate change. Information in this section is derived from CARB sources, as well as data and research conducted by the IPCC. The discussion provided below provides an overview of GHGs currently generated on the proposed project / proposed action site, the carbon sequestration potential of the proposed project / proposed action site, an overview of global climate change, and the impacts that global climate change may have on California's resources.

3.7.2.1 PROPOSED PROJECT / PROPOSED ACTION SITE

The proposed project / proposed action is located on lands administered by the BLM and the LADWP. The proposed project / proposed action site is approximately 194 acres in size and is located within a 1.36-square-mile (870.6-acre) proposed project / proposed action study area. The proposed project / proposed action study area is located on the Keeler alluvial fan situated between the base of the Inyo Mountains to the east-northeast and the dried bed of Owens Lake to the west-southwest. The proposed project / proposed action study area extends approximately 2.5 miles to the northwest from the community of Keeler and is bisected by California State Route 136 (SR 136).

There are limited "point source" quantities of GHGs currently being produced on the proposed project / proposed action site in the form of emissions associated vehicle emissions from traffic on SR 136. These emissions are not considered a major GHG source, and as such, the existing use of the land is not a major or significant generator of GHGs. The existing sparse vegetation has little to no value for biomass carbon sequestration, and do not provide positive impacts related to GHG reductions.

3.7.2.2 GLOBAL CLIMATE CHANGE

Global climate change is a change in the average weather of the earth that is measured by temperature, wind patterns, precipitation, and storms over a long period of time. The baseline, against which these changes are measured, originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. The global climate is continuously changing, as evidenced by repeated episodes of substantial warming and cooling documented in the geologic record. The rate of change has typically been incremental, with warming and cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of

incremental warming, as glaciers have steadily retreated across the globe. However, scientists have observed an unprecedented acceleration in the rate of warming during the past 150 years. Global climate change is a documented effect. Although the degree to which the change is cause by anthropogenic (man-made) sources is still under study, the increase in warming has coincided with the global industrial revolution, which has seen the widespread reduction of forests to accommodate urban centers, agriculture, and the use of fossil fuels—primarily the burning of coal, oil, and natural gas for energy. The majority of scientists agree that anthropogenic sources are a main, if not primary, contributor to the global climate change warming.

The effects of increasing global temperature are far-reaching and extremely difficult to quantify. The scientific community continues to study the effects of global climate change. In general, increases in the ambient global temperatures as a result of increase GHGs is anticipated to result in rising seas levels, which could threaten coastal areas through accelerated coastal erosion, threats to levees and inland water systems and disruption to coastal wetlands and habitat.

If the temperature of the ocean warms, it is anticipated that the winter snow season would be shortened. Snowpack in the Sierra Nevada provides both water supply (runoff) and storage (within the snowpack before melting), which is a major source of supply for the state. According to a California Energy Commission (CEC) report, the snowpack portion of the supply could potentially decline by 70 percent to 90 percent by the end of the twenty-first century.[3] This phenomenon could lead to significant challenges securing an adequate water supply for a growing state population. Furthermore, the increased ocean temperature could result in increased moisture flux into the state; however, since this would likely increasingly come in the form of rain rather than snow in the high elevations, increased precipitation could lead to increased potential and severity of flood events, placing more pressure on California's levee/flood control system.

Sea level has risen approximately seven inches during the last century, and according to the CEC report, it is predicted to rise an additional 22 to 35 inches by 2100, depending on the future GHG emissions levels. If this occurs, resultant effects could include increased coastal flooding, saltwater intrusion, and disruption of wetlands. As the existing climate throughout California changes over time, mass migration of species, or failure of species to migrate in time to adapt to the perturbations in climate, could also result.

A. Public Health

Higher temperatures are expected to increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation are projected to increase from 25 percent to 35 percent under the lower warming range, to 75 percent to 85 percent under the medium warming range. In addition, if global background ozone levels increase as predicted in some scenarios, it may become impossible to meet local air quality standards. Air quality could be further compromised by increases in wildfires, which emit fine particulate matter that can travel long distances depending on wind conditions. The Climate Scenarios report indicates that large wildfires could become up to 55 percent more frequent if GHG emissions are not significantly reduced.

In addition, under the higher warming scenario, there could be up to 100 more days per year with temperatures above 90 degrees Fahrenheit in Los Angeles and 95 degrees Fahrenheit in Sacramento by 2100. This is a large increase over historical patterns and approximately twice the increase projected if

[3] California Energy Commission. 2006. *Scenarios of Climate Change in California: An Overview*. Sacramento, CA.

temperatures remain within or below the lower warming range. Rising temperatures will increase the risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat.

3.7.2.3 Sources and Global Warming Potentials of Greenhouse Gases

The State of California GHG Inventory performed by the CARB compiled statewide anthropogenic GHG emission and sinks. It includes estimates for CO_2, CH_4, N_2O, SF6, HFCs, and PFCs. The current inventory covers the years 1990 to 2004, and is summarized in Table 3.7.2.3-1, *State of California GHG Emissions by Sector*. Data sources used to calculate this GHG inventory include California and federal agencies, international organizations, and industry associations. The calculation methodologies are consistent with guidance from the IPCC. The 1990 emissions level is the sum total of sources and sinks from all sectors and categories in the inventory. The inventory is divided into seven broad categories in the inventory. These sectors include: agriculture, commercial, electricity generation, forestry, industrial, residential, and transportation.

TABLE 3.7.2.3-1
STATE OF CALIFORNIA GHG EMISSIONS BY SECTOR

Sector	Total 1990 Emissions (MMTCO2e)*	Percent of Total 1990 Emissions	Total 2004 Emissions (MMTCO2e)	Percent of Total 2004 Emissions
Agriculture	23.4	5 percent	27.9	6 percent
Commercial	14.4	3 percent	12.8	3 percent
Electricity generation	110.6	26 percent	119.8	25 percent
Forestry (excluding sinks)	0.2	<1 percent	0.2	<1 percent
Industrial	103.0 percent	24 percent	96.2	20 percent
Residential	29.7	7 percent	29.1	6 percent
Transportation	150.7	35 percent	182.4	38 percent
Forestry sinks	(6.7)		(4.7)	

Note: *MMTCO2e = Million metric tons of CO_2 equivalent
Source: California Air Resources Board. Revised 2 December 2009. *Facts about California Greenhouse Gas Emissions Inventory*. Available at: http://www.arb.ca.gov/cc/factsheets/ghginv.pdf

When accounting for GHGs, all types of GHG emissions are expressed in terms of CO_{2e} and are typically quantified in metric tons (MT) or millions of metric tons (MMT). GHGs have varying global warming potential (GWP). The GWP represents how much a given mass of a chemical contributes to global warming over a given time period compared to the same mass of carbon dioxide (CO_2 GWP is defined as 1.0). The other main GHGs that have been attributed to human activity include CH_4, which has a GWP of 21, and N_2O, which has a GWP of 310. Table 3.7.2.3-2, *Global Warming Potentials and Atmospheric Lifetimes of GHGs*, presents the GWP and atmospheric lifetimes of common GHGs.

TABLE 3.7.2.3-2
GLOBAL WARMING POTENTIALS AND ATMOSPHERIC LIFETIMES OF GHGS

GHG	Formula	100-Year Global Warming Potential	Atmospheric Lifetime (Years)
Carbon dioxide	CO_2	1	Variable
Methane	CH_4	21	12 ± 3
Nitrous dioxide	N_2O	310	120
Sulfur hexafluoride	SF_6	23,900	3,200

Source: California Air Resources Board. Revised 2 December 2009. *Facts about California Greenhouse Gas Emissions Inventory*. Available at: http://www.arb.ca.gov/cc/factsheets/ghginv.pdf

Human-caused sources of CO_2 include combustion of fossil fuels (coal, oil, natural gas, gasoline, and wood). Data from ice cores indicate that CO_2 concentrations remained steady prior to the current period for approximately 10,000 years. Concentrations of CO_2 have increased in the atmosphere since the Industrial Revolution.

CH_4 is the main component of natural gas and also arises naturally from anaerobic decay of organic matter. Human-caused sources of natural gas include landfills, fermentation of manure, and cattle farming. Human-caused sources of N_2O include combustion of fossil fuels and industrial processes. According to the Intergovernmental Panel on Climate Change (IPCC), SF_6 is the most potent GHG. SF_6 is a colorless, odorless, nontoxic, nonflammable gas that is used as an insulating agent in electrical equipment. Other GHGs are present in trace amounts in the atmosphere and are generated from various industrial or other uses.

The sources of GHG emissions, GWP, and atmospheric lifetime of GHGs are all important variables to be considered in the process of calculating CO_{2e} for discretionary land use projects that require a climate change analysis. It is anticipated that long-term GHG emissions, particularly PM_{10} emissions, will be reduced as a result of implementing the proposed project / proposed action.

3.8 HYDROLOGY AND WATER QUALITY

This section describes federal, state and local regulations applicable to hydrology and water quality. It also describes the environmental setting of the proposed project / proposed action site with regard to the regional hydrologic setting, existing hydrology/drainage (on-site and off-site), and existing flood hazards in the vicinity of the proposed project / proposed action site. Water quality is also characterized in terms of groundwater beneath the proposed project / proposed action site and surface water hydrology for the southeastern Owens Valley. The characterization of hydrology and water quality is based on information provided by the Inyo County General Plan,[1] past hydrological studies and data from the OVPA studies, and the State of California Regional Basin Plan, Lahontan Region.[2]

3.8.1 REGULATORY FRAMEWORK

3.8.1.1 FEDERAL

A. Section 401 and 402 of the Clean Water Act of 1972

The federal Clean Water Act (CWA) of 1972 sets national goals and policies to eliminate discharge of water pollutants into navigable waters and to achieve a water-quality level that will protect fish, shellfish, and wildlife while providing for recreation in and on the water whenever possible.[3] The CWA regulates point-source and non-point-source discharges to receiving waters with the National Pollutant Discharge Elimination System (NPDES) program. The CWA provides for delegation of certain water-quality control and planning responsibilities to the states. The State of California (State) has been authorized by the U.S. Environmental Protection Agency (U.S. EPA) to administrate and enforce portions of the CWA, including the NPDES program. The State issues NPDES permits through the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs). The proposed project / proposed action is regulated by the Lahontan RWQCB.

Section 401

The Clean Water Act made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained as required under Section 401. Per Section 401, any activity that may result in a discharge into waters of the U.S. must be certified by the California State Water Resources Control Board (SWRCB) as administered by the Regional Water Quality Control Boards (RWQCB). This certification ensures that an action does not violate State and/or Federal water quality standards. The proposed project / proposed action site is located in the jurisdiction of the Lahontan RWQCB.

[1] Inyo County Planning Department. December 2001. *Inyo County General Plan, Conservation and Open Space Element*. Independence, CA.

[2] Lahontan Regional Water Quality Control Board. n.d. *Basin Plan*. Available at: http://www.swrcb.ca.gov/rwqcb6/water_issues/programs/basin_plan/index.shtml

[3] *United States Code*, Title 33, Section 1341: "A Certification."

Section 402 National Pollutant Discharge Elimination System

The CWA was amended in 1987 to expressly prohibit the discharge of pollutants from storm water to waters of the United States, unless the discharge is in compliance with a NPDES permit. The 1987 amendment to the CWA added Section 402(p) and established a framework for regulating industrial, municipal, and construction storm water discharges under NPDES. The 1987 amendment was developed in recognition that storm water runoff, a non-point-source discharge, is a significant source of water pollution. In 1990, the U.S. EPA published final regulations that established application requirements to determine the conditions under which industrial, municipal, and construction activities require an NPDES permit.

To streamline the NPDES permit process, the SWRCB has issued statewide general permits that apply to all storm water discharges from certain industrial and construction activities. Of these, the proposed project / proposed action would be subject to the requirements of the NPDES General Permit for Storm Water Discharges Associated with Construction (General Permit).

Section 404

Section 404 of the Clean Water Act regulates the discharge of dredged, excavated, or fill materials in wetlands, streams, rivers, and other United States waters. The United States Army Corps of Engineers is the federal agency responsible for issuing 404 Permits for certain activities conducted in wetlands or other U.S. waters. Section 404 Permits are not granted without a prior 401 certification.

B. Federal Emergency Management Agency

Inyo County is a participant in the National Flood Insurance Program (NFIP), a federal program administered by the Federal Emergency Management Agency (FEMA). Participants in the NFIP must satisfy certain mandated floodplain management criteria. The National Flood Insurance Act of 1968 has adopted, as a desired level of protection, an expectation that developments should be protected from floodwater damage of the Intermediate Regional Flood (IRF). The IRF is defined as a flood that has an average frequency of occurrence on the order of one in 100 years, although such a flood may occur in any given year. Inyo County is occasionally audited by the Department of Water Resources (DWR) to ensure the proper implementation of FEMA floodplain management regulations. The proposed project / proposed action site is located on Flood Insurance Rate Map (FIRM) Map Number 06027C2225D and 06027C2575D, dated effective August 16, 2011.[4]

C. Bishop Resource Management Plan

The Bishop Resource Management Plan provides planning direction for the future use of land in the Bishop Resource Area.[5] The BLM's responsibilities include managing public land and associated natural resources to provide a variety of uses. The BLM predominantly controls the proposed project / proposed action study area. The proposed project / proposed action study area is located within the Owens Lake Management Area and South Inyo Management Area, two of nine management areas managed by the BLM pursuant to the Bishop Resource Management Plan. The proposed dust control

[4] Federal Emergency Management Agency. Flood Insurance Rate Map Number 06027C2225D and 06027C2575D, dated effective August 16, 2011. Available at: http://map1.msc.fema.gov/idms/IntraView.cgi?KEY=49046611&IFIT=1

[5] U.S. Department of the Interior, Bureau of Land Management, Bakersfield District. April 1993. *Bishop Resource Management Plan, Record of Decision*. Bakersfield, CA.

measures (DCMs) would be implemented within the Owens Lake Management Area only. The proposed project / proposed action has been designed in conformance with BLM standard operating procedures for managing the various resources and activities in the management areas, including construction activities within streams will comply with the State Fish and Game Code as to notification and incorporation of appropriate mitigation measures.

Limit vegetation removal and other surface disturbing activities to the minimum required for project implementation. Require soil retaining structures or other special methods as needed to control erosion on steep slopes or unstable soils

BMPs and appropriate mitigation will be identified during project level environmental review and applied during project implementation for any ground disturbing activity that may reduce soil productivity or cause surface erosion or mass wasting.

3.8.1.2 STATE

A. Porter-Cologne Water Quality Control Act (California Water Code Section 13000 et seq.)

Water quality in California is further regulated under the Porter-Cologne Water Quality Control Act. This law assigns responsibility for protection of water quality to the SWRCB, which is divided into nine statewide RWQCBs that enforce water quality standards. The proposed project / proposed action site is subject to the jurisdiction of the Lahontan RWQCB.

B. Section 13050

Waters of the State are defined in Section 13050 of the Porter-Cologne Water Quality Control Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." Water quality criteria include the identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures.

C. Section 13260 California Water Code

Section 13260 of the California Water Code states that persons discharging or proposing to discharge waste that could affect the quality of the waters of the State, other than into a community sewer system, shall file a Report of Waste Discharge (ROWD) with the appropriate RWQCB. Following the filing of a ROWD, if applicable, the RWQCB adopts Waste Discharge Requirements (WDR) specifying water quality limitations for the reported waste discharge. Pursuant to California Water Code 13267, a Monitoring and Reporting Program may be required by the RWQCB as a condition of the WDR.

D. Section 13263

The RWQCBs are authorized to issue Waste Discharge Requirements specifying conditions for protection of water quality in Section 13263.

State Water Resources Control Board Construction General Permit Order No. 2010-0014-DWQ

The SWRCB regulates storm water discharges from projects during construction in accordance with the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (NPDES No. CAS000002). Dischargers whose projects disturb one or more acres of soil or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit Order 2010-2014-DWQ, effective February 14, 2011) (SWRCB, 2011a).

For projects which disturb an area in excess of one acre, it is generally required to file a Notice of Intent (NOI) with the SWRCB to be covered under the State NPDES General Construction Permit for discharges of storm water associated with construction activity. The proposed project / proposed action would be required to develop and implement a Storm Water Pollution Prevention Plan (SWPPP). A SWPPP describes BMPs the discharger will use to protect storm water runoff and reduce potential impacts to surface water quality through the construction period. The SWPPP must contain the following: a visual monitoring program; a chemical monitoring program for non-visible pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges to a water body listed on the 303(d) list for sediment. A BMP is defined by the Stormwater Quality Task Force as any program, technology, process, siting criteria, operating method, measure, or device that controls, prevents, removes, or reduces storm water pollution. The DCMs for the proposed project / proposed action may disturb an area greater than one acre, and consequently would be required to comply with the General Permit.

E. Lahontan Regional Water Quality Control Board Basin Plan

The CWA is administered and enforced by the SWRCB, which develops regulations to execute water quality control programs mandated at the federal and state levels. As stated above, California has nine RWQCBs that implement these water quality programs. The Lahontan RWQCB has prepared a Water Quality Control Plan that includes a combination and revision of two separate Water Quality Control Plans adopted in 1975 for the North and South Lahontan Basins. The proposed project / proposed action site is located within the South Lahontan Basin Plan. The basin plan, which was established under the requirements of California's 1969 Porter-Cologne Water Quality Control Act, was amended several times between 1975 and 2006, and is currently under public review.[6]

3.8.1.3 LOCAL

A. Inyo County Groundwater Ordinance

In 1991, the County adopted an ordinance requiring that any person proposing to transfer water pursuant to California Water Code Section 1810 et seq. first obtain a conditional use permit (CUP). The ordinance required that no permit could be issued unless the County finds that the transfer would not unreasonably affect the overall economy or environment of the County.

[6] California Regional Water Quality Control Board, Lahontan Region. 1994. *Water Quality Control Plan*. Available at: http://www.swrcb.ca.gov/lahontan/water_issues/programs/basin_plan/references.shtml

In 1997, the ordinance was repealed and replaced by a more comprehensive ordinance that applies to any of the following transfers or transports of water:

- A water transfer from the unincorporated area of Inyo County undertaken pursuant to Water Code Section 1810 et seq.

- A sale to the City of Los Angeles or an acquisition by the City of Los Angeles by means other than a sale of surface water or groundwater extracted or diverted from within Inyo County

The ordinance requires any person proposing to undertake a water transfer or transport first obtain a CUP from the County. The ordinance requires that no permit be issued unless the County finds that the transfer will not unreasonably affect the overall economy or environment of the County. The proposed project / proposed action does not involve a groundwater transfer from Inyo County.

B. Inyo County General Plan

The Inyo County General Plan contains the goal to "protect and preserve water resources for the maintenance, enhancement, and restoration of environmental resources." This goal is supported by the following policy relevant to the proposed project / proposed action:[7]

> Policy WR-2, Restoration. Encourage and support the restoration of degraded water surface and groundwater resources

The Inyo County General Plan also contains the goal to "protect and restore environmental resources from the effects of export and withdrawal of water resources." This goal is supported by the following policies relevant to the proposed project / proposed action:[8]

> Policy WR-3.1, Watershed Management. Protect, maintain and enhance watersheds within Inyo County

> Policy WR-3.2, Sustainable Groundwater Withdrawal. The County shall manage the groundwater resources within the County through ordinances; project approvals and agreements; ensure an adequate, safe and economically viable groundwater supply for existing and future development within the County; protect existing groundwater users; maintain and enhance the natural environment; protect the overall economy of the County; and protect groundwater and surface water quality and quantity

3.8.2 AFFECTED ENVIRONMENT

The proposed project / proposed action is located at the southern end of the Owens Valley, an elongated north-south trending valley that is bounded on the west by the Sierra Nevada Mountains, on east by the Inyo and White Mountains, and on the south by the Coso Mountains. The floor of the Owens Valley ranges in elevation from a low of approximately 3,550 feet above mean sea level (MSL)

[7] Inyo County Planning Department. December 2001. *Inyo County General Plan, Conservation and Open Space Element*. Independence, CA.

[8] Inyo County Planning Department. December 2001. *Inyo County General Plan, Conservation and Open Space Element*. Independence, CA.

on the Owens Lake bed to the south to a high of approximately 4,100 feet above MSL near Bishop to the north. The Owens Valley is a naturally closed hydrologic basin. The LADWP began withdrawing water from the Owens Valley via the Los Angeles Aqueduct in 1913 for export to southern California and subsequently created the current Owens Lake bed. The Owens Lake bed currently consists of a brine pool and open playa, in addition to dust control areas as specified in the 2008 State Implementation Plan.[9]

3.8.2.1 HYDROLOGIC SETTING

The Keeler Dunes are located to the northeast of the Owens Lake bed and northwest of the community of Keeler. The southwestern boundary of the proposed project / proposed action site abuts the historic shoreline of Owens Lake. The western boundary of the proposed project / proposed action is located almost entirely east of the Old State Highway (Figure 2.1.5.1-3, *Geomorphic Map of the Keeler Dunes Area)*. The Owens River enters Owens Lake from the north approximately 4.5 miles northwest of the Keeler Dunes.

The proposed project / proposed action site consists of sand sheets and sand dunes on top of alluvium and ranges in elevation from approximately 3,600 feet above MSL to approximately 3,885 feet above MSL. There is a 285-foot elevation difference between the highest and the lowest area of the proposed project / proposed action site. The general direction of topographic slope is from the Inyo Mountains on the east towards Owens Lake to the west and southwest. The bed of Owens Lake consists of a brine pool (below an elevation of 3,553.53 above MSL) and the playa (that area between the brine pool and the historic shoreline at 3,600 feet above MSL).[10]

In 1950, as part of the realignment of SR 136 the California Department of Public Works Division of Highways (subsequently called the California Department of Transportation [Caltrans]) installed storm water diversion structures on the Keeler Fan east of SR 136 to divert sheet flow resulting from infrequent high magnitude storms[11] (Figure 2.1.5.1-3). The two blue-line drainages that historically passed through the Keeler Dunes as they descended the alluvial fan to their connection with Owens Lake were rerouted to the northern and southern portions of the Keeler Fan by the Caltrans storm water diversion structures. The flow path from the southern diversion structure goes through the proposed project / proposed action site. The flow path from the northern diversion structure cuts through the proposed project / proposed action study area but does not cross the proposed project / proposed action area.

[9] Great Basin Unified Air Pollution Control District. January 2008. *2008 Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan*. Bishop, CA.

[10] Sapphos Environmental, Inc. 2008. *Integrated Subsequent Environmental Impact Report*. Prepared for: Great Basin Unified Air Pollution Control District, Bishop, California. Pasadena, CA.

[11] California Department of Transportation, 1950. Final Report for the Construction of a State Highway in Inyo County, From S.P.R.R. Crossing West of Keeler to Soda Plant, Station "C" 491+00 to Station "D" 38+00, Contract 1-9VC27, Road IX –INY-127-C,D. 5.4 Miles. Report by Rice Brothers INC to the State of California Department of Public Works Division of Highways, District IX, Bishop, California.

3.8.2.2 EXISTING HYDROLOGY / DRAINAGE

There are no perennial surface water inflows to the Owens Lake bed from the proposed project / proposed action site (Figure 2.1.5.1-3). The proposed project / proposed action study area consists of alluvial fan, aeolian, lacustrine, and anthropogenic landforms.[12] The surface hydrology of the study area can be described as a system with multiple channels descending the alluvial fan of Slate Canyon (Keeler Fan). Water flows in the northern channel pass through a culvert that crosses under SR 136 and then to the west-northwest towards the bed of Owens Lake. The central and southern channels become active during significant storm events and flow to the Caltrans water diversion structure located east of SR 136 where it is diverted to the south along the diversion structure and continues across the highway, where the southern terminus of the diversion structure meets the highway, and then continues in the ephemeral drainage that is located on the western side of the highway (Figure 2.1.5.1-3) and then through the Keeler Dunes. The blue-line drainage that is shown on the 100-year flood zone map in the Keeler Dunes between the northern and southern termini of the diversion structure has been rendered inactive by the diversion structure (Figure 3.8.2.2-1, *100-Year Flood Zone).*

The Federal Emergency Management Agency (FEMA) maps show the entirety of the proposed project / proposed action area as being outside the 100-year flood zone (Figure 3.8.2.2-1). The proposed project / proposed action should not be significantly impacted by flood waters from the main (northern) channel of Slate Canyon as long as the Caltrans water diversion structures are successful at diverting flow. The straw bales are proposed to be placed outside the ephemeral drainage that convey flows from the location where the southern terminus of the diversion structure conveys storm water flows across the highway and through the Keeler Dunes.

The Keeler alluvial fan is characterized by active alluvial and aeolian features. Wind and storm water runoff events may alter the existing surficial features. The fan is covered with aeolian deposits that fill in drainage features. Local runoff on the alluvial fan below the Caltrans water diversion structures does not likely generate enough flow to affect the proposed project / proposed action study area.[13]. The main active drainage in the proposed project / proposed action area brings water that is captured by the southern diversion structure and directs it through a series of channels that cross through the Keeler Dunes. No project elements will be constructed within these defined channels.

A. Springs / Uncontrolled Flowing Artesian Wells

There are several springs in the Keeler area (Figure 3.8.2.2-2, *Springs in Study Area Vicinity)*. The main springs are anthropogenic created by the flow of water from uncontrolled flowing artesian wells. None of these springs are located within the project area. The Keeler Spring is located southwest of the community of Keeler and is approximately 0.75 mile from the southern border of the proposed project / proposed action site. The Keeler Spring has a water source that originates from a free-flowing artesian

[12] Bacon, S.N. and N. Lancaster, November 2012. Geomorphic Mapping of the Keeler Dunefield and Surrounding Areas. Report by the Desert Research Institute prepared for Great Basin Unified Air Pollution Control District. Available at: *http://www.gbuapcd.org/keelerdunes/originanddevelopment/finalstaffreport/Attachment%20D%20-%20Geomorphology/Bacon%20and%20Lancaster%202012_FINAL_REPORT_Geomorphic_Mapping_of_the_Keeler_Dunfield_and_Surrounding_Areas20121114.pdf*

[13] Bacon, S.N. Desert Research Institute. 6 November 2012. Telephone conversation with D. Grotzinger, Sapphos Environmental, Inc. Pasadena, CA.

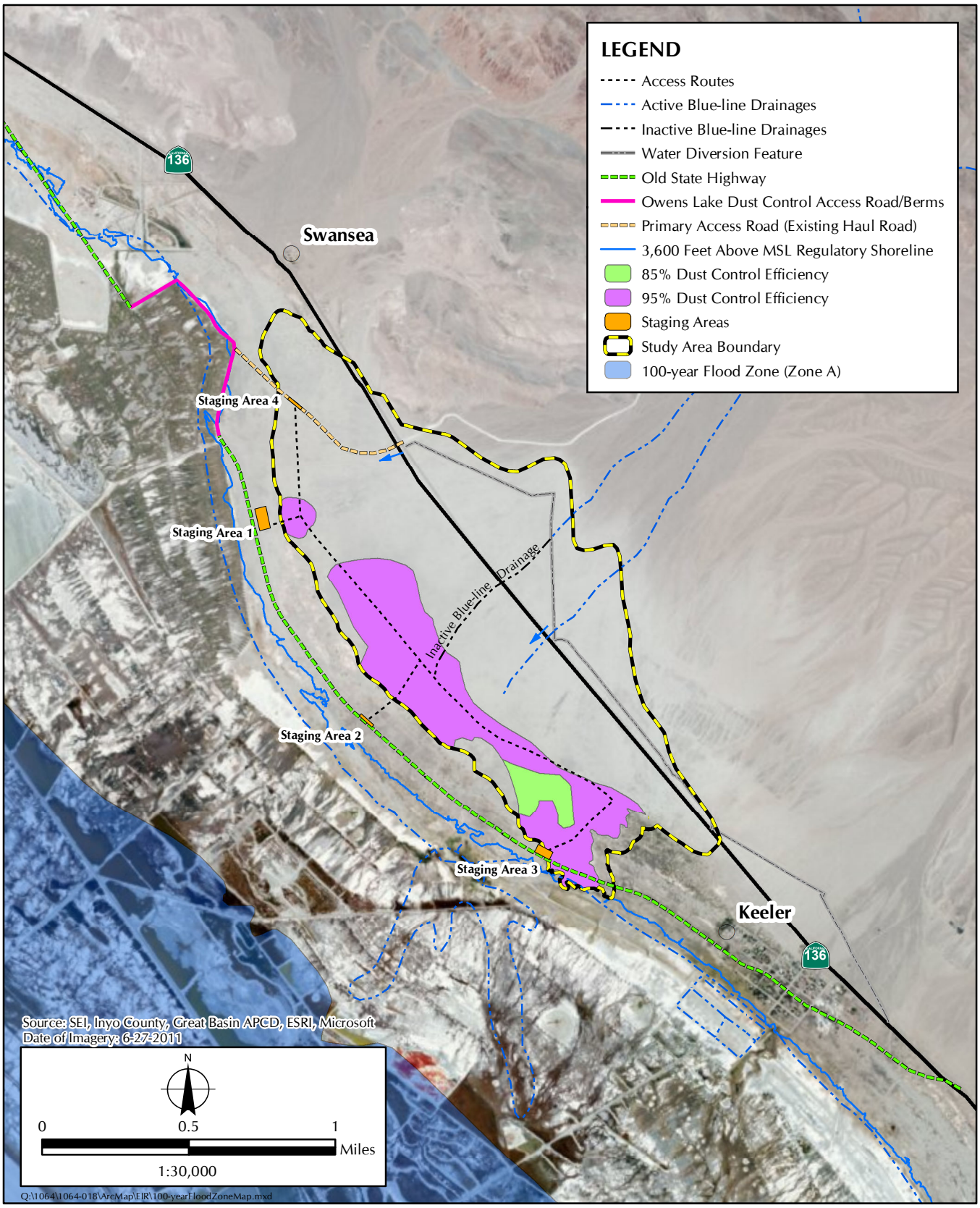

FIGURE 3.8.2.2-1

100-Year Flood Zone Map

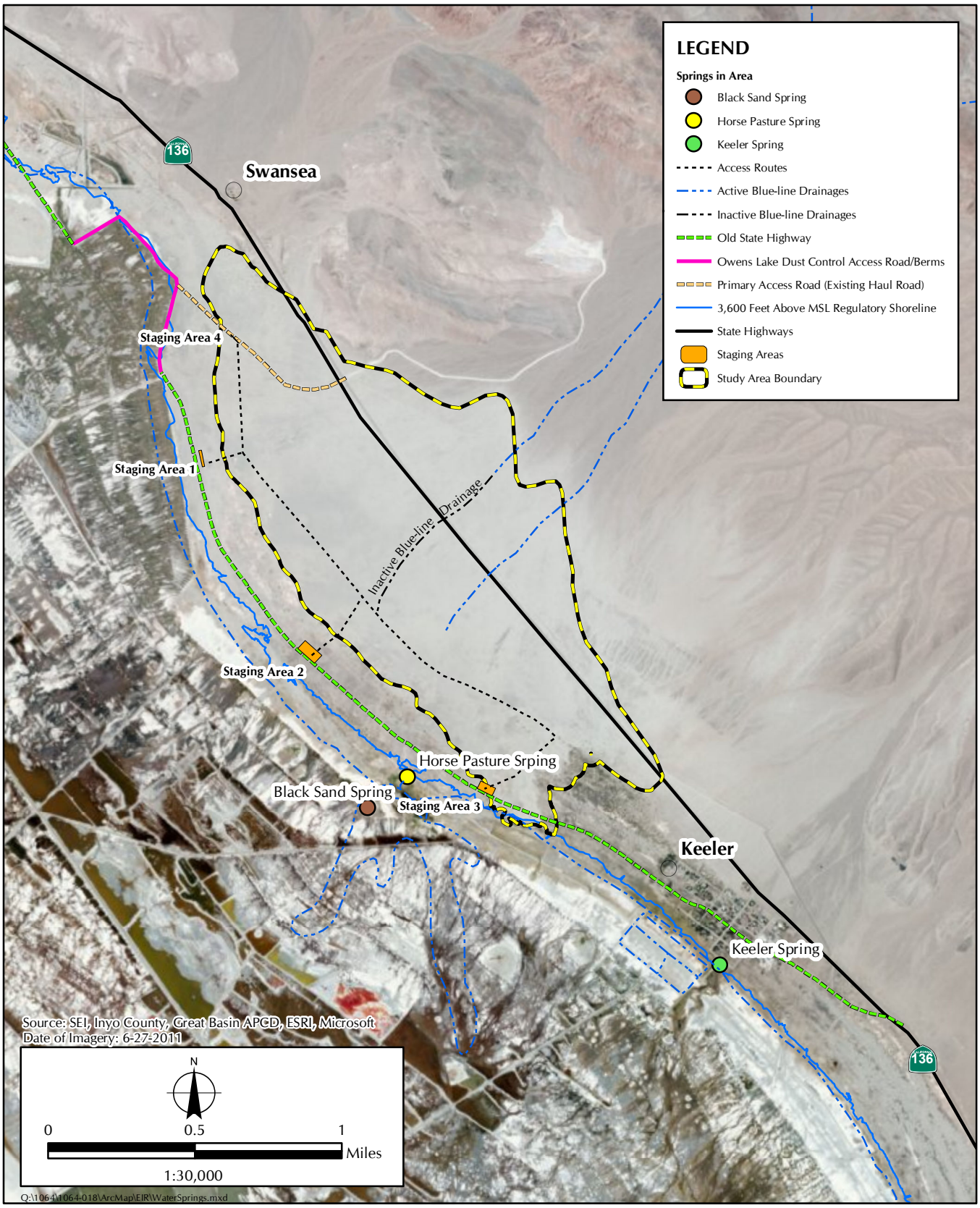

FIGURE 3.8.2.2-2

Springs in Study Area Vicinity

well located adjacent to the old community pool.[14] The exact date of drilling of the Keeler Spring well is unknown but appears to have been in the early 1900s or late 1800s.

In addition to the Keeler Spring, there are two additional spring sites created by human activity that are located outside of proposed project / proposed action site approximately 0.3 mile from the southwestern border and are located within the historic shoreline of Owens Lake. The Black Sand and Horse Pasture springs both result from free-flowing artesian wells that were drilled in the early 1900s.[15]

Beneficial uses listed in the Lahontan RWQCB Basin Plan for the Keeler Spring include municipal and domestic supply, agricultural supply, industrial service supply, groundwater recharge, freshwater replenishment, water contact and noncontact recreation, warm freshwater habitat, cold freshwater habitat, inland saline water habitat, wildlife habitat, and migration of aquatic organisms. Although Owens Lake has been reduced to a dry lake bed and brine pool, the Basin Plan describes beneficial uses for Owens Lake as water contact and non-contact recreation, commercial and sport fishing, warm freshwater habitat, cold freshwater habitat, inland saline water habitat, and wildlife habitat.

3.8.2.3 Existing Flooding

According to the FEMA flood maps, the proposed project / proposed action area is located outside the 100-year flood hazard area (Figure 3.8.2.2-1).[16]

3.8.2.4 Existing Water Quality

The proposed project / proposed action occurs within the Owens Valley Groundwater Basin. The basin inflows are derived from precipitation, surface flows, and subsurface flows and outflows from evaporation, evapotranspiration, spring and seep discharge, surface water diversion, and withdrawal from pumping. Much of the recharge for the basin comes from the Sierras on the west side of the Owens Valley and from the Owens River. The range of overall inflow and outflow in the Owens Valley groundwater basin is estimated to be in the range of 45,000 to 67,500 acre-feet per year.[17] The proposed project / proposed action is located on the northeast side of Owens Lake, west of the Inyo Mountains. Groundwater resources from the Inyo Mountains flow through the sediments of the alluvial fans toward Owens Lake.[18,19]

[14] Holder, Grace, Great Basin Unified Air Pollution Control District, Bishop, CA. 13 September 2011. Email to Donna Grotzinger, Sapphos Environmental, Inc., Pasadena, CA. Subject: Water Resources in the Keeler Dunes Area.

[15] Records found at the University of Nevada, Reno Special Collection Number 73, reviewed April 2013.

[16] Federal Emergency Management Agency. Flood Insurance Rate Map Number 06027C2225D and 06027C2575D, dated effective August 16, 2011. Available at: http://map1.msc.fema.gov/idms/IntraView.cgi?KEY=49046611&IFIT=1

[17] MWH Americas, Inc. November 2011. "Owens Lake Groundwater Evaluation Project, Updated Conceptual Model Report- FINAL." Prepared for: Los Angeles Department of Water and Power, Los Angeles, CA.

[18] Porter, C. 1984. *Final Environmental Impact Report Inyo Marble*, Appendix E: "Geohydrology Study of the Swansea Alluvial Fan Area for the Proposed Inyo-Marble Development of Dolomite, California." Prepared by: Applied Geotechnical, Reno, NV.

[19] Conway, Chris. 1997. "Observation of Ephemeral Flows and Estimation of Recharge from the Inyo and Coso Mountains, Owens Dry Lake, California." Thesis, University of Nevada, Reno.

The detailed hydrology of the Owens Lake basin has been studied extensively over the past two decades.[20,21,22,23,24,25,26.27,28,29,30] The LADWP initiated the latest investigation, the Owens Lake Groundwater Evaluation Project (OLGEP), in March of 2009 for the purpose of evaluating the groundwater resources below the lake bed as a potential water supply for DCMs on the lake bed. Monitoring well installations were completed by LADWP in 2010 and an updated hydrogeological conceptual model was presented in November 2011. The report concluded that DCMs on the lake bed locally influence shallow groundwater levels but appear to have no effect on the deep wells that were monitored.[31]

The District has conducted an analysis of groundwater beneath the Keeler Dunes utilizing available data from the existing groundwater wells in the area and ground surface elevation data.[32] The results of this analysis indicate that the groundwater elevation does not vary significantly across the study area and is present at an elevation of approximately 3,614 feet above MSL. The depth to groundwater in the dust control areas is estimated to range from a maximum of 70 feet along the eastern side of the proposed project / proposed action to less than 10 feet on the west. The range in groundwater depth across the larger study area is greater ranging from approximately 196 feet on the eastern border (east of SR 136) to within a few feet of the surface along the southwestern border along the historic shoreline.

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[20] Danskin, W.R. 1998. "Evaluation of the Hydrologic System and Selected Water-Management Alternatives in the Owens Valley, California." U.S. Geological Survey Water-Supply Paper 2370. Prepared in cooperation with Inyo County and the Los Angeles Department of Water and Power. Denver, CO: U.S. Geological Survey.

[21] Porter, C. 1984. *Final Environmental Impact Report Inyo Marble*, Appendix E: "Geohydrology Study of the Swansea Alluvial Fan Area for the Proposed Inyo-Marble Development of Dolomite, California." Prepared by: Applied Geotechnical, Reno, NV.

[22] Hollett, K., Danskin, W., McCaffrey, W., and Walti, G. 1991. *Geology and Water Resources of Owens Valley, California*. U.S. Geological Survey Water Supply Paper 2370-B. Denver, CO: U.S. Geological Survey.

[23] Conway, Chris. 1997. "Observation of Ephemeral Flows and Estimation of Recharge from the Inyo and Coso Mountains, Owens Dry Lake, California." Thesis, University of Nevada, Reno.

[24] Schultz, B.W. 1996. *Evaluation of Change in Wetlands at Owens Lake Playa between 1977 and 1992 Using MSS Satellite Imagery and Color Infrared Photography*. Publication No. 41154. Draft Report Submitted to Great Basin Unified Air Pollution Control District, Bishop, CA. Reno, NV: Desert Research Institute.

[25] Wirganowicz, M. 1997. "Numerical Simulation of the Owens Lake Groundwater Basin, California." Unpublished thesis, University of Nevada, Reno.

[26] Great Basin Unified Air Pollution Control District. [2001] Revised 2003. *Archive of Groundwater and Hydrology Data, Owens Lake*. Bishop, CA.

[27] Johnson, K., J. Eliason, G. Maddox, and T. Brooks. 1999. *Characterization of the Owens Lake Basin Hydrology System, Inyo County, California*. Prepared by: Neponset Geophysical Corporation for Great Basin Unified Air Pollution Control District.

[28] Sierra GeoSciences LLC. November, 2002. *Summary of Construction, Analyses and Long Term Monitoring, Keeler/Swansea Site, Owens Lake, Inyo County, California*. Project Number 0211. Final Report prepared for the Great Basin Unified Air Pollution Control District. Bishop, CA..

[29] Great Basin Unified Air Pollution Control District. February 2009. "Owen Lake Shallow Hydrology Monitoring, Data and Chemistry; 1992-2004." Bishop, CA. Available at: http://www.gbuapcd.org/owenslake/hydrology/OwensLakeShallowHydrologyMonitoringDataAndChemistry1992-2004/Final%20Report%20(Compiled%20Text_Figs).pdf

[30] MWH Americas, Inc. November 2011. "Owens Lake Groundwater Evaluation Project, Updated Conceptual Model Report- FINAL." Prepared for: Los Angeles Department of Water and Power, Los Angeles, CA.

[31] MWH Americas, Inc. November 2011. "Owens Lake Groundwater Evaluation Project, Updated Conceptual Model Report- FINAL." Prepared for: Los Angeles Department of Water and Power, Los Angeles, CA.

[32] Great Basin Unified Air Pollution Control District. 2012. Unpublished data. Bishop, CA.

Groundwater pumping from the Owens Valley occurs to supply the potable water needs of nearby communities, as well as the exportation to southern California. The LADWP pumps groundwater from wells located in the Owens Valley. The LADWP's reported total groundwater pumpage in Owens Valley for runoff year April 2011 to April 2012 was 91,728 acre-feet[33]. Although the LADWP has a monitoring well location (DWP-3) within 1-mile of the proposed project / proposed action site, the closest pumped LADWP well is near Lone Pine over 10 miles away from the proposed project / proposed action area[34]. The nearest public water supply well to the proposed project / proposed action site is the Keeler Community Services District Well (KCSDW) located on the east side of SR 136 adjacent to the border of the proposed project / proposed action boundary (Figure 3.8.2.2-2).

An analysis was completed on the groundwater beneath the Keeler Dunes area. This analysis used the elevation of the groundwater beneath the Keeler Fan as estimated from three well sites in the area (Dunn Wells, KCSD Well, and the Keeler-Swansea Well) in comparison to the elevation of the ground surface. Data for the elevation of the ground surface was taken from two sources – the bare earth DEM from the January 2009 LiDAR survey conducted by the LADWP and the 1990's Horizon topographic survey. The vertical resolution on the LiDAR data is 0.5 feet while the resolution on the Horizons data is 5 feet. The more recent higher resolution LiDAR data covers the areas of highest concern and areas that are the most likely to have changed within the past few years due to movement of the dune sands. This high resolution data was not available for the entire area of interest such that in the outlying areas along the north, east and southern portion of the dunes the elevation data from the Horizons survey were used.

From analysis of the available groundwater data it appears that the elevation of the groundwater is essentially constant beneath the study area. A value of 3,614 feet above MSL was used to represent the elevation of the groundwater. A contour map was generated based on the difference in elevation between the surface topography and the elevation of the groundwater with cutoff values of zero and 200 feet.[35]

A. Groundwater Quality

Groundwater quality in the region varies considerably with location. Groundwater directly underlying Owens Lake, west of the proposed project / proposed action, is non-potable due to elevated levels of total dissolved solids (TDS) well above the secondary drinking water standards (1,000 mg/L). Water quality in the springs and seeps that occur along the edges of Owens Lake is of higher quality but is still non-potable.[36] TDS measured in groundwater samples collected from the Fault Test Well located to the northwest of the proposed project / proposed action ranged in value from approximately 761 to

[33] Jorat, S, Civil Engineer Associate, City of Los Angeles Department of Water and Power. 11 October 2012. Telephone conversation with D. Grotzinger, Sapphos Environmental, Inc., Pasadena, CA.

[34] Final Report of the OLGEP, Available from: www.ladwp.com

[35] Owens Lake Groundwater Evaluation Program. Available from: www.ladwp.com

[36] Great Basin Unified Air Pollution Control District. February 2009. "Owen Lake Shallow Hydrology Monitoring, Data and Chemistry; 1992-2004." Bishop, CA. Available at: http://www.gbuapcd.org/owenslake/hydrology/OwensLakeShallowHydrologyMonitoringDataAndChemistry1992-2004/Final%20Report%20(Compiled%20Text_Figs).pdf. .

1,872 mg/L.[37] Measurements of TDS measured in the nearest public supply well, the KCSDW, average 830 mg/L.[38]

B. Surface Water Quality

As noted above, there are no perennial surface water drainages in the proposed project / proposed action study area. Two surface water bodies within the Lower Owens River Hydrologic Unit, listed in the Basin Plan for the Lahontan Region as having water quality objectives, are located adjacent to the proposed project / proposed action study area. Water quality objectives for the Keeler Spring (0.8 mile south of the proposed project / proposed action) and Owens Lake (Lower Owens River Hydrologic Unit) are listed in the Water Quality Control Plan for the South Lahontan Region (Basin Plan).[39] Specific objectives for these water bodies are included for ammonia, bacteria (Coliform), biostimulatory substances, chemical constituents, chlorine (total residual), color, dissolved oxygen, floating materials, oil and grease, non-degradation of aquatic communities and populations, organochlorine and organophosphate pesticides, pH, radioactivity, sediment, settleable materials, taste and odor, temperature, toxicity, and turbidity.

Electrical conductivity measurements of the Keeler Spring (Figure 3.8.2.2-1) average 1.74 (mS/cm).[40] Electrical conductivity is a measure of water's ability to conduct an electric current and is influenced by the dissolved salts present; therefore, high electrical conductivity measurements indicate a large quantity of dissolved salts. Potable water typically ranges from 0.03 to 1.5 mS/cm.[41] Past measurements of the electrical conductivity of samples from the Black Sand and Horse Pasture springs (Figure 3.8.2.2-2), located southwest of the proposed project / proposed action, average 3.64 and 2.85 mS/cm, respectively.[42]

[37] Sierra Geosciences, 2002. Summary of Construction, Analyses and Long Term Monitoring. Fault Test Site, Owens Lake, Inyo County, California, prepared for Great Basin Unified Air Pollution Control District. Bishop, CA.

[38] Barton, K., Inyo County Department of Environmental Health Services, Independence, CA. 25 September 2012. Telephone conversation with D. Grotzinger, Sapphos Environmental, Inc., Pasadena, CA.

[39] Lahontan Regional Water Quality Control Board. n.d. *Basin Plan*. Available at: http://www.swrcb.ca.gov/rwqcb6/water_issues/programs/basin_plan/index.shtml

[40] Great Basin Unified Air Pollution Control District. February 2009. "Owen Lake Shallow Hydrology Monitoring, Data and Chemistry; 1992-2004." Bishop, CA. Available at: http://www.gbuapcd.org/owenslake/hydrology/OwensLakeShallowHydrologyMonitoringDataAndChemistry1992-2004/Final%20Report%20(Compiled%20Text_Figs).pdf

[41] Clean Water Team . 2004. "Electrical Conductivity/Salinity Fact Sheet, FS-3.1.3.0(EC)." In *The Clean Water Team Guidance Compendium for Watershed Monitoring and Assessment*, Version 2.0. Sacramento, CA: Division of Water Quality, California State Water Resources Control Board (SWRCB).

[42] Great Basin Unified Air Pollution Control District. February 2009. "Owen Lake Shallow Hydrology Monitoring, Data and Chemistry; 1992-2004." Bishop, CA. Available at: http://www.gbuapcd.org/owenslake/hydrology/OwensLakeShallowHydrologyMonitoringDataAndChemistry1992-2004/Final%20Report%20(Compiled%20Text_Figs).pdf

3.9 LAND USE AND PLANNING

This section describes background discussion of applicable land use plans, policies, regulations, and federal special designations.

3.9.1 REGULATORY FRAMEWORK

3.9.1.1 FEDERAL

A. Federal Land Policy and Management Act, 1976 as Amended

The United States Congress passed the Federal Land Policy and Management Act (FLPMA) in 1976. Title V, "Rights-of-Way," of the FLPMA establishes public land policy, guidelines for administration, provides for management, protection, development, and enhancement of public lands; and provides the BLM authorization to grant right-of-way (ROW).[1] In addition, Section 503 specifically addresses "Right of Way Corridors" and requires common ROWs "to the extent practical."[2] FLPMA, Title V, Section 501(a)(6), states:

> The Secretary with respect to the public lands (including public lands, as defined in section 103(e) of this Act, which are reserved from entry pursuant to section 24 of the Federal Power Act and, the Secretary of Agriculture, with respect to lands within the National Forest System (except in each case land designated as wilderness), are authorized to grant, issue, or renew rights-of-way over, upon, under, or through such lands roads, trails, highways, railroads, canals, tunnels, tramways, airways, livestock driveways, or other means of transportation except where such facilities are constructed and maintained in connection with commercial recreation facilities on lands in the National Forest System.[3]

B. Bishop Resource Management Plan

The BLM's responsibilities include managing its own land and associated natural resources to provide a variety of uses. The Bishop Resource Management Plan (RMP) provides guidance and policies for managing BLM land within nine management areas. The BLM predominantly controls the Keeler Dunes area, which is located within the Owens Lake Management Area and South Inyo Management Area, two of the nine areas managed by the BLM pursuant to the Bishop RMP (Figure 3.9.1.1-1, *Study Area in Relation to the Bishop Resource Management Plan Management Areas*).[4] The proposed DCMs would be implemented within the Owens Lake Management Area, with the exception of the KCSD well tank (Alternative 5), which is located within the South Inyo Management Area. The Bishop RMP's policies and guidelines applicable to the Owens Lake Management Area address preservation and protection of the environment and archaeological artifacts and management of domestic sources of minerals, off-highway vehicle use, grazing, and recreation on public lands.

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[1] *Federal Land Policy and Management Act.* (1976), 43 U.S.C., Title V.

[2] *Federal Land Policy and Management Act.* (1976), 43 U.S.C., Title V, § 503.

[3] *Federal Land Policy and Management Act.* (1976), 43 U.S.C., Title V, § 501(a)(6).

[4] U.S. Department of the Interior, Bureau of Land Management, Bakersfield District. 1993. *Bishop Resource Management Plan Record of Decision*. Bakersfield, CA.

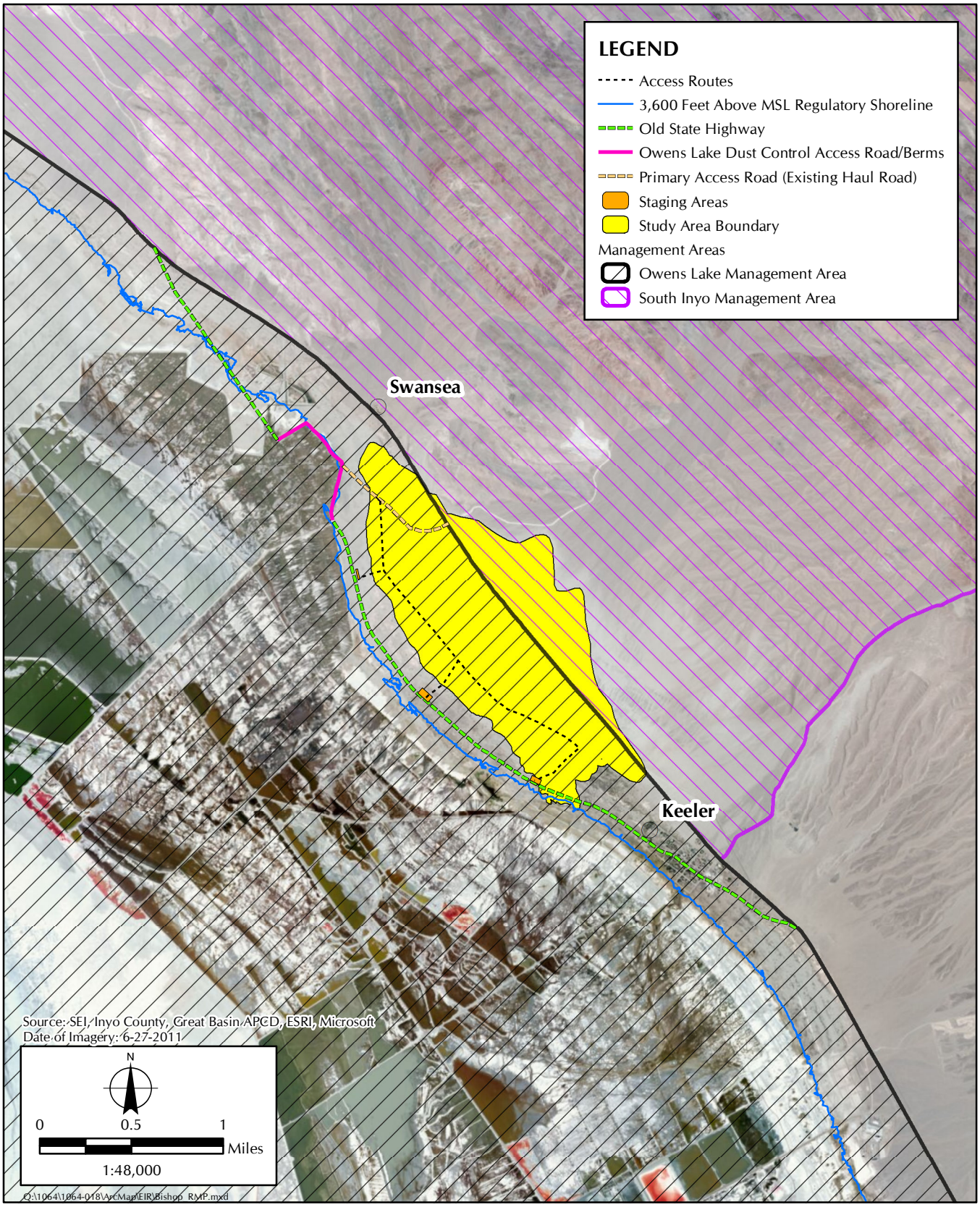

FIGURE 3.9.1.1-1

Study Area in Relation to the Bishop Resource Management Plan Management Areas

3.9.1.2 LOCAL

A. Inyo County General Plan

The Land Use and Conservation and Open Space Elements of the Inyo County General Plan establish goals and policies for the Inyo County land use designations within the proposed project / proposed action study area. The Land Use Element of the Inyo County General Plan designates the proposed project / proposed action study area as State and Federal Lands, Rural Protection, and Natural Resources.[5] These land use designations generally allow for low-intensity agriculture, including grazing, low-impact recreation, and preservation of rural and natural resources.[6] Below are the applicable goals and policies for land use and planning relevant to the proposed project / proposed action.

Land Use Element

Although projects on BLM-administered lands are not required to conform to a locally adopted general plan, the relevant goal and polices from the Land Use Element of the Inyo County General Plan were considered to apprise the District Governing Board of the level of conformance to the general plan. Four policies were considered in the evaluation of land use and planning:

- **Goal LU 5.** Provide adequate public facilities and services for the existing and/or future needs of communities and their surrounding environs, and conserve natural and managed resources.

- **Policy LU 2.95 Rural Protection Designation.** This designation, which is applied to land and water areas that are essentially unimproved and planned to remain open in character, provides for the preservation of natural resources, the managed production of resources, low-intensity agriculture including grazing, parks and other low-intensity recreation, wildlife refuges, hunting and fishing preserves, horse stables, cemeteries, greenbelts, and similar and compatible uses. The minimum parcel size is generally 40 acres. Residential use is limited to one single-family home per 40-acre or larger parcel.

- **Policy LU 5.4 Natural Resources Designation.** This designation, which is applied to land or water areas that are essentially unimproved and planned to remain open in character, provides for the preservation of natural resources, the managed production of resources, and recreational uses.

- **Policy LU 5.6 State and Federal Lands Designation.** This designation applies to those state- and federally owned parks, forests, recreation, and/or management areas that have adopted management plans.

[5] Inyo County Planning Department. December 2001. *Inyo County General Plan, Land Use Element*. Independence, CA.

[6] Inyo County Planning Department. December 2001. *Inyo County General Plan, Land Use Element*. Independence, CA.

Conservation and Open Space Element

Three goals and five related policies from the Conservation and Open Space Element of the Inyo County General Plan were considered in relation to the proposed project / proposed action:

Soils

- **Goal S-2.** Recognize development limitations of soil types in review and approval of future development projects to protect public health and safety.
- **Policy S-2.1 Soil Erosion.** Minimize soil erosion from wind and water related to new development.

Biological Resources

- **Goal BIO-2.** Provide a balanced approach to resource protection and recreational use of the natural environment.
- **Policy BIO-2.1 Coordination on Management of Adjacent Lands.** Work with other government land management agencies to preserve and protect biological resources while maintaining the ability to utilize and enjoy the natural resources in the County.
- **Policy BIO-2.2 Appropriate Access for Recreation.** Work with other government land management agencies to preserve and protect biological resources while maintaining the ability to utilize and enjoy natural resources in the County.

Recreation

- **Goal REC-1.** Develop a public parks, recreation, and open space system that provides adequate space and facilities to meet the varied needs of County residents and visitors.
- **Policy REC-1.1 Natural Environment as Recreation.** Encourage the use of the natural environment for passive recreational opportunities.
- **Policy REC-1.2 Recreational Opportunities on Federal, State, and the City of Los Angeles Department of Water and Power Lands.** Encourage the continued management of existing recreational areas and open space, and the appropriate expansion of new recreational opportunities on federal, state, and the City of Los Angeles Department of Water and Power (LADWP) lands.

B. Applicable Local Zoning Ordinances

OS-40 Zoning

The County of Inyo Land Use Ordinance provides the physical land use planning criteria, development standards, and zoning regulations for development in the unincorporated areas of the County.

3.9.2 AFFECTED ENVIRONMENT

3.9.2.1 REGIONAL SETTING

The proposed project / proposed action study area is located approximately 10 miles west of the boundary of Death Valley National Park, approximately 11 miles east of the boundary of Sequoia National Park, and approximately 48 miles north of the City of Ridgecrest. The proposed project / proposed action and alternatives are located east of the 110-square-mile (70,000-acre) Owens Lake Bed within the Owens Valley, Inyo County, California (Figure 1.3.1-1, *Regional Vicinity Map*). As described in Section 1.3.1, *Location*, within the 870.6-acre proposed project / proposed action study area, land ownership the majority of land is located on lands administered by the BLM and the balance is located in the unincorporated territory of Inyo County. The DCMs for the proposed project / proposed action and alternatives would occur within the proposed project / proposed action study area limits.

The area to the west of the proposed project / proposed action is largely comprised of lands on the bed of Owens Lake, administered by the California State Lands Commission and being treated with DCMs required pursuant to the 2008 SIP (Figure 3.9.2.1-1, *Existing Land Uses*).[7] The Old State Highway roadbed is also located parallel to the western boundary of the proposed project / proposed action study area, and SR 136 runs through the eastern portion of the proposed project / proposed action study area. One designated Native American reservation (Lone Pine Paiute-Shoshone Indian Reservation) and the town of Lone Pine are approximately 10 miles to the northwest, the community of Swansea is located approximately 1.3 miles to the north, and the community of Keeler is located 1.7 miles to the southeast of the center of the proposed project / proposed action study area.

3.9.2.2 ON-SITE LAND USES

A. Land Ownership

The proposed project / proposed action and action alternatives would be implemented on up to 143.5 acres of Federal land administered by the BLM and 49.5 acres of land owned by the City of Los Angeles, located in the unincorporated portion of Inyo County (Table 3.9.2.2-1, *Summary of Land Ownership in the Proposed Project / Proposed Action Study Area and Dust Control Area*, and Figure 3.9.2.2-1, *Land Ownership in the Study Area*).

TABLE 3.9.2.2-1
SUMMARY OF LAND OWNERSHIP IN THE PROPOSED PROJECT / PROPOSED ACTION STUDY AREA AND DUST CONTROL AREA

Land Owner	Study Area Land Ownership (approximately 870.6 acres)	Dust Control Land Ownership (194 acres)
BLM	778.5	144.5
LADWP	66.7	49.5
Other private/business	1.2	0
State of California ROW	24.1	0

[7] Great Basin Unified Air Pollution Control District. February 2007. *2008 Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan Initial Study*. State Clearinghouse Number 2007021127. Bishop, CA.

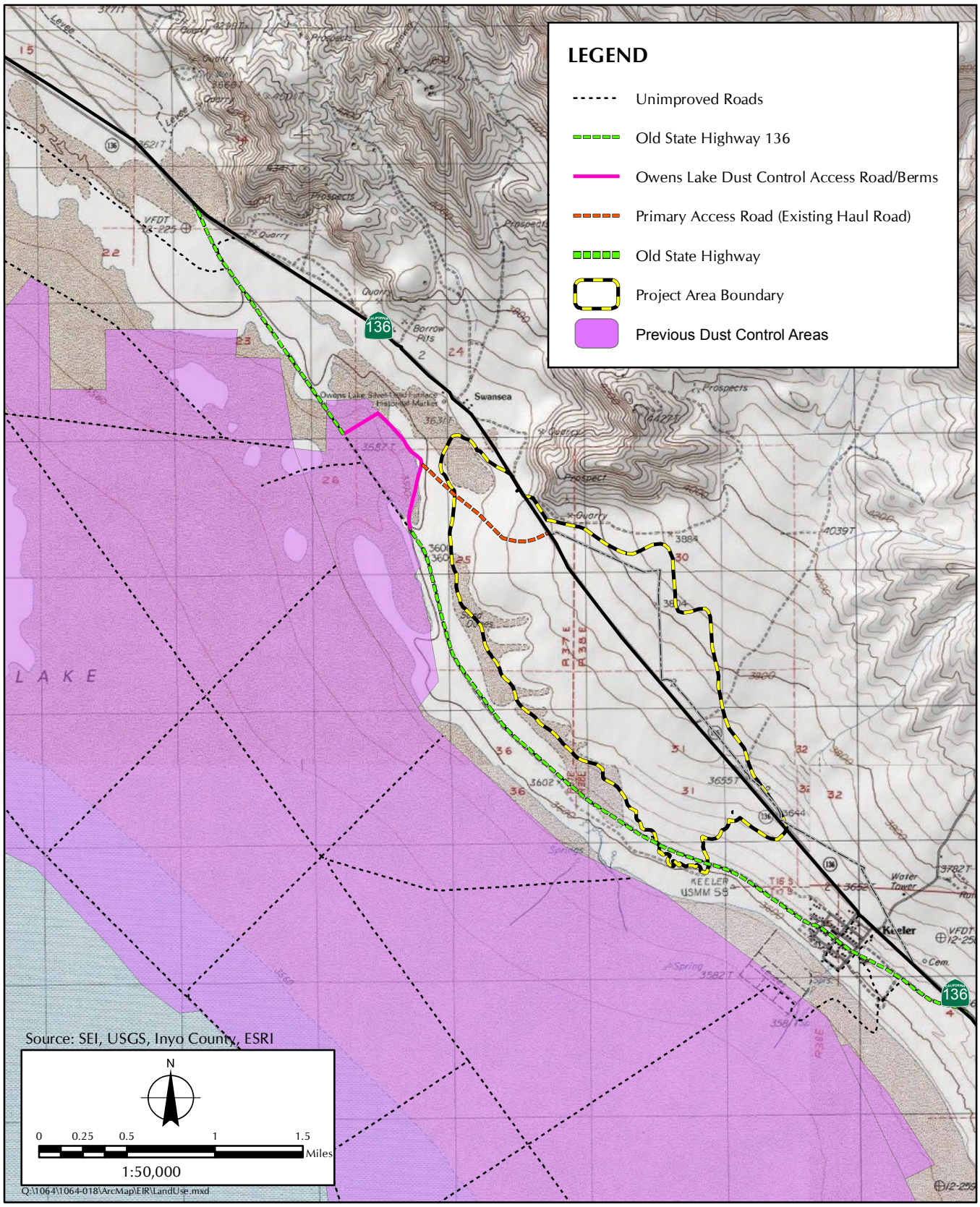

FIGURE 3.9.2.1-1

Existing Land Uses

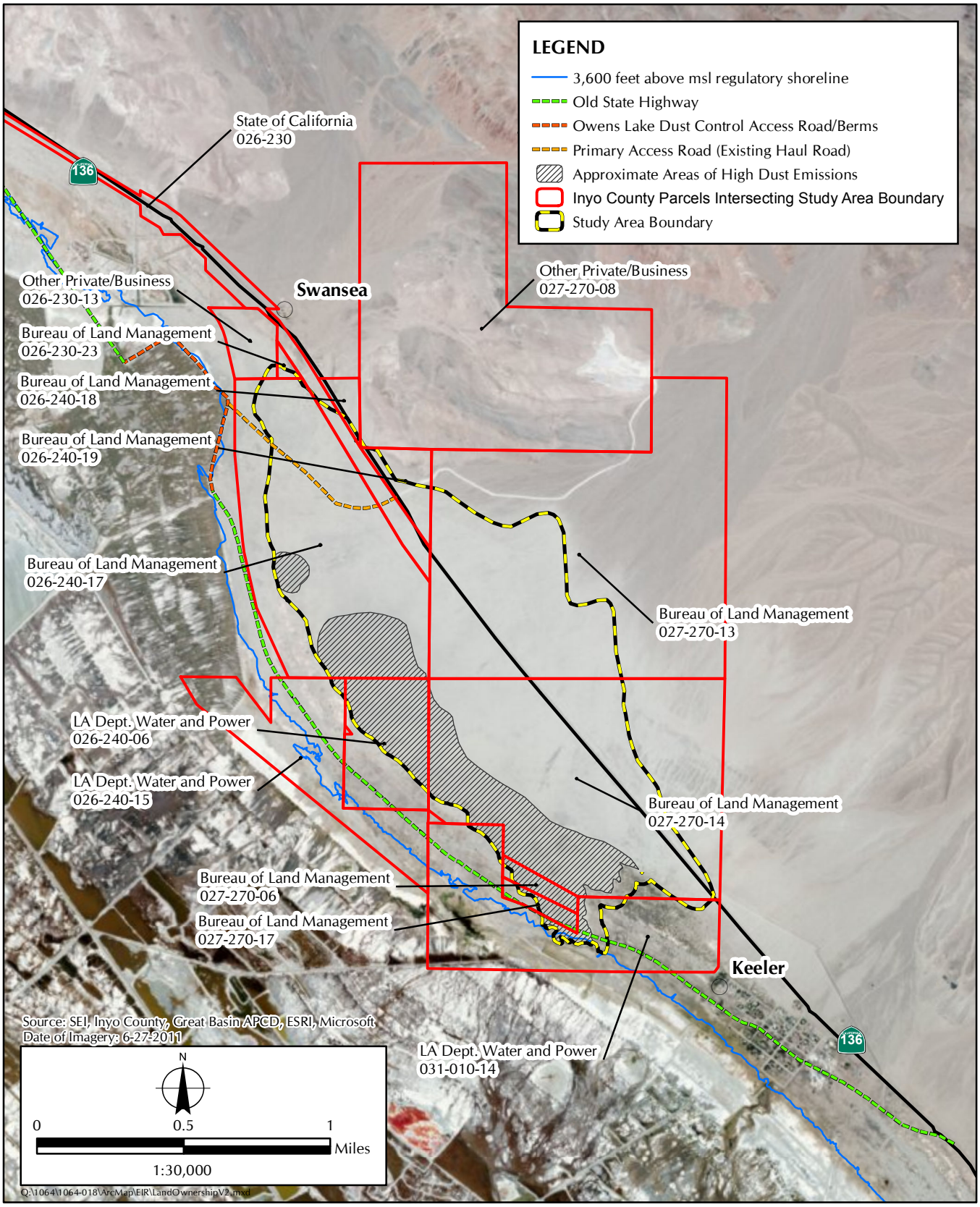

FIGURE 3.9.2.2-1

Land Ownership in the Study Area

B. Inyo County Land Use Designations

While not subject to the local regulatory authority of Inyo County, the Inyo County General Plan recognizes the location of state- and federally owned lands at Keeler Dunes. The Land Use Element of the Inyo County General Plan designates the proposed project / proposed action study area as State and Federal Lands, Natural Resources, and Rural Protection, including the portion administered by BLM.[8]

C. Inyo County Zoning Ordinance

The Inyo County Zoning Ordinance designates the proposed project / proposed action study area as predominantly OS-40, Open Space Zone, and 40-acre minimum lot size.[9] The OS-40 designation encourages the preservation and protection of mountainous, hilly upland, valley, agricultural, potential agricultural, fragile desert areas, and other mandated lands from fire erosion, soil destruction, pollution, and other detrimental effects of intensive land use activities.[10]

D. Existing Land Use

The District has a Sensit network to monitor sand motion, including 16 sand motion monitoring sites located within the proposed project / proposed action study area. District staff collects data and conducts routine maintenance on the Sensit sites. Land use within the proposed project / proposed action study area is characterized by passive recreation use such as walking and wildlife observation by community members from the nearby community of Swansea, community of Keeler, and the Lone Pine Paiute-Shoshone Tribe. The Lone Pine Paiute-Shoshone Tribe uses the area as a sacred site. SR 136 crosses through the study area. Additionally, there are four existing ROWs within the proposed project / proposed action study area consisting of an existing ROW held by LADWP for a 34.5-kilovolt power line (CARI 002605), an existing ROW held by Verizon California Inc. consisting of a telephone line of both aerial and underground cable (CALA 0 087399), a ROW held by the District (CALA 046216) for monitoring sites and activities within the dunes, and a ROW held by the District for the Straw Bale Demonstration Pilot Test Project (CACA 054024). SR 136, held by a Caltrans ROW, is 200 feet from the centerline in width and has been defined on the ground with the concrete edge of ROW monuments. The Southern Pacific Railroad ROW was terminated in 1944 and the management of the land was transferred to the BLM.

[8] Inyo County Planning Department. December 2001. *Inyo County General Plan, Land Use Element*. Independence, CA.

[9] Inyo County. 30 June 2003. "Zoning Ordinance," Title 18, *Inyo County Code*. Independence, CA.

[10] Inyo County. 30 June 2003. "Zoning Ordinance," Title 18, *Inyo County Code*. Independence, CA.

3.10 RECREATION

3.10.1 REGULATORY FRAMEWORK

3.10.1.1 FEDERAL

A. National Environmental Policy Act

The NEPA and its supporting federal regulations establish certain requirements that must be adhered to for any project "financed, assisted, conducted or approved by a federal agency." In making a decision on the issuance of federal grant monies or a permit to conduct work on federal lands for components of the proposed action, the federally designated lead agency pursuant to NEPA is required to "determine whether the proposed action may significantly affect the quality of the human environment." Implementation of the best available control measures under consideration by the District would require a Right-of-Way permit to be issued by the BLM, and thus, an EA has been prepared.

B. Bishop Resource Management Plan

The BLM is the predominant land owner in the Keeler Dunes area. The Keeler Dunes are located within the Owens Lake Management Area and South Inyo Management Area, two of nine management areas managed by the BLM pursuant to the Bishop Resource Management Plan.[1] The proposed DCMs would be implemented within the Owens Lake Management Area, with the exception of the KCSD well tank (Alternative 5), which is located within the South Inyo Management Area. The BLM's responsibilities include managing public land and associated natural resources to provide a variety of uses. Relevant policies include the following:

(1) The Bishop Resource Area will be managed to provide for a variety of dispersed recreation opportunities with an emphasis on primitive, semi-primitive non-motorized and roaded natural experiences.

(2) All BLM lands will be designated as closed, limited, or open to off-highway vehicle (OHV) use. Vehicle use is limited to designated roads and trails.

(3) OHV use will be monitored throughout the resource area. Monitoring efforts will be concentrated in Areas of Critical Environmental Concern, Wilderness Study Areas, other specially designated areas, and areas incurring resource impacts. Mitigation, where needed, will be applied to eliminate or reduce resource problems caused by OHV use.

C. Section 4(f) of the Department of Transportation Act

Section 4(f) of the Department of Transportation Act (recodified at 49 USC 303) analyzes whether a proposed project / proposed action has the potential to result in a "use" of public parks and recreation lands, wildlife and waterfowl refuges, and any historic sites as defined by the Department of

[1] U.S. Department of the Interior, Bureau of Land Management, Bakersfield District. 1993. *Bishop Resource Management Plan Record of Decision*. Bakersfield, CA.

Transportation. Use, within the context of Section 4(f), occurs when a proposed project / proposed action requires a physical taking or other direct control of the land for the purpose of the proposed project / proposed action. Use also includes adverse environmental impacts, also termed constructive use. Constructive use may occur when impacts substantially impair the activities, features, or attributes of the resource that contribute to its significance or its enjoyment. As outlined for the proposed project / proposed action, no such use would be considered applicable for project completion.

3.10.1.2 LOCAL

A. Inyo County General Plan

The Inyo County General Plan contains policies related to recreation in its Conservation and Open Space Element.[2] The Conservation and Open Space Element contains a summary of the existing conditions in the planning area, major issues, and policies designed to aid Inyo County to achieve its goal. Relevant policies include the following:

> **Policy REC-1.1, Natural Environment as Recreation.** Encourage the use of the natural environment for passive recreational opportunities
>
> **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
>
> **Policy REC-1.5, Distribution of Community Parks.** The County shall ensure that community parks are located to ensure equitable distribution of facilities within the County

B. Lower Owens River Project Plan

Inyo County and the LADWP are actively partnering to create a long-term recreational plan for the Lower Owens River Project (LORP) planning area within a context of ecosystem recovery. The LORP includes land on both sides of the Lower Owens River from the Los Angeles Aqueduct intake north of Independence downstream to the delta leading into Owens Lake, and is one of the largest river ecosystem restoration projects in the nation. The proposed project / proposed action study area is located approximately 3 miles southeast of the eastern boundary of the LORP area.[3] The Draft Lower Owens River Recreation Use Plan was prepared for Inyo County on January 15, 2013, with contributions from LADWP, local residents, tribes, and other stakeholders.[4] The Lower Owens River Recreation Use Plan is intended to "minimize conflicts between recreation users, natural resource conservation, cultural resource protection, water facility operations, and ranching" in the establishment of the Lower Owens River as a recreation destination for local and regional outdoor enthusiasts.[5] The

[2] Inyo County Planning Department. December 2001. *Inyo County General Plan, Conservation and Open Space Element*. Independence, CA.

[3] Inyo County Water Department. n.d. *Lower Owens River Project*. Available online at: http://www.inyowater.org/LORP/default.htm

[4] Inyo County Water Department. 15 January 2013. *Draft Plan: Lower Owens River Recreation Use Plan*. Available online at: http://www.inyowater.org/LORP/DOCUMENTS/LowerOwensRiver_RecreationUsePlanDRAFT_011513.pdf. Page 27 contains a map, *Preferred Recreation Concept*, for the recreation area.

[5] Inyo County Water Department. January 15, 2013. *Draft Plan: Lower Owens River Recreation Use Plan*. Available online at: http://www.inyowater.org/LORP/DOCUMENTS/LowerOwensRiver_RecreationUsePlanDRAFT_011513.pdf. Page i, Executive Summary.

purpose of the Recreation Use Plan is to support the LORP goals of establishing healthy, functioning ecosystems while providing for the continuation of sustainable uses including recreation, livestock grazing and agriculture while creating opportunities for local residents and visitors to experience recreation, learn about the ecosystem, and become active stewards of the Lower Owens River.[6,7]

3.10.2 AFFECTED ENVIRONMENT

3.10.2.1 FEDERAL RECREATION

The proposed project / proposed action study area is located approximately 10 miles west of the boundary of Death Valley National Park, approximately 20 miles southeast of the Manzanar National Historic Site, and approximately 11 miles east of the boundary of Sequoia National Park. The proposed project / proposed action study area is largely located on lands administered by the BLM.

There are many federal lands located in the general project vicinity including the Inyo National Forest, Sequoia National Forest, Domeland Wilderness, South Sierra Wilderness, Golden Trout Wilderness, Coso Range Wilderness, Monarch Wilderness, Jennie Lakes Wilderness, Inyo Mountains Wilderness, Sequoia National Park, Kings Canyon National Park, and Death Valley National Park. These surrounding National Forest wilderness areas, National Parks, and National Forest areas provide numerous recreational opportunities including but not limited to hiking, backpacking, horse packing, mountain biking, winter recreation, and ORV use (Figure 1.3.1-1, *Regional Vicinity Map*).

3.10.2.2 COUNTY RECREATION

The proposed project / proposed action study area is located within an unincorporated area of Inyo County. Within Inyo County there are 11 county-run campgrounds and seven county parks, among other recreational areas and facilities.[8] There are 18 public recreational areas within a 1-hour travel time of the proposed project / proposed action. These areas provide access to many types of generally passive recreation. Three of these areas are managed by the BLM, nine are managed by Inyo County, two are managed by the National Park Service (NPS), and four are managed by the U.S. Forest Service (USFS) (Table 3.10.2.2-1, *List of Public Recreation Areas within a 1-Hour Travel Time of the Proposed Project / Proposed Action*).

There are no parks of national, state, or historic nature within a 10-mile radius of the proposed project / proposed action study area. There are no designated parks or recreational facilities within the community of Keeler.

[6] Inyo County Water Department. 1997. *Memorandum of Understanding*. Available at: http://www.inyowater.org/LORP/DOCUMENTS/1997MOU.pdf

[7] Inyo County Water Department. 15 January 2013. *Draft Plan: Lower Owens River Recreation Use Plan*. Available online at: http://www.inyowater.org/LORP/DOCUMENTS/LowerOwensRiver_RecreationUsePlanDRAFT_011513.pdf. Page 3, Section 1.2 Purpose of the Recreation Use Plan.

[8] Inyo County Department of Parks and Recreation. 2008. *Parks and Recreation*. Available at: http://www.inyocounty.us/campgrounds/index.htm

TABLE 3.10.2.2-1
LIST OF PUBLIC RECREATION AREAS WITHIN A 1-HOUR TRAVEL TIME OF THE PROPOSED PROJECT / PROPOSED ACTION

Name	Agency Management	Driving Time from the Proposed Project / Proposed Action in Minutes	Linear Distance from the Proposed Project / Proposed Action in Miles
Alabama Hills Recreation Area	BLM	25–31	11
Tuttle Creek Campground	BLM	29–34	13
Goodale Creek Campground	BLM	49–53	39.5
Dirty Socks Hot Springs	Inyo County	17–19	11.5
Diaz Lake Recreation Area	Inyo County	12–20	9
Mendenhall Park	Inyo County	55–60	51
Taboose Creek Campground	Inyo County	50–51	39.5
Dehy Park	Inyo County	33–34	26
Tinnemaha Campground	Inyo County	54–59	43.5
Portagee Joe Campground	Inyo County	16–19	11
Spainhower Park	Inyo County	14–17	11
Independence Creek Campground	Inyo County	30–35	25.5
Death Valley National Park Boundary	NPS	23–25	17
Manzanar National Historic Site	NPS	24–29	20
Whitney Portal	USFS	39–47	18.5
Onion Valley Road Trailhead	USFS	45–48	27.5
Horseshoe Meadows Road Trailhead	USFS	52–60	13
Kennedy Meadows Trailheads, Campground	USFS	42–103	31.5

Four county-managed recreational areas, one USFS-managed recreational area, and two BLM-managed recreational areas are located within a 15-mile radius of the proposed project / proposed action study area (Figure 3.10.2.2-1, *Nearest Recreational Facilities to the Study Area*):

> The nearest recreational park to the proposed project / proposed action study area is the Diaz Lake Recreation Area, located approximately 9 miles northwest of the proposed project / proposed action study area (a 12–20 minute drive) near the town of Lone Pine. Recreational activities in and around Diaz Lake include swimming, fishing, water skiing, picnicking, boating, grilling, use of play equipment, and camping.[9]
>
> The second nearest recreational area is Spainhower Park, located approximately 11 miles northwest of the proposed project / proposed action study area (a 14–17 minute drive). Formerly called Lone Pine Park, recreational facilities within this park include a lawn area,

[9] Inyo County Parks & Recreation. 2012. *Diaz Lake Campground*. Website. Available online at http://www.inyocountycamping.com/diaz_lake_campground.html

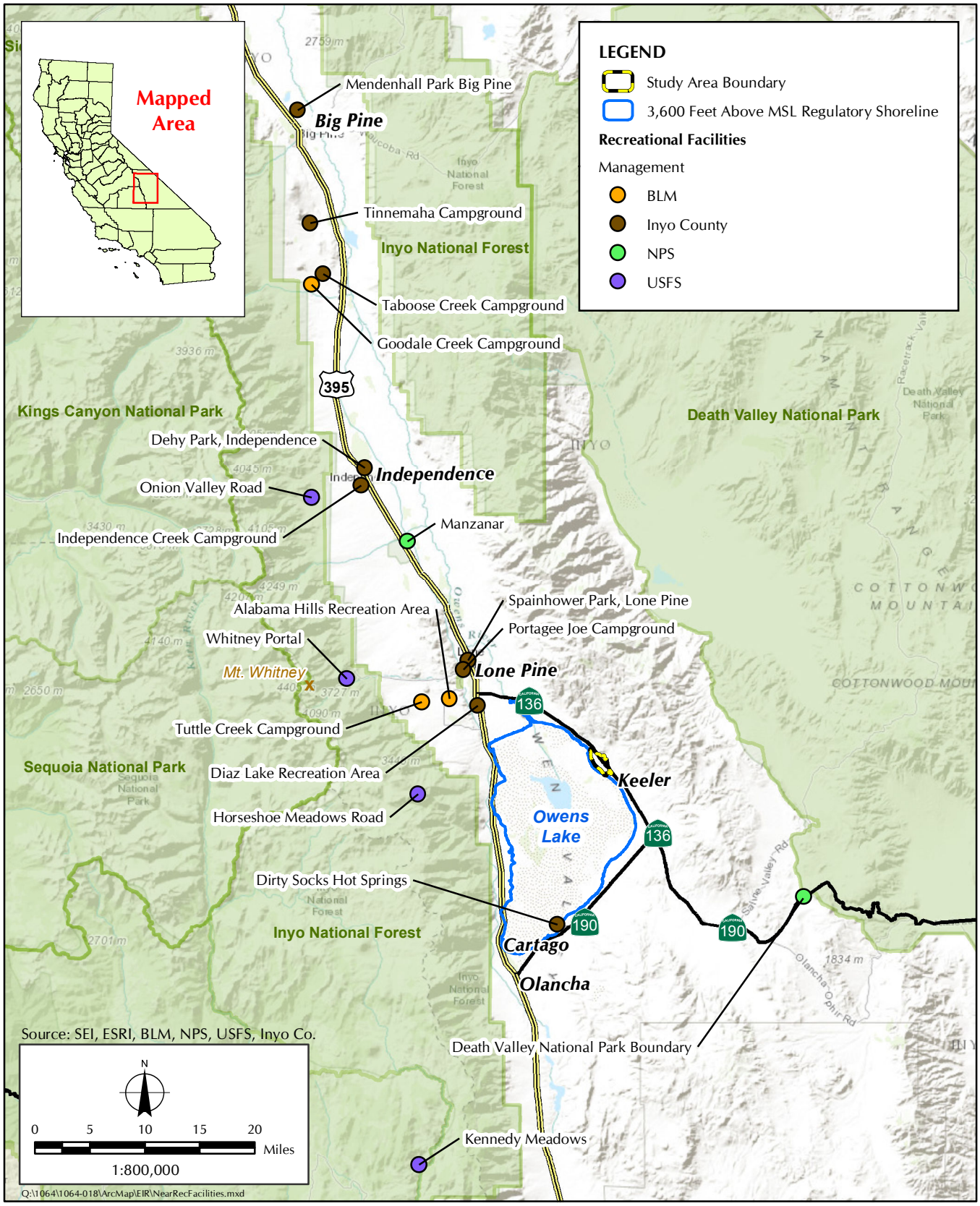

FIGURE 3.10.2.2-1

Nearest Recreation Facilities to the Study Area

tennis and basketball courts, play equipment, a horseshoe-pitching area, a gazebo, and a creek running through the park.[10]

The third nearest recreational area is Portagee Joe Campground, located approximately 11 miles northwest of the proposed project / proposed action study area (a 16–19 minute drive). Portagee Joe Campground provides amenities including vault toilets, grills, potable water, fire rings, a stream, 15 camp spaces, and space to accommodate RVs.[11]

The fourth nearest recreational area is the BLM-managed Alabama Hills Recreation Area, located approximately 11 miles northwest of the proposed project / proposed action study area (a 25–31 minute drive). Recreational activities in and around the Alabama Hills Recreation Area include motor touring, photography, rock climbing, hiking, and wildflower viewing.[12]

The fifth nearest recreational area is the Dirty Socks Hot Springs, located 11.5 miles southwest of the proposed project / proposed action study area (a 17–19 minute drive). Recreational activities in and around the Dirty Socks Hot Springs include birding and wildlife viewing, bird hunting, photography, off-road vehicles, and rock collecting.[13]

The sixth nearest recreational area is Tuttle Creek Campground, located approximately 13 miles northwest of the proposed project / proposed action study area (a 29–34 minute drive). Recreational activities in and around Tuttle Creek Campground include exploring, hiking, sightseeing, and camping.[14]

The seventh nearest recreational area is the Horseshoe Meadows Road Trailhead, located approximately 13 miles west of the proposed project / proposed action study area (a 52–60 minute drive). The trailhead leads to Horseshoe Meadow Area in Inyo National Forest, which contains three campgrounds, and recreational activities in and around Horseshoe Meadow Area include camping, climbing, fishing, hiking, horse riding, and picnicking.[15]

The Keeler Dunes are located primarily on lands owned and administered by the BLM and where, according to the BLM Bishop Resource Management Plan, passive recreation is an allowable use. While the general vicinity is known for passive recreation and OHV use, the Bishop Resource Management Plan states that all BLM lands are to be designated as closed and/or limited to OHV use.[16] The Keeler Dunes are closed to OHV use. Residents of the community of Keeler use the Keeler Dunes

[10] Inyo County Parks & Recreation. 2012. *Spainhower Park (formerly Lone Pine Park*). Website. Available online at: http://www.inyocountycamping.com/lone_pine_park.html

[11] Inyo County Parks & Recreation. 2012. *Portagee Joe Campground*. Website. Available online at: http://www.inyocountycamping.com/portagee_joe_campground.html

[12] U.S. Department of the Interior, Bureau of Land Management. 1 April 2013. *The Alabama Hills*. Website. Available online at: http://www.blm.gov/ca/st/en/fo/bishop/scenic_byways/alabamas.html

[13] City of Los Angeles Department of Water and Power. August 2001. *Mitigated Negative Declaration Southern Zones Dust Control Project, Owens Lake Dust Mitigation Program, Owens Lake, California*. Prepared by: CH2M Hill, Santa Ana, CA.

[14] U.S. Department of the Interior, Bureau of Land Management. 22 October 2013. *Tuttle Creek Campground*. Website. Available online at: http://www.blm.gov/ca/st/en/fo/bishop/camping/tuttle.html

[15] U.S. Forest Service. n.d. *Inyo National Forest: Horseshoe Meadow Area*. Website. Available online at: http://www.fs.usda.gov/recarea/inyo/recreation/camping-cabins/recarea/?recid=20700&actid=29

[16] U.S. Department of the Interior, Bureau of Land Management. April 1993. *Bishop Resource Management Plan, Record of Decision*. Bishop, CA.

for hiking, dog-walking, and other low-impact recreational activities.[17] In addition, there are historic mining towns and smelter sites in the vicinity (Swansea and Cerro Gordo) of the proposed project / proposed action study area that are popular destinations for visitors to the Owens Valley (Figure 3.10.2.2-2, *Historic Mining Towns and Smelter Sites*).

The proposed project / proposed action study area abuts the eastern shoreline of the bed of Owens Lake. The lake bed is included in LADWP's proposed Owens Lake Master Project, which has the goal of maintaining the existing habitat for designated bird guilds while reducing water use while meeting all dust control requirements.[18] Additionally, land near the delta on the lake bed and on both sides of the Lower Owens River is being evaluated for opportunities and constraints regarding recreational activities, such as fishing, non-motorized boating, birding and wildlife viewing, swimming and tubing, water fowl hunting, picnicking and camping, hiking/walking, scenic driving and road biking, mountain biking, historical and cultural tourism, and volunteer stewardship and environmental education (Figure 3.10.2.2-3, *Study Area in Relation to the Lower Owens River Project Planning Area*).

[17] Sapphos Environmental, Inc. 12 July 2011. Memorandum for the Record No. 1. Subject: Summary of the June 29, 2011, Project Kickoff Meeting for the Keeler Dunes Environmental Impact Report / Environmental Impact Statement. Pasadena, CA.

[18] Los Angeles Department of Water and Power. April 2013. *Owens Lake Master Project*. Available from: http://www.ladwpnews.com/go/doc/1475/1750407/

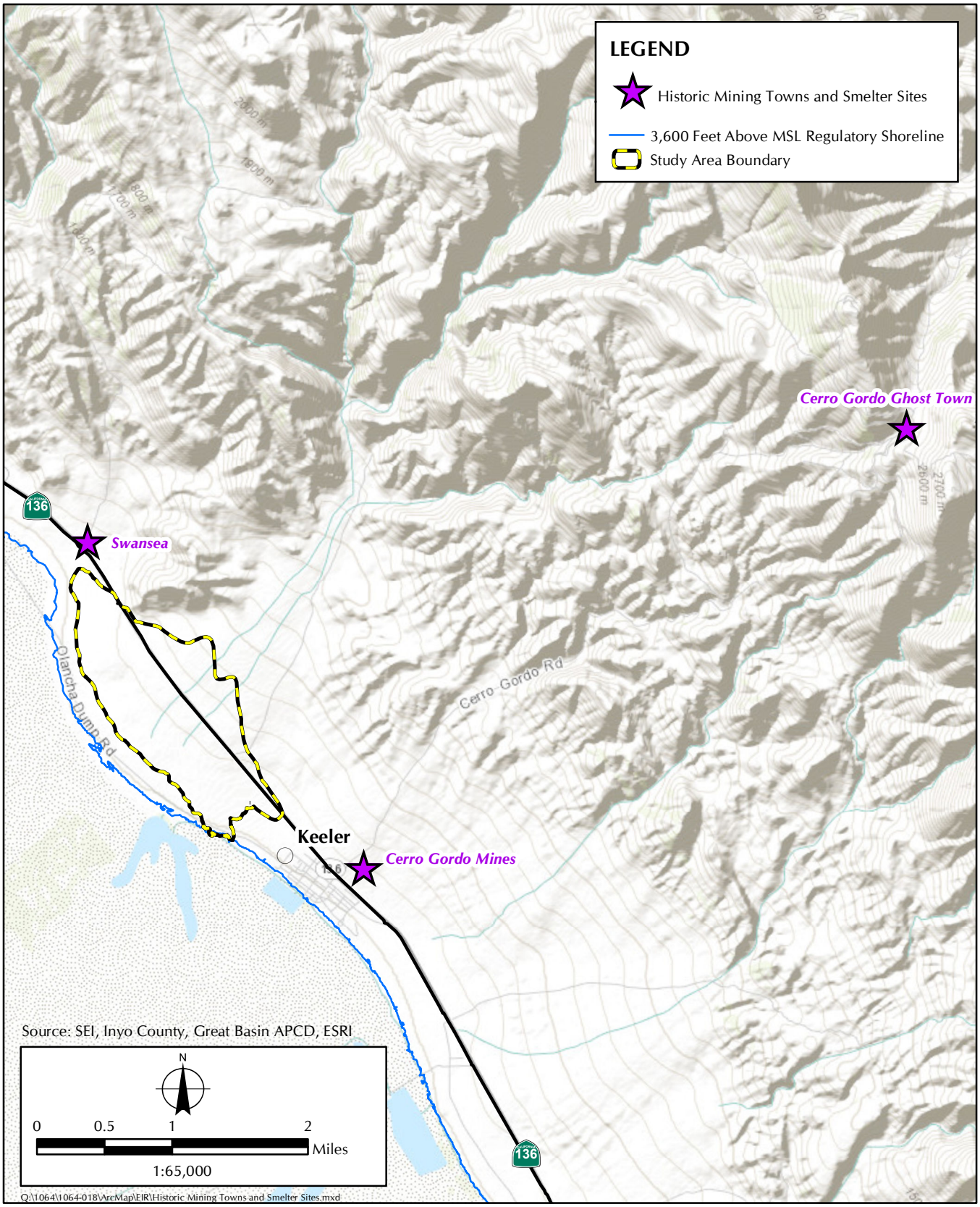

FIGURE 3.10.2.2-2

Historic Mining Towns and Smelter Sites

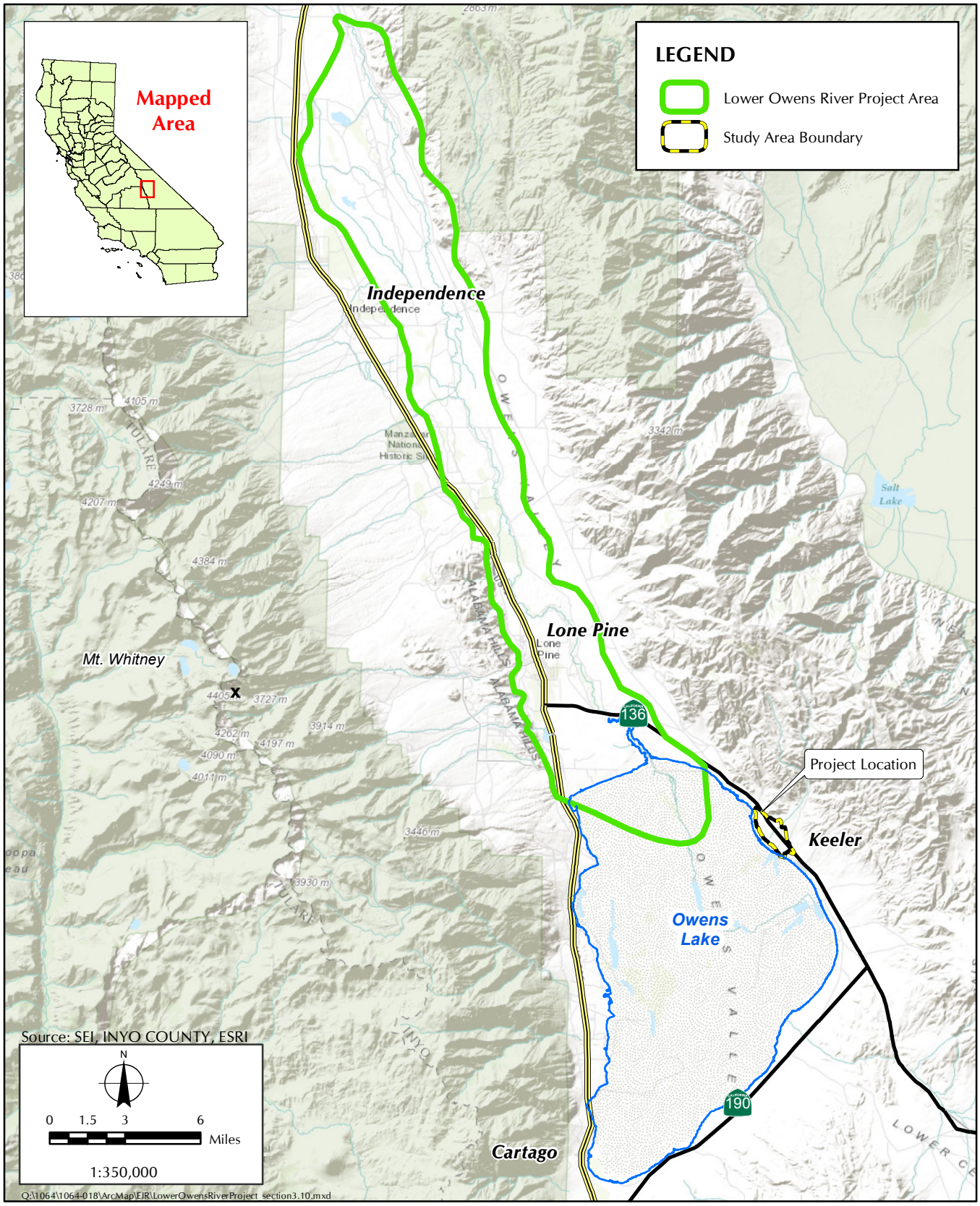

FIGURE 3.10.2.2-3

Study Area in Relation to the
Lower Owens River Project Planning Area

3.11 TRANSPORTATION AND TRAFFIC

3.11.1 REGULATORY FRAMEWORK

3.11.1.1 STATE

A. California Department of Transportation

The State of California Department of Transportation (Caltrans) is responsible for the design, construction, maintenance, and operation of the California State Highway System. Caltrans is also responsible for portions of the Interstate Highway System within the state's boundaries. Caltrans has jurisdiction over state highway right-of-way and has the authority to issue permits for work and encroachment (temporary or permanent) in these areas, and review of traffic control plans.

B. California Water Code

The proposed project / proposed action is subject to the State of California Water Code, Division 12, Part 5, Chapter 1, Article 4, Section 31060, titled "Construction of Rights of Way."[1] Any mitigation measure required to be implemented in a state right-of-way would require a Caltrans Encroachment Permit. Mitigation in excess of $300,000 would require a Caltrans Project Study Report. Caltrans recommends that large-sized trucks transporting construction materials and equipment be limited to off-peak commute periods and any heavy construction equipment that requires the use of oversize transport vehicles on state roadways or facilities would require a Caltrans transportation permit. The construction scenario defined for the proposed project / proposed action would not require the transport of oversize vehicles on state facilities.

3.11.1.2 LOCAL

The Inyo County Regional Transportation Plan (RTP) is a planning document developed in cooperation with Caltrans and other stakeholders to address long-range transportation planning within the County.

The RTP identifies the transportation needs of Inyo County and specifies a course of action that Inyo County policymakers should pursue to achieve a balanced transportation system for both people and goods.[2] This document has a short-term horizon of up to 10 years and a long-term horizon of 20 years. Local, state, and federal agencies with jurisdiction over the quality of Inyo County's transportation system use the RTP as a tool in policy design. Potentially the most relevant policy from the RTP is the following:

> *Policy 2.1.2, Safer Truck Transportation*. Facilitate safer truck transportation and ease the impact of truck traffic on residential areas

The Inyo County General Plan Circulation Element addresses issues related to roadways and highways within the County, as well as the movement of people, products, and materials using a variety of conveyances, from roads to railroads, and bicycle paths to transmission lines.[3]

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[1] *West's Annotated California Codes*. 1984. Volume 69, "Water Code Sections 30000 to 38999. Official California Water Code Classification." St. Paul, MN: West.

[2] Inyo County Local Transportation Commission. 22 April 2009. *Inyo County Regional Transportation Plan.* Independence, CA.

[3] Inyo County Planning Department. December 2001. *Inyo County General Plan, Circulation*. Independence, CA.

The following goals and policies are relevant to the proposed project / proposed action:

> *Goal RH-1*. A transportation system that is safe, efficient, and comfortable, which meets the needs of people and goods and enhances the lifestyle of the County's residents
>
> > Policy RH-1.3 Safer Truck Transportation. Facilitate safer truck transportation and ease the impact of truck traffic on residential areas
> >
> > Policy RH-1.4 Level of Service. Maintain a minimum level of service (LOS) "C" on all roadways in the County. For highways within the County, LOS "C" should be maintained except where roadways expansions or reconfigurations would adversely impact the small community character and economic viability of designated Central Business Districts.
> >
> > Policy RH-1.5 Proper Access. Provide proper access to residential, commercial, and industrial areas
> >
> > Policy RH-1.6 Minimize Environmental Impacts. Ensure that all transportation projects minimize adverse effects on the environment of the County

3.11.2 AFFECTED ENVIRONMENT

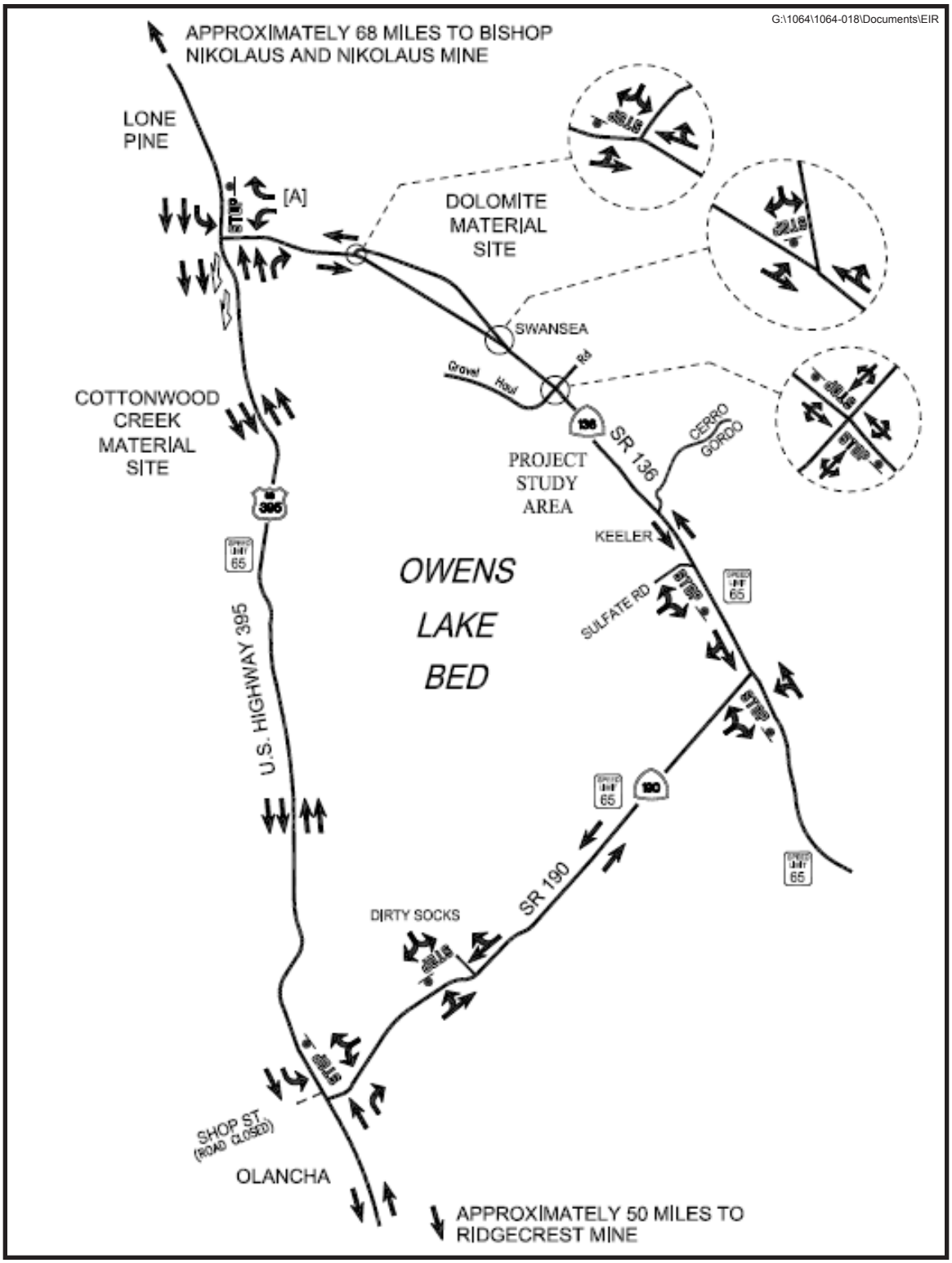
Information contained in this section is summarized from the *Traffic Impact Study* prepared by Linscott, Law, & Greenspan Engineers. This document is provided as Appendix H of this EIR/EA.

3.11.2.1 EXISTING CIRCULATION ELEMENTS

Access to the site from the west is from U.S. Highway 395 via State Route (SR) 136 on the north or from the U.S. Highway 395 via SR 190 from the south, or from SR 190 via SR 136 from the east (as shown in Figure 1.3.1-1*, Regional Vicinity Map*). There are three additional roadways that provide access to the proposed project / proposed action area (Figure 2.1.5.2-2, *Location of Infrastructure Elements Common to All Action Alternatives*): (1) the Old State Highway alignment parallel to the western boundary of the proposed project / proposed action study area; (2) the Owens Lake Dust Control Access Roads/Berm northwest of the proposed project / proposed action study area; and (3) the primary access route into the proposed project / proposed action study area is an existing dirt road used to haul gravel to the Owens Lake bed dust control proposed project / proposed action (haul road). Both the Old State Highway and existing dirt road used to haul gravel are unpaved access routes. The Old State Highway provides site access from the north, while the existing dirt road provides site access from the east.

A. U.S. Highway 395

U.S. Highway 395 is the main transportation route through Inyo County. U.S. Highway 395 is included on the Inter-Regional Road System and is functionally classified as Rural Principal Arterial (Figure 3.11.2.1-1, *Existing Roadway Conditions*). The highway connects the proposed project / proposed action study area with Mono County and Reno to the north and the Southern California metropolitan area to the south. Adjacent to the Owens Lake bed, the majority of U.S. Highway 395 is a divided four-lane expressway with a posted speed limit of 65 mph. U.S. Highway 395 is a major highway used by commercial traffic traveling within the Owens Valley and by recreational traffic traveling around Southern California and the Sierra Nevada Mountain Range. In the Cartago/Olancha area, U.S. Highway 395 transitions from a four-lane highway to a two-lane highway.



LINSCOTT LAW & GREENSPAN engineers

FIGURE 3.11.2.1-1
Existing Roadway Conditions

At the U.S. Highway 395 intersection with SR 136, one exclusive left-turn lane and two through lanes are provided at the southbound approach on U.S. Highway 395. Two through lanes and a channelized right-turn-only lane are provided at the northbound approach on U.S. Highway 395. A southbound departure auxiliary lane is also provided for the westbound left-turn movement from SR 136 to southbound on U.S. Highway 395. Twelve-foot-wide lanes with paved shoulders are provided in each direction on U.S. Highway 395 near the SR 136 intersection and in the proposed project / proposed action vicinity. The posted speed limit along U.S. Highway 395 at SR 136 varies from 55 mph south of intersection to 45 mph both north and south of the intersection.

At the U.S. Highway 395 intersection with SR 190, one exclusive left-turn lane and one through lane are provided at the southbound approach on U.S. Highway 395. One through lane and one channelized right-turn-only lane are provided at the northbound approach on U.S. Highway 395. Twelve-foot-wide lanes with paved shoulders are provided in each direction on U.S. Highway 395 near the SR 190 intersection and in the proposed project / proposed action vicinity. The posted speed limit along U.S. Highway 395 at SR 190 is 55 mph just north of the intersection.

It is noted that the two-lane portion (i.e., one lane in each direction) of U.S. Highway 395 near Cartago/Olancha is planned to be improved to four lanes.[4] Caltrans plans to convert approximately 12.6 miles of the existing U.S. Highway 395 from a two-lane conventional highway into a four-lane expressway or partial conventional four-lane highway from post mile 29.2 to post mile 41.8 in Inyo County. The new facility would have four 12-foot lanes with a variable median width and paved shoulders.

B. State Route 136

SR 136 is a two-lane conventional highway that is classified as a Minor Arterial (two- to four-lane streets that service local and commute traffic), providing access to the historic sites of Dolomite, the community of Swansea, and the community of Keeler. Primary access to the north and eastern portions of the Owens Lake bed also is provided via SR 136. SR 136 runs northwest to southeast between U.S. Highway 395 to the north and SR 190 to the south. Twelve-foot-wide lanes with unimproved gravel shoulders are provided in each direction in the proposed project / proposed action vicinity. The posted speed limit is 65 mph. The existing roadway configuration of SR 136 is shown in Figure 3.11.2.1-1.

At the SR 136 intersection with U.S. Highway 395, which is a "Tee" intersection, a one-way stop sign control is provided at the westbound approach on SR 136. One left-turn lane and one channelized right-turn-only lane are provided at the westbound approach on SR 136 at the U.S. Highway 395 intersection.

At the SR 136 intersection with SR 190, which is another "Tee" intersection, a one-way stop sign control is provided at the eastbound approach on SR 190. One combination through/right-turn lane and one combination left-turn/through lane are provided at the southbound and northbound approaches on SR 136, respectively, at the SR 190 intersection.

C. State Route 190

SR 190 is an interregional two-lane conventional highway that is classified as Minor Arterial, which provides access from U.S. Highway 395 at the eastern flank of the Sierra Nevada Mountains to SR 127

[4] U.S. Department of Transportation, Federal Highway Administration and the State of California Department of Transportation. August 2010. *Olancha/Cartago Four-Lane Project, Initial Study with Proposed Mitigated Negative Declaration/Environmental Assessment*. Washington, DC, and Sacramento, CA.

at Death Valley Junction near the California-Nevada border. SR 190 is a two-lane highway that is oriented southwest to northeast between U.S. Highway 395 to the west and SR 136 to the east and then is oriented to the southeast from the SR 136 intersection. Twelve-foot-wide lanes with unimproved gravel shoulders are provided in each direction on SR 190 in the proposed project / proposed action vicinity. Primary access to the southern portions of the Owens Lake bed is provided via SR 190. The posted speed limit along SR 190 is 65 mph. The existing roadway configuration of SR 190 is shown in Figure 3.11.2.1-1.

At the SR 190 intersection with U.S. Highway 395, stop control is provided at the westbound approach on SR 190 and the west leg of the intersection is closed. One combination left-turn/right-turn lane is provided at the westbound approach on SR 190 at the U.S. Highway 395 intersection.

At the SR 190 intersection with SR 136, which is a "Tee" intersection, a one-way stop sign control is provided at the eastbound approach on SR 190. One combination left-turn/right-turn lane is provided at the eastbound approach on SR 190 at the SR 136 intersection.

3.11.2.2 Existing Level of Service

A. Vehicular Traffic

Recent traffic counts for U.S. Highway 395, SR 136, and SR 190 in the proposed project / proposed action vicinity were researched from data provided in *2011 Traffic Volumes on California State Highway System*, which was published by Caltrans in August 2012 (Figure 3.11.2.2-1, *Existing Year 2011 Annual ADT Volumes*).[5] The Annual Average Daily Traffic (AADT) is the total traffic volume for the year divided by 365 days.

U.S. Highway 395 Traffic Volumes

The AADT volume on U.S. Highway 395 between SR 136 and SR 190 varies between 5,450 and 5,860 vehicles per day, respectively, with a peak hour traffic volume of approximately 1,100 vehicles (year 2011 traffic volumes adjusted to reflect year 2012 conditions). This AADT volume is well below the capacity of the four-lane section of the highway, extending between SR 136 and SR 190.

State Route 136 Traffic Volumes

The AADT along SR 136 ranges from approximately 545 vehicles east of U.S. Highway 395 to approximately 435 vehicles near SR 190 at the Olancha cutoff (year 2011 traffic volumes adjusted to reflect year 2012 conditions). The peak hour traffic volume at both of these locations is approximately 70 vehicles per hour. The current traffic volume data indicates that this route is currently operating well below capacity.

State Route 190 Traffic Volumes

The AADT volume along SR 190 ranges from approximately 230 vehicles both east of U.S. Highway 395 and west of SR 136 (year 2011 traffic volumes adjusted to reflect year 2012 conditions). The peak hour traffic volume at both of these locations is approximately 50 vehicles per hour. The current traffic volume data indicates that this route is currently operating well below capacity.

[5] California Department of Transportation. August 2012. *2011 Traffic Volumes on California State Highway System*. Sacramento, CA.

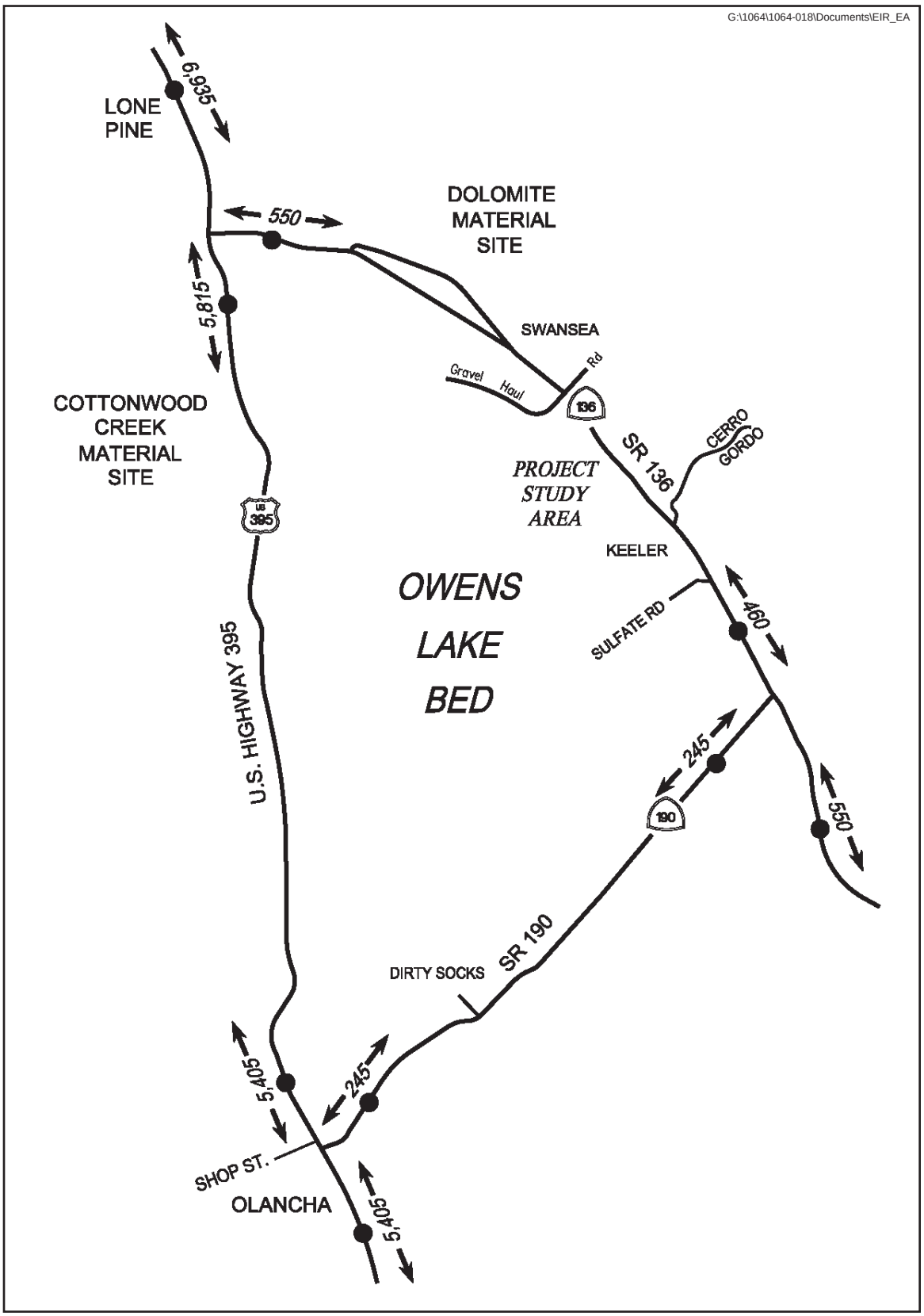


FIGURE 3.11.2.2-1
Existing 2011 Annual ADT Volumes

B. Roadway Design Configurations

The proposed project / proposed action study area is located adjacent to SR 136, which currently experiences compromised visibility during dust events. Visibility in the Owens Valley generally ranges from 37 to 93 miles, with the best visibility occurring during the winter. Visibility is most limited from October through June during high wind events that cause dust storms from the Keeler Dunes and uncontrolled sources on the Owens Lake bed. Owens Lake bed and Keeler Dunes dust storms can reduce visibility to zero. Dust storms from the Keeler Dunes mostly impact the local region near the communities of Keeler and Swansea, as well as traffic along SR 136. The main cause of visibility degradation in the Owens Valley is fine particulates in the atmosphere. In addition to dust from the Owens Lake bed and the Keeler Dunes, visibility degradation results and elevated PM_{10} levels are associated with forest fires that occur in the Sierra Nevada Mountains.[6]

C. Vehicular Emergency Access/Egress

The procedures for vehicular emergency access and egress for Inyo County are defined in the *Hazardous Materials Area Plan*.[7] The Inyo County Sheriff's Department has the primary responsibility for evacuation and identifying evacuation routes on incident by incident basis. The primary evacuation routes in the County consist of the major streets, state routes, and highways within the County, including US 395, SR 136, and SR 190, in the vicinity of the proposed project / proposed action study area. Additionally, for the proposed project / proposed action, the Old State Highway and Gravel Haul Road would be part of the routes used for emergency access and egress.

D. Existing Parking Conditions

The proposed project / proposed action study area does not include any permanent parking.

E. Existing Alternative Transportation Systems

There are no public transportation services (such as bus routes or dial-a-ride) or Class I, II, or III bike lanes serving the community of Keeler, or the proposed project / proposed action study area.[8,9,10]

F. Air Traffic

The Eastern Sierra Regional Airport (KBIH)[11] is located approximately 2 miles east of the city of Bishop, California, approximately 60 miles north of the proposed project / proposed action study area. The Lone Pine Airport, a publicly owned, privately operated airport is located approximately 12 miles northwest of the proposed project / proposed action study area.

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[6] Great Basin Unified Air Pollution Control District. 2 July 2008. *Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan Final Environmental Impact Report*. State Clearinghouse Number 96122077. Bishop, CA.

[7] County of Inyo Department of Environmental Health Services. September 2008. *Hazardous Materials Area Plan*. Prepared by Risk Management Professionals [RMP], Inc.

[8] Inyo County Planning Department. December 2001. *Inyo County General Plan, Circulation*. Independence, CA.

[9] Inyo County Planning Department. December 2001. *Inyo County General Plan, Circulation*. Independence, CA.

[10] County of Inyo Local Transportation Commission. 2013. *Inyo County Collaborative Bikeways Plan, Appendix C.*

[11] Bishop Airport Homepage. Accessed 3 October 2012. Available at: http://www.inyocounty.us/Airport/index.html