TWENTY-NINE PALMS CASINO PROJECT

Tribal Environmental Assessment

Prepared for the
Twenty-Nine Palms Band of Mission Indians

January 2013

ESA

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SECTION 1
Introduction

1.1 Introduction

This Tribal Environmental Assessment (TEA) has been prepared for the Twenty-Nine Palms Band of Mission Indians (Tribe) to analyze the potential off-Reservation impacts of a proposed casino project on the Tribe's Reservation in San Bernardino, California. This TEA has been prepared pursuant to Section 10.8 of the Tribal State Gaming Compact between the Tribe and the State of California, and the Tribe's Environmental Protection Ordinance. Both the Compact and Tribal Ordinance require that the Tribe determine whether gaming-related projects would result in significant adverse impacts on the off-Reservation environment.

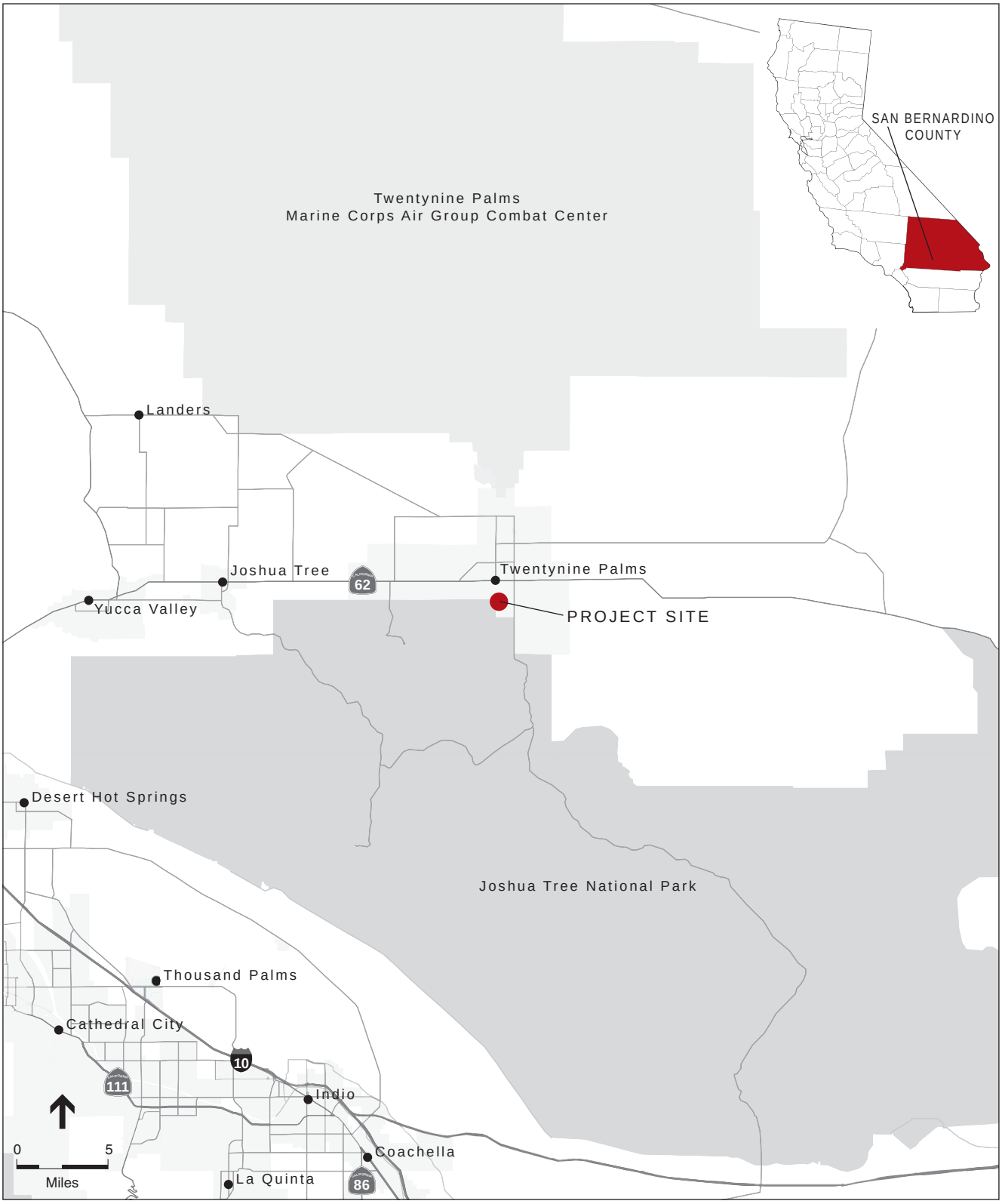
1.2 Project Location

The project is located on the Tribe's 160-acre Reservation in San Bernardino County, California (refer to **Figure 1** for regional location). This location corresponds to Township 1 South, Range 9 East, in the northwest quadrant of Section 4 on the Queen Mountain USGS 7.5-minute topographic quadrangle map. Regional access to the Reservation is provided by State Route 62, which is located approximately one mile north of the Reservation.

The Reservation is shown on **Figure 2** and is currently undeveloped. The Reservation is bordered by the City of Twentynine Palms to the north, east and south. The roads which border the northern, eastern and southern boundaries of the Reservation are Baseline Road, Desert Knoll Avenue, and Twilight Drive, respectively. Adobe Road and Joshua Tree National Park border the western boundary of the Reservation. Construction and operational activities are proposed on approximately 32 acres in the northwestern portion of the Reservation, shown as the project site on **Figure 2**.

1.3 Purpose and Need

The purpose of the proposed project is to develop the Tribe's Reservation with an economically sustainable development. Revenues from the project would help the Tribe maintain and improve a variety of social, governmental, administrative, educational, health and welfare services provided to Tribal members. The project would also aid in diversifying revenue for the Tribe which strengthens the Tribe's economic self-sufficiency.



SOURCE: DeLorme Street Atlas, 2000; and ESA, 2012

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Figure 1
Regional Location

SOURCE: USDA, 2012; MSA Consulting, 2013; and ESA, 2013

Figure 2
29 Palms Reservation and Project Site

Development of the proposed casino would allow the Tribe to achieve these objectives. The viability of a gaming project is strengthened by the fact that casino gaming entertainment is not readily available in or near the City of Twentynine Palms. The closest gaming operation is the Morongo Casino, located 55 miles west in Cabazon, California.

1.4 Overview of the Environmental Review Process

Pursuant to the Compact requirements, the Tribe adopted the Environmental Impact Ordinance that provides for the preparation, circulation, and consideration by the Tribe of a TEA that addresses off-Reservation impacts for gaming-related projects. The Compact and Environmental Impact Ordinance also require one public hearing concerning the TEA prior to approval. The TEA will be submitted to the State of California Clearinghouse and local planning agencies. A Final TEA will be prepared subsequently to address comments received during circulation and the public hearing.

SECTION 2
Alternatives

This TEA analyzes two alternatives, the proposed project and a no-action alternative. These alternatives are described below.

2.1 Proposed Project

The development would be contained within the tortoise exclusion fence shown previously on **Figure 2**; the area within the exclusion fence is hereafter called the project site and encompasses approximately 32 acres. The proposed project is the development of a 30,000 square foot casino and associated facilities on the project site. A conceptual site plan is included as **Figure 3**. The casino would be up to 35 feet in height. The development would include 450 paved surface parking spaces. Additional overflow parking as shown on the site plan and grading plan could be developed between these planned spaces and the retention basin, to accommodate a gradual increase in visitors which is expected to occur over time. Vehicle access to the project would be provided by Baseline Road.

A conceptual floor plan is included as **Figure 4** and the proposed development program is included as **Table 2-1**. The casino would have a maximum of 500 slot machines and six game tables. In addition to the gaming floor and cashier cage, the project would include a deli, bar, administrative offices and back-of-house areas. The project would employ approximately 100 employees including part-time employees. Employee parking and a loading and service area would be located south of the casino building.

TABLE 2-1
PROPOSED DEVELOPMENT PROGRAM

Component	Units	Area (sf)
Casino Building		
Gaming Floor	500 slot machines, 6 tables	16,000
Back-of-House		10,000
Deli	32 seats	2,000
Bar	74 seats	2,000
Total		**30,000**
Wastewater Treatment Plant Total		**600**

SOURCE: JMA, 2012; ECOfluid Systems, 2012.

1 Retention Basin
2 Main Public Entry/Exit
3 Casino Parking (450 Spaces)
4 Casino 30,122 GSF (500 Slots)
5 Mechanical Yard
6 Loading/Service Yard/60 Staff Parking

NOTE: See Appendix A for revised grading plan.

0 150
Feet

SOURCE: JMA, 2012; and ESA, 2012

Figure 3
Conceptual Site Plan

SOURCE: JMA, 2013; and ESA, 2013

Figure 4
Floor Plan

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An architectural rendering is included as **Figure 5**. As shown, the design would use natural colors which blend with the existing landscape. These materials include glazing, stacked stone, concrete and corten metal panels. Road signage located on the project site (adjacent to Baseline Road) would also use natural colors and would be up to 15 feet in height (**Figure 6**). Outdoor lighting would be fully shielded or would be constructed so that light rays are not directed upward or onto adjacent property. Lighting within parking areas would be oriented downward with cut-off fixtures. Drought tolerant landscaping would be used in the immediate vicinity of the project buildings and parking areas.

Construction could begin as early as March 2013 with completion scheduled for approximately November 2013. Construction staging would be located on the project site. The development will be constructed in compliance with the California Building Code and Uniform Fire Code. In addition, the development will comply with the federal Americans with Disabilities Act, P.L. 101-336, as amended, 42 U.S.C. Section 1201 et seq. Construction would also include installation of an underslab vapor barrier.

A preliminary grading plan is included as Appendix A. Grading activities would have a duration of at least 60 days and would include the import of approximately 50,000 cubic yards of fill would need to be imported. The grading plan assumes that the project buildings would be built above the floodplain. A flood wall would be developed south of proposed facilities, surrounding the proposed staff parking and loading/service area. As shown on the grading plan, stormwater flows would be directed north to retention basins between the parking lot and Baseline Road. Prior to construction the Tribe would develop a Stormwater Pollution Prevention Plan (SWPPP) which would be followed through the duration of construction. The SWPPP would ensure minimization of adverse effects to off-site water quality during construction. The SWPPP is discussed further in Section 3.13, Water Resources.

Water would be provided by Twentynine Palms Water District via a new extension from the 8-inch water line on Baseline Road. Wastewater would be treated by a new 600 square foot wastewater treatment plant on the project site which provides at least secondary treatment. It is anticipated that the wastewater treatment plant will utilize upflow sludge blanket filtration technology. This technology utilizes aerobic treatment with an activated sludge process. The wastewater treatment would be designed for an average flow rate of 17,000 gallons per day and a peak flow of 25,000 gallons per day. Treated effluent would be disposed via seepage pits and/or leachfield.

Electricity would be provided by Southern California Edison which provides service adjacent to the site at the 480V distribution level. The project electrical load is estimated at 1.5 mega-volt amperes. For heating the use of propane is planned; however the Tribe is also considering service from Southern California Gas Company, which is the natural gas utility provider for the area. The nearest natural gas line is approximately 3,300 feet east of the project entrance along Baseline Road.

2.2 No-Action Alternative

Under the no-action alternative, development of a casino would not occur on the Reservation. In the short term the land would likely remain undeveloped but could be developed in the future for other Tribal needs.

2.3 Alternatives Considered Previously

In 2008, the Tribe analyzed the development of a larger development including a 70,000 square foot casino, 250-room hotel and RV Park. The Tribe also analyzed development of a 60,000 square foot casino and RV Park. In comparison these alternatives would have greater environmental effects and were eliminated from consideration in this TEA.

SOURCE: JMA, 2012; and ESA, 2012

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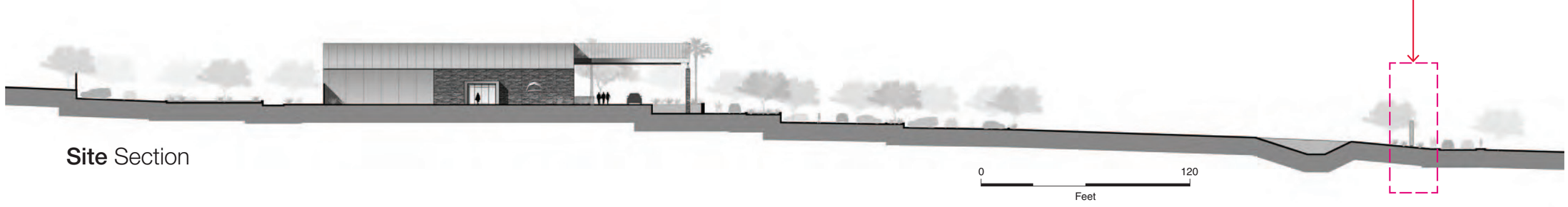
Figure 5
Architectural Rendering



Site Section

SOURCE: JMA, 2012; and ESA, 2012

Figure 6
Proposed Signage

SECTION 3
Off-Reservation Environmental Assessment

For each environmental resource area, this section presents both the existing setting for the affected environment and the potential impacts associated with the proposed project and no action alternatives.

3.1 Aesthetics

3.1.1 Setting

The Reservation is located in the Morongo Basin which forms the southwestern corner of the Mojave Desert. The western Mojave Desert is a flat, sparsely vegetated region that is interspersed with mountain ranges. Areas north and east of the Reservation are generally flat and include urban development, primarily residential and commercial uses, within the City of Twentynine Palms. To the west and south of the Reservation are undeveloped, mountainous areas within Joshua Tree National Park. The boundary of Joshua Tree National Park is considered a unique view of a scenic resource, or a scenic vista, by the City of Twentynine Palms as discussed under Regulatory Setting, below.

The Reservation is undeveloped and generally flat with the exception of hilly terrain in the southwestern portion. The project site is visible from residential development located to the east and north, and Palm Vista Elementary School to the northeast across Baseline Road. The project site is visible to recreational uses at the Oasis of Mara, approximately 0.5 miles to the northeast. The project site is visible to motorists driving along Baseline Road, Adobe Road (north of the project site) and Utah Trail. The northern entrance to Joshua Tree National is located 3 miles southeast of the project site on Utah Trail; however the project site would not be visible at the entrance from this distance.

Regulatory Setting

The Reservation is not subject to local regulations however the relevant regulations for the surrounding area are discussed here.

Caltrans State Scenic Highway Program

The project site is not located near an officially designated state scenic highway (California Department of Transportation, 2012).

City of Twentynine Palms General Plan

The City of Twentynine Palms General Plan (2012) considers the Joshua Tree National Park boundary to be a scenic vista and has established a National Park Buffer Overlay to discourage development that could potentially impact the scenic vista. Within this area, intensification of allowable development densities is discouraged and development standards will be established. The project site is within the National Park Buffer Overlay but is not subject to the City's development regulations. Chapter 19.18 of the City Municipal Code does not currently have development standards for the National Park Buffer Overlay. Additionally, the proposed project would not result in an intensification of the allowable development density as there is no established development density for Tribal land.

The City has also established a Hillsides Overlay to preserve and protect scenic resources and vistas and to project development from earthquake induced slope failure. The southwestern portion of the Reservation is within the Hillsides Overlay; however, the project site is not within the overlay.

Twentynine Palms Highway, located one mile north of the project site, is designated by the General Plan as a scenic highway and portions of Utah Trail are designated as a scenic corridor. The project site is not located within the City's Scenic Vistas and Highways Buffer Overlay which regulates development along designated scenic corridors.

Night Sky Ordinance

The City of Twentynine Palms has adopted a Night Sky Ordinance (April 26, 2005) to preserve views of the night sky which could be affected by nighttime lighting. The Ordinance requires that outdoor lighting be fully shielded (unless exempted) or constructed to that light rays are not directed upward or onto adjacent property. Street and parking lot lighting shall be oriented downward with cut-off fixtures.

3.1.2 Impact Analysis

Proposed Project

Off-Site Views

The proposed project would change the visual character of the project site which is currently undeveloped. The development would primarily affect scenic views for: residential development to the north and east; the existing school to the northeast; recreational visitors at the Oasis of Mara; and motorists along Baseline Road, Adobe Road (north of the project site) and Utah Trail.

To reduce the visual impact the proposed project has incorporated natural colors and building materials into proposed facilities and signage, as shown in Figure 5 and 6 in Section 2. The proposed project is also limited to a single-level structure of up to 35 feet in height, thus the tops of mountainous areas to the south and west would still be visible behind the proposed development.

The Joshua Tree National Park boundary is currently visible from the City of Twentynine Palms for several miles and would remain a dominant scenic vista. The proposed development affects a very small portion of this viewshed. The use of natural materials and neutral colors for the project facilities and signage would further mitigate the effects of development of the project site. For these reasons the aesthetic impact to off-Reservation views is considered less than significant.

Nighttime Sky

The Tribe has agreed to comply with the Night Sky Ordinance to the maximum extent feasible. To this extent, the proposed project would utilize outdoor lighting which is fully shielded or constructed so that light rays are not directed upward or onto adjacent property. Street and parking lot lighting would be oriented downward with cut-off fixtures. With incorporation of these features into the project design (see Section 2), off-Reservation impacts would be less than significant.

No Action Alternative

Under the no action alternative there would be no change to the visual character of the project site. Thus there would be no impact to off-Reservation views or views of the night sky.

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3.2 Air Quality

3.2.1 Setting

This section addresses the impacts of the proposed project on ambient air quality and the exposure of people, especially sensitive individuals, to unhealthful pollutant concentrations, including the type and quantity of emissions that would be generated by the construction and operation of the proposed project. The analysis of project emissions focuses on whether the project would cause an exceedance of a threshold recommended by the Mojave Desert Air Quality Management District (MDAQMD) for off-Reservation impacts.

Environmental Setting

Climate and Meteorology

The proposed project is located in the Mojave Desert Air Basin (MDAB). Prevailing winds in the MDAB are out of the west and southwest, due to the proximity of the MDAB to coastal and central regions and the blocking nature of the Sierra Nevada Mountains to the north; air masses pushed onshore in Southern California by differential heating are channeled through the MDAB.

During the summer the MDAB is generally influenced by a Pacific Subtropical High cell that sits off the coast, inhibiting cloud formation and encouraging daytime solar heating. The MDAB is rarely influenced by cold air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse by the time they reach the desert. Most desert moisture arrives from infrequent warm, moist, and unstable air masses from the south. The MDAB averages between three and seven inches of precipitation per year (from 16 to 30 days with at least 0.01 inches of precipitation). The MDAB is classified as a dry-hot desert climate, with portions classified as dry-very hot desert, to indicate at least three months have maximum average temperatures over 100.4ºF (MDAQMD, 2011).

Criteria Air Pollutants

The air pollutants for which federal and State standards have been promulgated and which are most relevant to air quality planning and regulation in the air basins include ozone, carbon monoxide, nitrogen oxides, suspended particulate matter, sulfur dioxide, and lead. Health effects and major sources for these pollutants are briefly described in **Table 3.2-2** below.

Existing Air Quality

The California Air Resources Board (ARB) collects ambient air quality data locally through a network of air monitoring stations throughout the State. For the three pollutants for which the MDAB remains "nonattainment", ozone, PM10, and PM2.5, the closest monitoring stations to the proposed project are the Joshua Tree National Monument station, the Lucerne Valley Middle School station, and the Big Bear City station, respectively. **Table 3.2-1** identifies the most recent available data for federal and State ambient air quality standards for the relevant air pollutants, along with the ambient pollutant concentrations that were measured between 2009 and 2011.

TABLE 3.2-1
AIR QUALITY DATA SUMMARY (2009-2011) FOR THE PROJECT SITE VICINITY

Pollutant	Monitoring Data by Year		
	2009	2010	2011
Ozone – Joshua Tree National Monument Station			
Highest 1 Hour Average (ppm)[b]	**0.121**	**0.119**	**0.121**
Days over State Standard (0.09 ppm)[a]	24	19	21
Highest 8 Hour Average (ppm)[b]	**0.104**	**0.106**	**0.105**
Days over National Standard (0.075 ppm)[a]	59	53	56
Days over State Standard (0.07 ppm)[a]	90	90	90
Particulate Matter (PM10) – Lucerne Valley Middle School Station			
Highest 24 Hour Average – State/National ($\mu g/m^3$)[b]	**81.0**/93.0	38.0/43.0	31.0/33.0
Estimated Days over National Standard (150 $\mu g/m^3$)[a,c]	0	0	NA
Estimated Days over State Standard (50 $\mu g/m^3$)[a,c]	6.1	0	NA
State Annual Average (State Standard 20 $\mu g/m^3$)[a,b]	15.4	13.4	NA
Particulate Matter (PM2.5) – Big Bear City Station			
Highest 24 Hour Average ($\mu g/m3$)[b] – National Measurement	**40.7**	35.4	30.7
Estimated Days over National Standard (35 $\mu g/m^3$)[a,c]	6.6	NA	0
State Annual Average (12 $\mu g/m3$)[b]	9.9	NA	NA

a Generally, state standards and national standards are not to be exceeded more than once per year.
b ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.
c PM10 and PM2.5 is not measured every day of the year. Number of estimated days over the standard is based on 365 days per year.

NA = Not Available. Values in **Bold** exceed the respective air quality standard.

SOURCE: California Air Resources Board (ARB), 2012c. *Summaries of Air Quality Data*, 2009-2011; http://www.arb.ca.gov/adam/topfour/topfour1.php. Accessed May 24, 2012.

Toxic Air Contaminants (TACs)

TACs are known to be highly hazardous to health, even in small quantities. TACs are airborne substances capable of causing short-term (acute) and/or long-term (chronic or carcinogenic) adverse human health effects (i.e., injury or illness). TACs can be emitted from a variety of common sources, including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations.

Greenhouse Gases (GHGs)

Gases that trap heat in the atmosphere are called GHGs. The major concern with GHGs is that increases in their concentrations are causing global climate change, a change in the average weather on Earth that can be measured by wind patterns, storms, precipitation, and temperature. Although there is disagreement as to the rate of global climate change and the extent of the impacts attributable to human activities, most in the scientific community agree that there is a direct link between increased emissions of GHGs and long-term global temperature increases. Both natural processes and human activities emit GHGs. The presence of GHGs in the atmosphere regulates the Earth's temperature; however, emissions from human activities such as fossil fuel-based electricity production and the use of motor vehicles have elevated the concentration of GHGs in the atmosphere.

The principal GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs). Because these different GHGs have different warming potential (the amount of heat trapped by a certain mass of a GHG), and CO_2 is the most commonly referenced gas for climate change, GHG emissions often are quantified and reported as CO_2 equivalents (CO_2e). Large emission sources are reported in million metric tons[1] of CO_2e.

The projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects (IPCC, 2007):

- Higher maximum temperatures and more hot days over nearly all land areas;
- Higher minimum temperatures, fewer cold days and frost days over nearly all land areas;
- Reduced diurnal temperature range over most land areas;
- Increase of heat index over land areas; and
- More intense precipitation events.

Also, there are many secondary effects that are projected to result from global warming, including global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. Some of the potential effects of global warming in California may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (ARB, 2008).

Sensitive Receptors

Some receptors are considered more sensitive than others to air pollutants. Reasons for greater sensitivity include pre-existing health problems, proximity to emissions source, or duration of exposure to air pollutants. Schools, hospitals and convalescent homes are considered to be relatively sensitive to poor air quality because children, elderly people and the infirm are more susceptible to respiratory infections and other air quality-related health problems than the general public. Residential areas are also sensitive to poor air quality because people usually stay home for extended periods of time. Sensitive receptors nearest to the project include one school (Palm Vista Elementary School) located approximately 3,375 feet northeast of the project site across Baseline Road, residential development 350 feet north of the project site near the intersection of Adobe Road and Baseline Road, and residential development 2,200 feet southeast of the project site.

Regulatory Setting

Air quality management exists at federal, state, and local levels of government. Air quality planning programs have generally been developed in response to requirements established by the federal Clean Air Act (CAA) of 1972 and subsequent amendments to the act; however, the enactment of the California Clean Air Act (CCAA) of 1988 produced additional changes in the structure and administration of air quality management programs in California.

[1] A metric ton is 1,000 kilograms; it is equal to approximately 1.1 U.S. tons and approximately 2,204.6 pounds.

Federal

Criteria Air Pollutants

The federal CAA requires the U.S. Environmental Protection Agency (EPA) to identify National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. National standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, PM10, PM2.5, and lead. These pollutants are called "criteria" air pollutants because standards have been established for each of them to meet the specific public health and welfare criteria set forth in the federal CAA. California has adopted more stringent ambient air quality standards for the criteria air pollutants (referred to as California Ambient Air Quality Standards [CAAQS], or state standards) and has adopted air quality standards for some pollutants for which there is no corresponding national standard. **Table 3.2-2** lists the NAAQS and CAAQS, as well as provides a brief discussion of the related health effects and principal sources for each criteria air pollutant. **Table 3.2-3** presents current attainment statuses for the project area portion of the MDAB.

General Conformity Rule

Federal projects are subject to either the Transportation Conformity Rule (40 Code of Federal Regulations [CFR], Part 51, Subpart T), which applies to federal highway and transit projects, or the General Conformity Rule (40 CFR, Part 51, Subpart W), which applies to all other federal projects. Since the Tribe has not adopted their own air quality program, the thresholds of significance established in the federal General Conformity Rule have been applied to the project. The General Conformity Rule implements Section 176(c) of the federal Clean Air Act, which requires that a federal agency ensure conformity with an approved State Implementation Plan (SIP) for those air emissions that would be generated by an agency action.

Toxic Air Contaminants

The 1977 amendments to the CAA required the U.S. EPA to identify National Emission Standards for Hazardous Air Pollutants (HAPs) to protect public health and welfare. These substances include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Control of HAPs (known as TACs under California regulations) is achieved through federal, state, and local controls on individual sources.

Greenhouse Gases

Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, U.S. EPA released its final Greenhouse Gas Reporting Rule. The Reporting Rule is a response to the fiscal year 2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110-161), that required U.S. EPA to develop "… mandatory reporting of GHGs above appropriate thresholds in all sectors of the economy…." The Reporting Rule applies to most entities that emit 25,000 metric tons of CO_2e or more per year. Facility owners are required to submit an annual GHG emissions report with detailed calculations of facility GHG emissions. The Reporting Rule also mandates recordkeeping and administrative requirements in order for U.S. EPA to verify annual GHG emissions reports.

TABLE 3.2-2
STATE AND NATIONAL CRITERIA AIR POLLUTANT STANDARDS, EFFECTS, AND SOURCES

Pollutant	Averaging Time	State Standard	National Standard	Pollutant Health and Atmospheric Effects	Major Pollutant Sources
Ozone	1 hour	0.09 ppm	---	High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue.	Formed when reactive organic gases (ROG) and nitrogen oxides (NOx) react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial / industrial mobile equipment.
	8 hours	0.070 ppm	0.075 ppm		
Carbon Monoxide	1 hour	20 ppm	35 ppm	Classified as a chemical asphyxiant, carbon monoxide interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen.	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm		
Nitrogen Dioxide	1 hour	0.18 ppm	100 ppb	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads.
	Annual Avg.	0.030 ppm	53 ppb		
Sulfur Dioxide	1 hour	0.25 ppm	75 ppb	Irritates upper respiratory tract; injurious to lung tissue. Can yellow the leaves of plants, destructive to marble, iron, and steel. Limits visibility and reduces sunlight.	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	3 hours	---	0.5 ppm		
	24 hours	0.04 ppm	---		
Respirable Particulate Matter (PM10)	24 hours	50 $\mu g/m^3$	150 $\mu g/m^3$	May irritate eyes and respiratory tract, decreases in lung capacity, can cause cancer and increased mortality. Produces haze and limits visibility.	Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	Annual Avg.	20 $\mu g/m^3$	---		
Fine Particulate Matter (PM2.5)	24 hours	---	35 $\mu g/m^3$	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and results in surface soiling.	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; Also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics.
	Annual Avg.	12 $\mu g/m^3$	15.0 $\mu g/m^3$		
Lead	Monthly Ave.	1.5 $\mu g/m^3$	---	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurological dysfunction.	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Quarterly	---	1.5 $\mu g/m^3$		
Hydrogen Sulfide	1 hour	0.03 ppm	No National Standard	Nuisance odor (rotten egg smell), headache and breathing difficulties (higher concentrations)	Geothermal power plants, petroleum production and refining.
Sulfates	24 hour	25 $\mu g/m^3$	No National Standard	Breathing difficulties, aggravates asthma, reduced visibility	Produced by the reaction in the air of SO_2.
Visibility Reducing Particles	8 hour	Extinction of 0.23/km; visibility of 10 miles or more	No National Standard	Reduces visibility, reduced airport safety, lower real estate value, discourages tourism.	See PM2.5.

ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.

SOURCES: California Air Resources Board (ARB), 2012a. *Ambient Air Quality Standards,* available at http://www.arb.ca.gov/research/aaqs/aaqs2.pdf Standards last updated February 7, 2012; and ARB, 2009. *ARB Fact Sheet: Air Pollution Sources, Effects and Control,* http://www.arb.ca.gov/research/health/fs/fs2/fs2.htm, page last updated December 2009.

TABLE 3.2-3
MDAB ATTAINMENT STATUS

	Designation/Classification	
Pollutant	**Federal Standards**	**State Standards**
Ozone – one hour	No Federal Standard	Nonattainment/Moderate
Ozone – eight hour	Nonattainment/Severe	Nonattainment
PM10	Nonattainment/Moderate	Nonattainment
PM2.5	Unclassified/Attainment	Nonattainment
CO	Unclassified/Attainment	Attainment
Nitrogen Dioxide	Unclassified/Attainment	Attainment
Sulfur Dioxide	Unclassified	Unclassified/Attainment
Lead	Unclassified/Attainment	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Vinyl Chloride	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified

SOURCE: California Air Resources Board (ARB), 2012b. *Area Designation Maps,* http://www.arb.ca.gov/desig/adm/adm.htm, page reviewed May 8, 2012 and accessed May 23, 2012.

State

Criteria Air Pollutants

The ARB manages air quality, regulates mobile emissions sources, and oversees the activities of county and regional air districts. ARB regulates local air quality indirectly by establishing State ambient air quality standards and vehicle emissions and fuel standards and by conducting research, planning, and coordinating activities.

The federal CAA requires each state to prepare a State Implementation Plan (SIP), a planning document containing emission inventories, emission standards for motor vehicles and consumer products, and attainment plans adopted by local districts and approved by ARB for inclusion in the SIP. The U.S. EPA must review each SIP to determine its compliance with the federal CAA and air quality standards. Amendments to the federal CAA further require states containing areas that are in nonattainment for NAAQS to amend their SIPs to add additional control measures. Although the state prepares the majority of the SIP, local air districts are responsible for adopting air quality attainment plans that are included in the SIP. Each attainment plan must demonstrate its compliance with the federal CAA and CCAA air quality standards.

Pursuant to Section 39606(b) of the California Health and Safety Code, California has adopted ambient standards that are more stringent than the national standards for some criteria air pollutants (e.g., PM10 daily and annual average standards). The state standards and attainment status for the project area are shown in Tables 3.2-2 and 3.2-3, respectively.

Toxic Air Contaminants

The State Air Toxics Program was established in 1983 under Assembly Bill (AB) 1807. A total of 243 substances have been designated as TACs under California law; they include the 189 federal HAPs adopted in accordance with AB 2728.

Greenhouse Gases

Assembly Bill 32 (AB 32)

In 2006, the California legislature passed Assembly Bill 32 (California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32), also known as the Global Warming Solutions Act. AB 32 requires the ARB to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions).

Pursuant to AB 32, the ARB adopted a Scoping Plan in December 2008 (ARB, 2008), which was re-approved by ARB on August 24, 2011, outlining measures to meet the 2020 GHG reduction limits. In order to meet these goals, California must reduce its GHG emissions by 30 percent below projected 2020 business as usual emissions levels, or about 15 percent from today's levels.

ARB has identified a GHG reduction target of 15 percent from current levels for local governments themselves and notes that successful implementation of the plan relies on local governments' land use planning and urban growth decisions because local governments have primary authority to plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions.

Local

The MDAQMD is the regional agency empowered to regulate air pollution emissions in the MDAB. The MDAQMD regulates air quality through its permit authority over most types of stationary emissions and through its planning and review activities. Off-Reservation impacts associated with the proposed project would be within the MDAQMD's jurisdiction.

3.2.2 Impact Analysis

Methodology

Project-related air quality impacts fall into two categories: short-term impacts due to construction, and long-term impacts due to project operation. Emissions were calculated by using California Emissions Estimator Model (CalEEMod) version 2011.1.1. CalEEMod is a computer program that can be used to estimate anticipated emissions associated with land development projects in California. CalEEMod has separate databases for specific counties and air districts. The San Bernardino County database was used for the proposed project. First, during project construction (short-term), the project would result in dust emissions, exhaust from on-road vehicle and off-road equipment, and fugitive emissions from pavement and architectural coatings. Under project operations (long-term), the project would result in an increase in emissions from energy use, area

sources, and mobile sources. The area sources are landscape maintenance equipment, consumer products, and architectural coatings used for routine maintenance.

Thresholds of Significance

Criteria Air Pollutants

As the Tribe has not adopted their own air quality program, the thresholds of significance established in the Federal General Conformity Rule have been applied to the proposed project. The General Conformity Rule establishes emissions thresholds that are used to determine whether a detailed conformity determination is needed. For this analysis, the following thresholds from the Rule are adopted to identify significant emissions increases of VOC, NOx, and PM10:

- VOCs or ROG 25 tons per year (tpy)
- NO_x 25 tpy
- PM10 100 tpy

Also, the MDAQMD has established the following thresholds for criteria pollutants (MDAQMD, 2011), which were applied to the off-Reservation impacts of the proposed project:

- VOC or ROG 25 tpy or 137 pounds per day (ppd)
- NOx 25 tpy or 137 ppd
- PM10 15 tpy or 82 ppd
- PM2.5 15 tpy or 82 ppd
- CO 100 tpy or 548 ppd
- SOx 25 tpy or 137 ppd

H_2S and lead were not quantified for the project since the project does not include sources of these pollutants.

Greenhouse Gases

The MDAQMD has also established the following thresholds for GHGs:

- CO_2e 100,000 tpy or 548,000 ppd

The threshold 25,000 metric tons of CO_2e per year is also considered. This number has been proposed by the Council on Environmental Quality (CEQ) Draft Guidance[2] as a proposed minimum indicator level for GHG emissions that may warrant description in the National Environmental Policy Act and by the California Air Resources Board as a mandatory reporting requirement for California stationary source emissions.

[2] CEQ, 2010. Memorandum to Federal Agencies regarding Draft National Environmental Policy Act Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions. February 18, 2010.

Toxic Air Contaminants

The operation of any project with the potential to expose sensitive receptors to substantial levels of TACs (such as DPM) would be deemed to have a potentially significant impact. Substantial levels of TACs are those resulting in a cancer risk greater than or equal to 10 in a million and/or a Hazard Index (HI) greater than equal to 1.

Impacts and Mitigation Measures

Proposed Project

Construction

Construction related emissions arise from a variety of activities including: 1) site preparation, grading, and other earth moving activities; 2) travel by construction equipment and employee vehicles, especially on unpaved surfaces; 3) exhaust from construction equipment and on-road vehicles; 4) architectural coatings; and 5) asphalt paving.

The CalEEMod emissions modeling program was used to estimate construction emissions for the proposed project. Default CalEEMod types and numbers of equipment were used for the analysis. Project assumptions include that 50,000 cubic yards of imported soil would be hauled to the project site. Unmitigated construction emissions were estimated for the eight month duration. **Table 3.2-4** includes annual and daily construction and operational emissions and comparison to the appropriate General Conformity Rule and MDAQMD significance thresholds. Emissions of criteria pollutants would be less than significant. However, PM10 emissions from construction would vary greatly from day to day depending on the level of activity, the equipment being operated, silt content of the soil, and the prevailing weather. Therefore, unmitigated construction dust emissions could result in significant local effects. **Mitigation Measure AIR-1** would be implemented to reduce exhaust and dust as basic control practices.

The greatest potential for TACs emissions would be related to diesel particulate emissions (DPM) associated with heavy equipment operations during grading and excavation activities. Health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. “Individual Cancer Risk” is the likelihood that a person exposed to concentrations of TACs over a 70-year lifetime would contract cancer, based on the use of standard risk-assessment methodology. The project would not result in a long-term (i.e., 70 years) substantial source of TAC emissions. As such, project-related toxic emission impacts during construction would be less than significant.

GHGs generated during the 8-month construction period would be 629 metric tons CO_2e, or 14,486 pounds CO_2e for the worse-case day. Appendix B includes CalEEMod outputs and assumptions. These emissions would be well below the MDAQMD threshold and the other considered threshold of 25,000 metric tons of CO_2e per year, and thus would be less-than-significant without mitigation.

Operations

Emissions from mobile, area, and energy sources associated with the project have been estimated using CalEEMod. Total operational emissions (on-road vehicle traffic, energy, and area sources) are shown below in **Table 3.2-4**. As shown in Table 3.2-4, operational emissions would not exceed the General Conformity Rule or MDAQMD thresholds. Therefore, operation of the project would result in less than significant emissions of criteria pollutants on and off the Reservation.

The project would not itself contribute or generate toxic air contaminants. However, diesel bus and truck travel to and from the gaming, facility, especially loading areas, would result in an increased concentration of diesel emissions in those areas, resulting in an increased toxic air contaminants in the area. Application of **Mitigation Measure AIR-3** would reduce potential effects to less than significant.

GHGs generated during operations would be 3,404 metric tons CO_2e per year, or 17,464 pounds CO_2e per day. Appendix B includes CalEEMod outputs and assumptions. These emissions would be well below the MDAQMD threshold and the other considered threshold of 25,000 metric tons of CO_2e per year, and thus would be less-than-significant without mitigation.

TABLE 3.2-4
CONSTRUCTION AND OPERATION EMISSION ESTIMATES[A]

Analysis Year	ROG	NOx	PM10	PM2.5	CO	SOx
Year 2012						
Annual Construction Emissions (tpy)	0.5	4.5	3.7	0.4	2.5	0.0
General Conformity Rule Thresholds (tpy)	25	25	100	NA	NA	NA
MDAQMD Annual Thresholds (tpy)	25	25	15	15	100	25
Significant (Yes or No)?	No	No	No	No	No	No
Daily Construction Emissions (ppd)	12.4	120.1	21.3[B]	12.8	56.8	0.1
MDAQMD Daily Thresholds (ppd)	137	137	82	82	548	137
Significant (Yes or No)?	No	No	No	No	No	No
Year 2013						
Annual Construction + Operational Emissions (tpy)	4.7	12.3	2.4	0.6	19.5	0.0
General Conformity Rule Thresholds (tpy)	25	25	100	NA	NA	NA
MDAQMD Annual Thresholds (tpy)	25	25	15	15	100	25
Significant (Yes or No)?	No	No	No	No	No	No
Daily Construction Emissions (ppd)	69.9	58.0	6.4	4.4	50.7	0.0
MDAQMD Daily Thresholds (ppd)	137	137	82	82	548	137
Significant (Yes or No)?	No	No	No	No	No	No
Daily Operational Emissions (ppd)	16.0	63.7	13.5	2.9	108.2	0.1
MDAQMD Daily Thresholds (ppd)	137	137	82	82	548	137
Significant (Yes or No)?	No	No	No	No	No	No

[A] Project construction and operation emissions estimates were made using CalEEMod. See Appendix B for model outputs and additional assumptions.

[B] Notably, daily fugitive dust PM10 emissions associated with soil hauling in CalEEMod are incorrectly reported as the summation over the entire grading phase duration (SCAQMD, 2013). For this project, this model output error shows all 60 days of on-road fugitive dust as occurring on one day. This bug does not affect on-road exhaust emissions. Appendix B includes the model output from CalEEMod, but the data above for the worse-case day was determined by comparing the different phases, with the on-road fugitive dust from the grading phase divided by 60 (to account for duration).

Mitigation Measure AIR-1: The following measures shall be implemented during construction:

- The contractors shall utilize equipment and vehicles tuned and maintained in accordance with manufacturer specifications.
- Standard techniques for dust suppression such as watering of access roads and active construction areas; application of surfactants to exposed soils; limiting truck speeds on unpaved surfaces; covering trucks hauling soil, sand, and other loose materials; prohibiting grading activities if wind speeds exceed 25 miles per hour; and replanting vegetation in disturbed areas as quickly as possible shall be required of the contractor to minimize particulates to the atmosphere. The Tribe's dust control and suppression plan shall be consistent with California air quality standards best practices throughout the construction of the project.

Mitigation Measure AIR-2: The applicant shall require busses and diesel loading trucks to comply with the California Air Resource Board's Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling (California Code of Regulations, Title 13, Division 3, Article 1, Chapter 10, Section 2458) which requires that the driver shall not idle for more than 5 minutes at any location, except in the case of passenger boarding where a ten minute limit is imposed, or when passengers are onboard.

No Action Alternative

Under the no action alternative, no additional emissions would be generated from the project site and thus no off-Reservation impacts with respect to air quality would occur.

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3.3 Biological Resources

This section describes the biological resources within the Reservation and in the immediate vicinity and analyzes potential impacts from the proposed project on biological resources. As with the rest of the Tribal EA, the term "project site" refers to the portion of the Reservation within the tortoise exclusion fence, where proposed construction and operational activities would occur.

3.3.1 Study Methods

Biological resources within the project site vicinity were identified by ESA biologists through field reconnaissance visits, protocol level desert tortoise surveys performed by Sundance Biology, studies by Arthur Davenport (**Appendix D**), a review of pertinent literature, and database queries. Field reconnaissance visits and surveys focused on identifying, characterizing, and delineating habitat for special-status plant and wildlife species. All incidental sightings of wildlife species during field visits were documented. The primary sources of data referenced for this report included the following:

- Biological Constraints Report for the Proposed Twenty-Nine Palms Project Site (ESA, 2006);
- Draft Tribal Habitat Conservation Plan (Twenty-Nine Palms EPA, 2008) and USFWS comments;
- Presence/Absence Survey for the Desert Tortoise (Gopherus agassizii), on the proposed Twentynine Palms Casino Development, San Bernardino County, California (Sundance Biology, 2008);
- Desert Tortoise Management Plan, Twenty-Nine Palms Indian Reservation (Davenport, 2011);
- Special Animals List (California Department of Fish and Game [CDFG], 2011).
- Official Species List for the Twentynine Palms Casino Project in San Bernardino County, California (U.S. Fish and Wildlife Service [USFWS], 2012);
- California Natural Diversity Database (CNDDB), (CDFG, 2012);
- Special Vascular Plants, Bryophytes, and Lichens List (CDFG, 2012); and
- Desert Tortoise Clearance Survey, Twenty-Nine Palms Indian Reservation (Davenport, 2013);

3.3.2 Regional and Project Site Setting

The Reservation is located in the southern Mojave Desert Basin and Range ecoregion (Griffith et al., 2011). This region is composed of broad basins and scattered mountain ranges. The area is characterized by desert climate—hot and dry from spring through fall and cool winters. Mean

annual precipitation is approximately 4 to 5 inches (most of this being rain during the winter months). Average high temperatures range from 105° F (Fahrenheit) in July to 64° F in December.

Elevation on site ranges from 2,040 to 2,600 feet above mean sea level (msl). The surface of the Reservation grades moderately to the north at a gradient of less than five percent. The southwestern quadrant of the property rises steeply into the eastern end of the Pinto Mountains. The project site is currently undeveloped. Adjacent land use is characterized by undeveloped land to the north, low density residential development to the east and south, and Joshua Tree National Park to the west.

3.3.3 Plant Communities and Wildlife Habitats

Plant communities are assemblages of plant species that occur together in the same area. They are defined by species composition and relative abundance. The plant community descriptions and nomenclature used in this section generally follow the classification system provided in Sawyer and Keeler-Wolf's A Manual of California Vegetation (2009).

Mojave Desert Scrub

The majority of the Reservation is dominated by Mojave Desert scrub habitat with creosote bush (*Larrea tridentata*) as the dominate plant. Other species associated with this plant community on site include: white bursage (*Ambrosia dumosa*), Mojave yucca (*Yucca schidigera*), cheesebush (*Hymenoclea salsola*), brittlebush (*Encelia farinosa*), and desert senna (*Senna armata*). Additional species found scattered throughout the site include various cacti and cholla species including: Engelmann's hedgehog cactus (*Echinocereus engelmannii*), California barrel cactus (*Ferocactus cylindraceus*), and branched pencil cholla (*Cylindropuntia ramosissima*).

3.3.4 Wetlands and Other Waters of the U.S.

Regulated wetlands and other waters of the United States are subject to jurisdiction under Section 404 of the Clean Water Act. Wetlands are ecologically complex habitats that support a variety of both plant and animal life. In a jurisdictional sense, the federal government defines wetlands in Section 404 of the Clean Water Act as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support (and do support, under normal circumstances) a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3[b] and 40 CFR 230.3). Under normal circumstances, the federal definition of wetlands requires three wetland identification parameters be present: wetland hydrology, hydric soils, and hydrophytic vegetation. Examples of wetlands include freshwater marsh, seasonal wetlands, and vernal pool complexes that have a hydrologic link to other waters of the U.S. (see definition below for "other waters of the U.S."). The Corps is the responsible agency for regulating wetlands under Section 404 of the Clean Water Act, while the EPA has overall responsibility for the Act.

"Other waters of the U.S." refers to those hydric features that are regulated by the Clean Water Act but are not wetlands (33 CFR 328.4). To be considered jurisdictional, these features must

exhibit a defined bed and bank and an ordinary high-water mark. Examples of other waters of the U.S. include rivers, creeks, intermittent and ephemeral channels, ponds, and lakes.

The delineation of wetlands for this project employed the "Routine Determination Method" as described in the *1987 Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987. The Routine On-Site Determination Method utilizes a three-parameter approach (vegetation, soils, and hydrology) to identify and delineate the boundaries of jurisdictional wetlands. To be considered a wetland, all three positive wetland parameters must be present: (1) a dominance of wetland vegetation, (2) presence of hydric soils, and (3) hydrologic conditions that result in periods of inundation or saturation on the surface from flooding or ponding.

The project site is not located nearby major rivers. The site is located within the Joshua Tree surface-water Hydrologic Unit of the Colorado River Hydrologic Region and within the Joshua Tree ground-water subbasin. There is no surface water located within the boundaries of the Reservation and no wetlands were identified within the limits of this area. Based on the site reconnaissance conducted by ESA, and review of aerial photographs (Google Earth, 2012) and USGS Quadrangle Maps (Queen Mtn, Twentynine Palms, Sunfair, Valley Mtn, Twentynine Palms Mtn, and Malapai Hill, USGS, 2012), the site does contains a series of braided ephemeral channels that flow in a northerly direction, dispersing into the undeveloped landscape to the north of the Oasis of Mara. According to the Queen Mtn USGS Quadrangle Map, there are two USGS blue line water features that cross the Reservation in the south to north direction, both of which have headwaters originating at Queen Mountain to the south and are included within the braided drainage system that extends through the Reservation. However, both of these blue line features appear to dissipate within the flat landscape to the north of the Reservation at Oasis of Mara. The Oasis of Mara, located along the trace of the fault line, was historically fed by groundwater that was driven to the surface by fault related structures. Today, the Oasis of Mara is artificially fed with groundwater.

According to the National Wetlands Inventory (USFWS, 2012b), Oasis of Mara is not a water body that is considered a water of the U.S. Moreover, the ephemeral drainages on the site do not connect to any navigable body of water or have a nexus to any water of the U.S.; therefore, these drainages are not considered jurisdictional under Section 404 of the Clean Water Act and do not qualify as waters of the U.S. Several mapped (i.e., USGS blue line) drainage features exist in the vicinity of the Reservation, including Dog Wash to the east, and several dry lakes such as Mesquite Lake and Deadman Lake located approximately 6 and 10 miles to the north, respectively, and Dale Lake located approximately 15 miles to the east. However, not of these ephemeral features appear to be waters of the U.S., nor do the drainages that extend through the site have a nexus with these features.

3.3.5 Special-Status Species

Regulatory Setting

As shown in **Table 3.4-1,** the Reservation falls within the geographic range of a number of special-status plants and animals.

For the purposes of this assessment, special-status species are those animals that, because of their recognized rarity or vulnerability to various causes of habitat loss or population decline, are recognized by federal agencies. Some of these species receive specific protection that is defined by federal endangered species legislation. Others have been designated as special-status on the basis of adopted policies and expertise of federal resource agencies or organizations with acknowledged expertise, or policies adopted by local governmental agencies such as counties, cities, and special districts to meet local conservation objectives. Special-status species include:

1. Species listed or proposed for listing as threatened or endangered, or are candidates for possible future listing as threatened or endangered, under the federal Endangered Species Act (FESA) or the California Endangered Species Act;
2. Species covered under an adopted NCCP/HCP;
3. Species of special concern to CDFG; and/or
4. Species fully protected in California (CDFG Code Sections 3511, 4700, and 5050).

Federally-recognized special-status animal species known to occur in the project area based on the results of project surveys, or those with potential to occur in the project area. The list provided in **Table 3.4-1** is based on a CNDDB and the USFWS Species List obtained for the project site. The table below also includes the general habitat requirements and likelihood of each species potential for occurrence in the project area based on habitat preferences. **Figure 7** shows CNDDB recorded occurrences of special-status species in the project site vicinity. It should be noted that numerous additional raptor and passerine (avian) species are likely to occur in the project area that are protected under the Migratory Bird Treaty Act of 1918, but are not included in Table 3.4-1 because they are not considered a special-status species.

Section 9 of the Federal Endangered Species Act (FESA) protects listed wildlife species from "take". Take is broadly defined as those activities that "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." An activity can be in violation of take prohibitions even if the activity is unintentional or accidental. Significant modification or degradation of the habitats of listed species, or activities that prevent or significantly impair essential behavioral patterns, including breeding, feeding, or sheltering, are also considered "take" under the FESA and are regulated by the USFWS.

TABLE 3.3-1
REGIONALLY OCCURRING SPECIAL-STATUS SPECIES

Species	Status	General Habitat	Likelihood of Occurrence
Plants			
Astragalus albens Cushenberry milk-vetch	FE 1B.1	Associated with pinyon/juniper and Joshua tree woodlands and Mojave desert scrub.	None. Known only in the north slopes of the San Bernardino Mtns. above 3,400 feet (msl).
Astragalus bernardinus San Bernardino milk-vetch	1B.2	Associated with pinyon/juniper and Joshua tree woodlands on granitic, rocky soils.	Low. Habitat on site is marginal for this species.
Astragalus brauntonii Braunton's milk-vetch	FE 1B.2	Associated with pinyon/juniper and Joshua tree woodlands on granitic, rocky soils.	None. Not found in the southern Mojave Desert.
Astragalus brauntonii Lane Mountain milk-vetch	FE 1B.2	Associated with Mojave desert scrub.	None. Found almost exclusively near and in Fort Irwin in the central Mojave Desert.
Astragalus lentiginosus var. *coachellae* Coachella Valley milk-vetch	FE 1B.2	Typically found in sandy soils in the Sonoran Desert.	None. Found almost exclusively in the Coachella Valley.
Boechera dispar Pinyon rockcress	2.3	Associated with pinyon/juniper woodland on gravelly, rocky soils.	Low. Habitat on site is marginal for this species.
Calochortus striatus Alkali mariposa lily	1B.2	Typically found in wetter locations in desert scrub and alkali meadows between 2,500 and 4,000 feet above mean sea level (MSL).	Low. Habitat on site is marginal for this species. Typically occurs at elevations higher than the project site.
Cymopterus multinervatus Purple-nerve cymopterus	2.2	Associated with Mojave desert scrub and pinyon/juniper woodland on gravelly, rocky soils.	**Moderate.** Appropriate habitat occurs on the project site.
Erigeron parishii Parish's daisy	FT 1B.1	Found in Mojave desert scrub habitat, often associated with limestone substrate.	Low. Habitat on site is marginal for this species. Only known west of the project site.
Erioggonum ovalifolium var. *vineum* Cushenbury buckwheat	FE 1B.1	Found in Mojave desert scrub habitat.	Low. Typically occurs at elevation higher than the project site.
Grusonia parishii Parish's club-cholla	2.2	Associated with Mojave desert scrub and Joshua tree woodlands on sandy or rocky soils.	Low. Appropriate habitat occurs on the project site, but is quite rare.
Lasthenia glabrata ssp. *coulteri* Coulter's goldfields	2.2	Typically found in mesic location and vernal pools.	None. No suitable habitat occurs on the project site.
Linanthus maculatus Little San Bernardino Mtns. linanthus	1B.2	Associated with Mojave desert scrub and Joshua tree woodlands on sandy soils.	Low. Found almost exclusively in the Little San Bernardino Mtns.
Matelea parvifolia Spearleaf	2.3	Associated with Mojave desert scrub on rocky soils.	**Moderate.** Appropriate habitat occurs on the project site.
Menodora spinescens var. *mohavensis* Mojave menodora	1B.2	Associated with Mojave desert scrub on rocky hillsides and canyons.	Low. Habitat on site is marginal for this species.
Monardella robisonii Robison's monardella	1B.3	Rocky desert slopes, often among granitic boulders. 1000-1500m.	Low. Habitat on site is marginal for this species. Typically occurs at elevations higher than the project site.

TABLE 3.3-1
REGIONALLY OCCURRING SPECIAL-STATUS SPECIES

Species	Status	General Habitat	Likelihood of Occurrence
Muhlenbergia appressa Appressed muhly	2.2	Typically found in Mojave desert scrub on rocky soils. Rocky slopes, canyon bottoms. 20-1600m.	Low. Habitat on site is marginal for this species.
Saltugilia latimeri Latmer's woodland-gilia	1B.2	Associated with Mojave desert scrub and pinyon/juniper woodlands on sandy or rocky soils.	Low. Appropriate habitat occurs on the project site, but is quite rare.
Sidalcea neomexicana Salt spring checkerbloom	2.2	Typically found in wetter locations in desert scrub, alkali playas, chaparral, and lower montane coniferous forests.	Low. No suitable habitat occurs on the project site.
Wislizenia refracta ssp. refracta Jackass-clover	2.2	Found in creosote bush scrub habitat. Sandy washes, roadsides, alkaline flats. 130-800m.	**Moderate.** Suitable habitat occurs on the project site.
Fish			
Gila bicolor Bonytail chub	FE SSC	Inhabits lakes and streams.	None. No habitat on site.
Gila bicolor mohavenesis Mojave tui chub	FE SE	Endemic to the Mohave River basin, adapted to alkaline, mineralized waters. Needs deep pools, ponds, or slough-like areas and vegetation for spawning.	None. No habitat on site.
Xyrauchen texanus Razorback sucker	FE SE	Found in the Colorado River bordering California. Adapted for swimming in swift currents but also need quiet waters. Spawn in areas of sand/gravel/rocks in shallow water.	None. No habitat on site.
Amphibians			
Anaxyrus californicus Arroyo toad	FE SSC	Associated with riparian habitat in sandy bottomed streams.	None. No aquatic habitat located on site.
Rana draytonii California red-legged frog	FT SSC	Breeds in slow moving streams, ponds, and marshes with emergent vegetation and an absence or low occurrence of predators.	None. No aquatic habitat located on site.
Rana muscosa Southern mountain yellow-legged frog	FE SSC	Breeds in slow moving streams, ponds, and marshes with emergent vegetation and an absence or low occurrence of predators.	None. No aquatic habitat located on site.
Reptiles			
Gopherus agassizii Desert tortoise	FT ST	Inhabits Mojave desert scrub and Joshua tree habitats in the Mojave and Sonoran deserts.	**High.** Is present on the southwestern portion of the Reservation. See discussion in text below.
Crotalus ruber Red diamond rattlesnake	SSC	Chaparrral, woodland, grassland, and desert areas from coastal San Diego County to the eastern slopes of the mountains. Occurs in rocky areas and dense vegetation.	Moderate. Marginal habitat occurs on the project site and higher quality habitat with dense vegetation exists to the southwest.

TABLE 3.3-1
REGIONALLY OCCURRING SPECIAL-STATUS SPECIES

Species	Status	General Habitat	Likelihood of Occurrence
Birds			
Coccyzus americanus Western yellow-billed cuckoo	SE	Nests in densely foliaged deciduous trees and shrubs especially willow, in broad riparian forest.	None. No suitable habitat occurs on the project site.
Empidonax traillii extimus Southwestern willow flycatcher	FE SE	Associated with riparian woodlands in southern California.	None. No suitable habitat occurs on the project site.
Falco mexicanus Prairie falcon	SSC	Breeds on cliffs, bluffs and outcrops near large, open areas.	**Moderate**. Appropriate habitat occurs on and adjacent to the project site.
Rallus longirostris yumanensis Yuma clapper rail	FE SE	Nests in fresh-water marshes along the Colorado River and along the south and east end of the Salton Sea.	None. No suitable habitat occurs on the project site.
Vireo bellii pusillus Least Bell's vireo	FE SE	Summer resident of southern California in low riparian habitat in vicinity of water. Nests placed along margins of bushes or on twigs.	None. No suitable habitat occurs on the project site.
Mammals			
Chaetodipus fallax pallidus Pallid San Diego pocket mouse	SSC	Desert border areas in eastern San Diego County in desert wash, desert scrub, desert succulent scrub, pinyon-juniper, etc. Sandy herbaceous areas, usually in association with rocks or coarse gravel.	**Moderate**. Appropriate habitat occurs on and adjacent to the project site.
Dipodomys merriami parvus San Bernardino Merriam's kangaroo rat	FE SSC	Alluvial scrub vegetation on sandy loam substrates characteristic of alluvial fans and flood plains.needs early to intermediate seral stages.	Low. No suitable habitat occurs on the project site.
Dipodomys stephensi Stephen's kangaroo rat	FE ST	Primarily annual and perennial grasslands, but also occurs in coastal scrub and sagebrush with sparse canopy cover.	None. No suitable habitat occurs on the project site.
Eumops perotis californicus Western mastiff bat	SSC	Roosts primarily in crevices within cliffs and canyons, occasionally in buildings. Primarily feeds on moths. Maternity colonies active May through July.	**Moderate**. Appropriate habitat occurs on and adjacent to the project site.
Antrozous pallidus Pallid bat	SSC	Uses caves, crevices, mines, buildings, some bridges, and hollow trees for day roosts, and more open spaces for nighttime roosts. Prefers rocky outcrops, cliffs, and crevices with access to open habitats for foraging.	Low. No suitable habitat occurs on the project site.
Nyctinomops femorosaccus Pocketed free-tailed bat	SSC	Variety of arid areas in southern California. Including pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian, etc. Needs rocky areas with high cliffs.	**Moderate**. Appropriate habitat occurs on and adjacent to the project site.

TABLE 3.3-1
REGIONALLY OCCURRING SPECIAL-STATUS SPECIES

Species	Status	General Habitat	Likelihood of Occurrence
Nyctinomops macrotis Big free-tailed bat	SSC	Low-lying arid areas in southern California. Needs high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.	**Moderate**. Appropriate habitat occurs on and adjacent to the project site.
Taxidea taxus American badger	SSC	Occurs in a wide variety of open forest, shrub, and grassland habitats that have friable soils for digging.	Low. No suitable habitat occurs on the project site.

Status Codes

Federal (USFWS)
- FE = Listed as "endangered" under the federal Endangered Species Act
- FT = Listed as "threatened" under the federal Endangered Species Act

State (CDFG)
- SE = Listed as "endangered" under the California Endangered Species Act
- ST = Listed as "threatened" under the California Endangered Species Act
- SSC = California Species of Concern

CNPS
- 1B.1 = Rare or Endangered in California and elsewhere
- 1B.2 = Rare or Endangered in California and elsewhere
- 1B.3 = Rare or Endangered in California and elsewhere
- 2.2 = Rare or Endangered in California, more common elsewhere
- 2.3 = Rare or Endangered in California, more common elsewhere

SOURCE: USFWS, 2012; CDFG, 2012; and CNPS, 2012

Listed Species with Potential to Occur on the Project Site

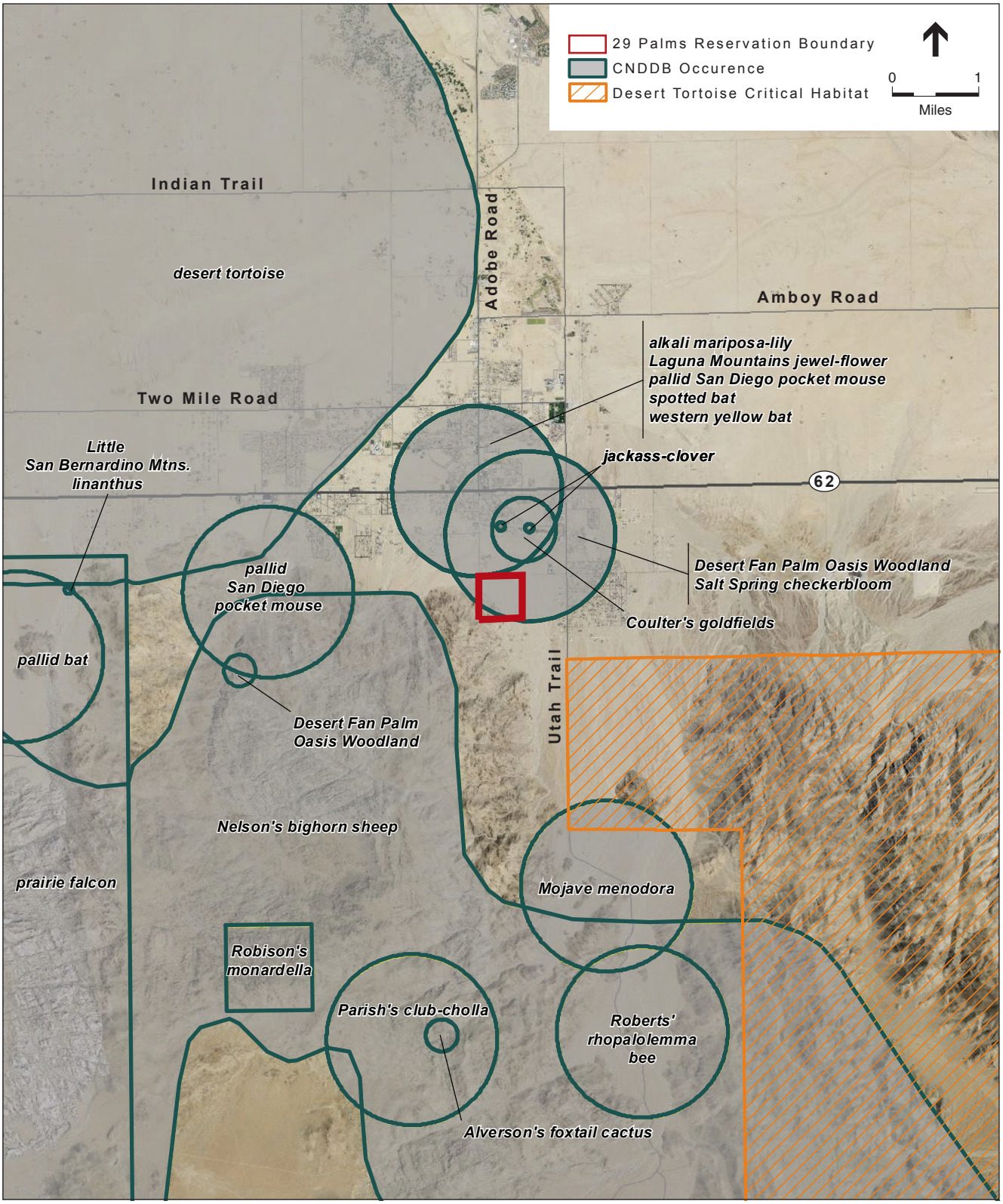
Desert Tortoise

Critical Habitat

The USFWS designated critical habitat for the desert tortoise on February 8, 1994 (59 FR 5820 5866) at various locations in the Mojave Desert region. The project site does not occur within designated critical habitat. The nearest designated critical habitat as shown on **Figure 7** is located approximately one mile southeast of the proposed development area on the project site.

Habitat

Desert tortoises occur in a variety of desert plant communities including those found on the Reservation and in the surrounding area. The desert tortoise generally requires firm ground in order to dig burrows for shelter, nesting, and wintering but will also use other shelter sites such as small caves or the burrows of other animals such as kit fox (Davenport, 2011). In California, desert tortoises are often found in arid sandy or gravelly locations along riverbanks, washes, sandy dunes, alluvial fans, canyon bottoms, desert oases, rocky hillsides, creosote flats and hillsides.



SOURCE: USFWS, 2010; ESRI, 2011; USDA, 2012; CNDDB, 2012; and ESA, 2012

Figure 7
CNDDB Occurrences and
USFWS Critical Habitat near the
Project Site (5 Miles)

Distribution

The current geographical range of the desert tortoise includes portions of the Mojave, Sonoran, Colorado and Great Basin deserts, which include portions of Arizona, Nevada, Utah and California (Davenport, 2011). The geographic range of the desert tortoise includes lands within the Reservation. Burrows and tortoise sign have been located on the Reservation and in areas east and south of the Reservation (Sundance, 2008; Davenport, 2011). Five desert tortoises have been identified on the Reservation since 2009 of which four have been radiotagged. To date, the four radiotagged tortoises have been located along the lower slopes of Queen Mountain, i.e. in the southwest corner of the Reservation and nearby off-site areas (Davenport, 2011). The project site has been chosen based on the absence of burrows and other sign during the 2013 clearance survey in the northwestern portion of the Reservation.

Behavior

Desert tortoises occur in the California desert from below sea level to an elevation of 7,300 feet, but the most favorable habitat occurs at elevations of approximately 1,000 to 3,000 feet. Although they spend most of their lives in burrows or caves to escape the extreme conditions of the desert, they will become active in suitable weather at any time of the year; rainfall, particularly during the summer, often initiates activity (Twenty-Nine Palms EPA, 2008).

Variable information is available on the movements and home range of the desert tortoise throughout its lifetime. A recent study in the western Mojave Desert found the average home range was 97 acres for male desert tortoises and 34 acres for female tortoises during the first year of study. During the second year of study, the average home range size was 117 acres for males and 41.8 acres for females. Though previous studies have estimated a lower mean home range size for both sexes at approximately 47 acres (Davenport, 2011).

Desert tortoises can produce from one to three clutches of eggs per year. On rare occasions, clutches may contain up to 15 eggs; most clutches contain 3 to 7 eggs. Desert tortoises typically hatch from late August through early October (Twenty-Nine Palms EPA, 2008). They typically live approximately 25 years in the wild (Davenport, 2011).

3.3.6 Impact Analysis

Proposed Project

Biological Resources

Based on surveys of the Reservation and surrounding area, as well as recent database searches of recorded occurrences (i.e., CNDDB), desert tortoises are known to occur within the southwest corner of the Reservation and in the vicinity of this area to the west and south of the Reservation. The most recent survey January 7-11, 2013 was completed for approximately the northern third of the Reservation. No desert tortoises were observed during the survey. No other listed or special-status species have been identified within the Reservation, including any other federally-

listed species. Additionally, the proposed development area does not include nesting habitat for migratory birds.

Desert Tortoise

Studies on the Reservation since 2008 have determined that desert tortoises occur primarily on the southwest corner of the Reservation; however, desert tortoise sign occur in other areas of the Reservation, particularly the northeastern portion. The Tribe proposes to construct a tortoise exclusion fence as shown on **Figure 3**, which is a separate project from the casino development. This area was selected as the best location for the project based on the lack of desert tortoise burrows and close proximity of existing development to the north (Davenport, 2013).

As the project site does not contain desert tortoises and an exclusion fence would restrict desert tortoises from entering the development area, the construction/operation of the proposed project is not anticipated to result in direct significant, adverse impacts to desert tortoises. **Mitigation Measure BIO-1** is included to ensure that impacts remain less than significant.

Indirect effects include the potential for increased raven predation. The potential for increased raven predation is based on the introduction of food and water subsidies to the Reservation which would occur under the proposed project (e.g. trash, stormwater storage). **Mitigation Measure BIO-1** has also incorporated measures to ensure that indirect impacts from raven predation remain less than significant. To offset predation, the Tribe proposes to use secure outdoor trash enclosures.

Mitigation Measure BIO-1: The Tribe shall implement the following measures:

Construction

- Prior to construction of the proposed project, the Tribe shall construct a desert tortoise-proof fence surrounding the project site. The height and depth of the fence would be approved by Tribal EPA and a qualified biologist employed by the Tribe to prevent burrowing or breach of the barrier by tortoises. Pipe cattle guards would be utilized at vehicle gates. Installation of the fence and cattle guards shall be monitored by a qualified biologist approved by the Tribe.
- A qualified biologist approved by the Tribe would monitor initial grading of the project site.
- All parking for construction-related vehicles on the Reservation shall be within the fenced project site.
- A Tribal EPA-authorized biologist or designated Tribal representative would meet with all construction personnel to administer a desert tortoise awareness program. This person will keep records to ensure that all construction personnel have participated in the awareness program. The Tribal EPA must receive, review and approve the awareness program prior to its presentation. The goal of the awareness program would be to avoid take during construction activities and to reinforce the protocol for construction personnel should a tortoise be sighted. Workers will be instructed not to touch, handle, or otherwise disturb desert tortoise. Workers will

also be instructed to check beneath their vehicles and equipment for the presence of desert tortoise prior to their movement.

- In the event a desert tortoise is observed within the project site, all activity would be ceased and a qualified biologist would be contacted. The desert tortoise may not be touched, handled, or otherwise disturbed. If appropriate, a breach should be opened in the desert tortoise proof fence on the west, east, or south side to facilitate the animal's movement off the site. Following movement from the project site, the desert tortoise proof fence shall be immediately repaired to prevent access.
- If an incidental take occurs during construction, work would stop and USFWS would be contacted to discuss what actions would be necessary.
- Project vehicles will be restricted to 15 MPH while on the project site, Adobe Road and Baseline Road. Access to Desert Knoll Avenue will be prohibited.

Construction and Operation Measures

- The proposed project would use secure containers for storage of recycling and solid waste to prevent predators, including coyote and raven, from attracting to the project site.
- The Tribe would maintain the installed fence to prevent deterioration and repair damage. Maintenance of the fence would occur from existing access roads or disturbed areas.

Aquatic Resources

Development of the Proposed Action would be limited to the project site and thus would not result in impacts to off-site aquatic resources. Stormwater runoff is discussed in **Section 3.13**.

No Action Alternative

Under the No Action Alternative there would be no development and thus no change or impact to biological or aquatic resources in the project site vicinity.

3.4 Cultural Resources

To assess the nature and extent of known cultural resources immediately outside of the Reservation, and to examine potential impacts, a cultural resource archival review for the project site vicinity was performed at the California Historical Resources Information System's (CHRIS) San Bernardino County Museum Archaeological Information Center on December 7, 2012, using a definition of a .5-mile radius around the Reservation as the study area.

3.4.1 Setting

Prehistoric

The prehistory of the Mojave is generally described in terms of cultural "complexes." A complex is a specific archaeological manifestation of a general mode of life, characterized archaeologically by technology, particular artifacts, economic systems, trade, burial practices, and other aspects of culture. Complexes are typically associated with particular chronological periods (**Table 3.4-1**).

TABLE 3.4-1
CULTURAL COMPLEXES

Time Period	Complex	Dates
Pleistocene	Paleo-Indian	10,000 – 8,000 B.C.
Early Holocene	Lake Mojave	8,000 – 6,000 B.C.
	Deadman Lake	7,500 – 5,200 B.C.
Middle Holocene	Pinto	6,000 – 3,000 B.C.
Late Holocene	Gypsum	2,000 B.C. – A.D. 200
	Rose Spring	A.D. 200 – 1100
	Late Prehistoric	A.D. 1100 to contact

SOURCE: Sutton et al., 2007

Paleo-Indian (10000 to 8000 B.C.)

The Paleo-Indian period is sparsely represented in the Mojave, but is characterized primarily by large, fluted Clovis Projectile points. This limited evidence suggests that early human occupants of the Mojave probably lived in small, mobile groups in temporary camps on permanent water sources (Sutton et al., 2007).

Lake Mojave Complex (8000 to 6000 B.C.)

Lake Mojave sites have been found primarily around Fort Irwin, Lake Mojave, Lake China, Rosamond Lake, and Twentynine Palms, near extinct water sources. Marginal lands near pluvial lakes were the preferred settlement area. Subsistence and settlement patterns are likely to have

been a direct response to climatic fluctuations occurring during the Pleistocene to Holocene transition. High mobility designed to exploit ever-changing resource bases was likely, coupled with a reliance on more permanent resources (water sources). In particular, the Lake China basin seems to have been a preferred resource location. Lake Mojave populations were organized into relatively small, mobile groups and practiced a forager-like subsistence strategy. Sites appear to have been repeatedly occupied, with artifact assemblages from both large and small sites being functionally identical (Sutton et al., 2007).

In terms of material culture, the Lake Mojave Complex is typified by stone tools such as Lake Mojave and Silver Lake projectile points, bifaces, steep-edged unifaces, crescents, and some ground stone implements. A characteristic of Lake Mojave artifact assemblages is the frequent use of fine-grained volcanic lithic material in the production of flaked stone tools, while cryptocrystalline material was preferred for use in the production of other types of implements (Giambastiani and Bullard, 2007).The use of heavy projectile points, bifaces, and scrapers suggests exploitation of large game. Faunal assemblages and protein residue analyses from Fort Irwin also suggests heavy reliance on small game, such as rodents, reptiles, and lagomorphs (hares/rabbits/pikas). Ground stone wear is generally light, suggesting minor use of hard seeds. Marine shell beads and non-local lithic materials indicate trade and/or long-distance foraging. Heavily battered cobble tools are often recovered, but the nature of their use is unclear (Sutton et al., 2007).

Deadman Lake Complex (ca. 7500 to ca. 5200 B.C)

This complex is newly proposed, and has yet to be fully defined and recognized. Thus far, sites from the Deadman Lake Complex are geographically restricted to Twentynine Palms in the southeastern Mojave Desert and appear to overlap with the Paleo-Indian and Pinto complexes (Sutton et al., 2007). Artifact types include small- to medium-size contracting-stemmed or lozenge-shaped points, battered cobbles and core tools, bifaces, flaked tools, and milling equipment. Similar projectile points have been recovered from Ventana Cave in Arizona. Lithic materials include large quantities of coarse- to fine-grained igneous rock and smaller amounts of both local and exotic obsidian. *Olivella* shell beads are present, with both *O. biplicata* from the Pacific coast and *O. dama* from the Sea of Cortez represented.

The Pinto Complex (6000 to 3000 B.C.)

Archaeological deposits dating from the Pinto Period suggest that settlement patterns consisted of seasonal occupation by small, semi-sedentary groups that were dependent upon a combination of big and small-game hunting and collection strategies, which could include the exploitation of stream or water resources. Typically, sites of this period are found along lakeshores and streams or springs, some of which are now dry, and in upland areas. Larger sites tend to be near well-watered locations, with smaller sites in other areas. In comparison to smaller sites, larger sites exhibit substantial midden deposits and greater variation in artifact types. These larger sites were probably centralized locations from which foraging parties journeyed to seasonal resources (Sutton et al., 2007).

The extent of regional mobility at this time is uncertain. A lack of lithic material diversity might indicate that foraging activities were not as expansive as in the previous complex (Sutton et al., 2007). *Olivella* shell beads are still present, indicating at least some degree of contact with coastal groups.

Material culture representative of this period includes roughly formed projectile points, "heavy-keeled" scrapers, choppers, and a greater prevalence of flat millingstones and manos (Warren, 1984). Pinto series projectile points appear to have been frequently reworked, suggesting they were used primarily as spear tips and not darts (Sutton et al., 2007).

Faunal assemblages are similar to those of the Lake Mojave Complex, with a slight increase in small fauna taxa coupled with a decrease in artiodactyls (Sutton et al., 2007). The rise of millingstones and manos indicates a more intensive use and processing of plant resources and site placement may have been in part based on access to plant resources. New dates indicate that intensive plant exploitation was occurring by ca. 7000 B.C., which is contemporaneous with coastal California groups (Sutton et al., 2007).

At the end of the Middle Holocene, around 3000 B.C., environmental conditions became much drier and hotter, and few sites in the Mojave date to the period between 3000 and 2000 B.C., suggesting that the area may have been largely abandoned during this period of unfavorable climate (Sutton et al., 2007).

Gypsum Complex (ca. 2000 B.C. to A.D. 200)

A wetter and cooler climate characterized the Late Holocene. Settlement patterns suggest small, temporary camps concentrated near streams. At the same time, there is more evidence of inter-tribal trade, particularly between the desert and the coast, and increasing social complexity (Sutton et al., 2007). Artifact assemblages associated with this period include an increase in the prevalence of millingstones and manos, and it is likely during this period that the pestle and mortar were introduced. These technological developments may point to the increased consumption of seeds and mesquite (Warren, 1984). Other artifacts associated with the Gypsum Period include Elko corner-notched series, concave base Humboldt series, and contracting-stemmed Gypsum series projectile points. The presence of quartz crystals, paint, and rock art indicate ritual activities (Sutton et al., 2007). Towards the end of the Gypsum period, there is evidence for the use of the bow and arrow (Warren, 1984). Interestingly, there is a scarcity of Gypsum periods sites in the southern and eastern extent of the Mojave Desert (Sutton et al., 2007).

Rose Spring Complex (ca. A.D. 200 to 1200)

The general cultural pattern for this period is a continuation of that of the preceding Gypsum Period. The increase in cultural complexity continued into this period and the archaeological record attests to established trade routes between desert and coastal populations by way of shell beads and steatite, as well as an introduction of Anasazi influence from the eastern Great Plains as evidenced by the appearance of turquoise and pottery (Warren, 1984).

Archaeological sites from this period are more numerous and contain more well-developed middens, indicating an increase in population and a more permanent settlement pattern (Sutton et al., 2007). Additionally, evidence of structures such as wickiups and pit houses also supports more permanent settlements. Sites tend to be located near springs, washes, and lakeshores (Sutton et al., 2007).

Material culture related to this period includes large quantities of obsidian artifacts, Rose Spring and Eastgate series projectile points, knives, drills, pipes, bone awls, millingstones, manos, mortars and pestles, marine shell ornaments, slate pendants, and incised stones (Sutton et al., 2007; Warren, 1984). The bow and arrow continued in use.

The Late Prehistoric Period (A.D. 1100 to European Contact)

By the Late Prehistoric period, an extensive network of established trade routes wound their way through the desert, routing quality goods to populations throughout the Mojave Region. These trade routes probably encouraged or were the motivating factors for "increasingly complex socioeconomic and sociopolitical organization" within Late Prehistoric peoples in Southern California. Housepit village sites are prevalent during this period, as are the presence of Desert series and Cottonwood projectile points, brownware and buffware ceramics, steatite shaft straighteners, painted millingstones, and, to a lesser degree, coastal shell beads. By the end of this period, a decline in trade occurred and well-established village sites were abandoned, perhaps as a result of rising temperatures (known as the Medieval Climatic Anomaly) (Sutton et al., 2007; Warren, 1984).

Ethnographic Period

At the time of European contact, Serrano, Cahuilla, and Chemehuevi tribes inhabited the projectarea, with occasional visits by the Mojave people. The Serrano had a village site at the oasis of Mara, in present-day Twentynine Palms, which they inhabited until the 1870s. After this, Chemehuevi inhabited the Mara oasis. The Cahuilla occupied what is now the southern portion of the Joshua Tree National Monument. Mojave occupation of the project area was likely seasonal and transitory (Bean and Vane, 2002). The Serrano, Cahuilla, and Chemehuevi cultural groups are each described in detail below.

Both the Serrano and the Cahuilla occupied territories that ranged from low or moderately low desert to the mountain regions of the Transverse and Peninsular ranges, with the Serrano inhabiting the north and the Cahuilla holding the south. Both groups adapted to and inhabited the terrain in a similar manner. Villages located at higher elevations were placed near canyons that received substantial precipitation or were adjacent to streams and springs. Villages situated at lower elevations were also located close to springs or in proximity to the termini of alluvial fans where the high water table provided abundant mesquite and shallow wells could be dug. Although the two groups were independent of one another, village communities often interacted with each other (Bean, 1978; Bean and Smith, 1978; Warren, 1984).

Serrano territory was bordered to the west roughly by the Cajon Pass in the San Bernardino Mountains, to the east by Twentynine Palms and to the south by Yucaipa Valley. Their territory extended north of the San Bernardino Mountains into the desert near Victorville, along the Mojave River.

The Serrano were organized into clans. The clan was the largest autonomous political entity. They lived in small villages where extended families built circular, dome-shaped structures made of willow frames covered with tule thatching. Each clan had one or more principal villages in addition to numerous smaller villages associated with the principal village (Price et al. 2008).

The Serrano subsistence strategy relied upon hunting and gathering, and occasionally fishing. Villages divided into smaller, mobile gathering groups during certain seasons to gather seasonally available foods. The division of labor was split between women gathering and men hunting and fishing (Bean and Smith 1978; Warren 1984). Mountain sheep, deer, rabbits, acorns, grass seeds, piñon nuts, bulbs, yucca roots, cacti fruit, berries, and mesquite were some of the more common resources utilized (Bean and Smith 1978; Warren 1984).

Despite early European and Spanish contact in 1771, the Serrano remained relatively autonomous until the period between 1819 and 1834 when most of the western Serrano moved to missions (Bean and Smith 1978; Warren 1984). Today, there are two sovereign nations that claim a Serrano heritage: the federally recognized San Manuel Band of Serrano Mission Indians, and the federally recognized Morongo Band of Mission Indians, which includes a mixture of Serrano, Cahuilla, and Cupeno cultures.

As with the Serrano, the Cahuilla occupied high-altitude locations as well as low desert lands. Villages were in close proximity to fresh water sources. The Cahuilla social structure revolved around clans and exogamous moieties (components connected through inter-marriage). Interaction between clans was limited to trade, intermarriage, and ceremonial performances. Individual clans had villages, or central places, and territories they considered theirs for purposes of hunting game, gathering food and other necessary resources.

House structures of the Cahuilla ranged from “brush shelters to dome-shaped or rectangular structures 15-20 feet long” (Bean, 1978). Hunting, in conjunction with the exploitation of a variety of available resources, governed the Cahuilla subsistence strategy. The material culture of the Cahuilla was extensive and varied, and included pottery, ornamental items, and a number of knapped stone tools.

Prior to European contact, population estimates for the Cahuilla range from 3,600 to as high as 10,000 persons. Due to European diseases such as smallpox, the Cahuilla population was decimated during the 19th century. Unlike other Native American populations in Southern California, the Cahuilla were able to retain their autonomy even after the arrival and increasing control of European explorers and the settling governments that followed. It was not until the late 19th century that the Cahuilla culture and its population began to succumb to the pressure of European and, later, United States governing bodies (Bean, 1978).

Today, there are nine federally recognized Cahuilla nations, including the Torres Martinez Desert Cahuilla Indians, Augustine Band of Cahuilla Indians, Cabazon Band of Mission Indians, Agua Caliente Band of Cahuilla Indians, Morongo Band of Mission Indians, Cahuilla Band of Mission Indians, Ramona Band of Cahuilla Indians, Santa Rosa Band of Mission Indians, and Los Coyotes Band of Cahuilla Indians.

The Chemehuevi, a branch of the Southern Paiute, had a territory that stretched from the Colorado River to the San Bernardino Mountains, including the area between Needles, Blythe, Twentynine Palms, and the Colorado River. The oral tradition of the Chemehuevi suggests that they migrated from the north and engaged the Mojave group in a long war that drove the Mojave east to the Colorado River (Kroeber, 1925). Archaeological evidence indicates that the war ended between 250 and 500 years ago (King and Casebier, 1976).

The harsh desert environment typical of the projectarea could support only the smallest groups comprised of nuclear families joined by kinship ties. These small hunter-gatherer groups moved in response to local food and water availability, typically seasonally or more frequently. The lack of resources of the area created a very diverse hunting economy where small game was an important protein source. Pronghorn sheep, mountain sheep, deer, rabbits, squirrels, desert chipmunks, and wood rats were important mammals in the local diet along with reptiles, such as desert tortoises, snakes, and lizards, and birds, eggs and insects. Bighorn sheep and desert tortoise have traditionally been considered important animals to the Chemehuevi, as well as neighboring Cahuilla and Mojave peoples. Their eastern neighbors introduced agriculture to the Chemehuevi. The Chemehuevi cultivated crops of various types of maize and corn, squash, gourds, wheat, and potatoes along the Colorado River (Kelly and Fowler, 1986).

The Chemehuevi were divided into two moieties (kinship group) represented by two songs, the Mountain Sheep Song and the Deer Song, which were each associated with different hunting areas. They generally lived in bands of two or three families; each band had a leader.

The Chemehuevi used the paddle-and-anvil technique for their pottery, which included cooking pots, storage jars, spoons, scoops, and large vessels (Kelly and Fowler, 1986). They also used twining techniques for their basketry. Baskets were used for transporting items, winnowing and parching, seed beating, boiling water, and storage. Other artifacts associated with the Chemehuevi included the mano and millingstone (metate), mortar and pestle, digging sticks, and the sinew-backed bow with arrows of cane or willow. In addition to locally consumed trade goods, the Chemehuevi acted as “middle-men” in the long distance trade networks from groups to the west and the Pacific Coast and the Central Valley to the groups in the Southwest and along the Colorado River.

Following the Civil War, an influx of settlers and accompanying livestock threatened the traditional Native subsistence base. With these resources unavailable, the Chemehuevi were employed on ranches, building railroads, and in the newly opened mines.

When permanent settlement of the area by Europeans and Americans began, the Chemehuevi, along with the Serrano, were occupying the oasis of Mara (Twentynine Palms). Livestock depleted natural resources and Euro-American settlers began to claim large pieces of land and water rights. In 1890, 160 acres were set aside for a reservation for the Chemehuevi at Twentynine Palms. In 1910, 640 acres adjacent to the existing Cabazon reservation in Coachella was given jointly to the Cahuilla and the Chemehuevi, and those who remained on the Twentynine Palms reservation were encouraged to move there. Some went, some stayed, and others chose to settle elsewhere in California (Bean and Vane, 2002). The federally recognized

Twentynine Palms Band of Mission Indians represents the descendants of the Chemehuevi who inhabited the Twentynine Palms area, and their reservation lands are located both in Twentynine Palms and the Coachella Valley. Other contemporary Chemehuevi groups include the federally recognized Chemehuevi Indian Tribe, whose reservation is located along the Colorado River.

Historical Period

The first European explorers to enter the area now known as San Bernardino County were Pedro Fages, the Spanish Military Commander of California, in 1772 and Father Francisco Garces, a Spanish missionary priest, in 1774. Franciscan missionary Francisco Dumatz, of the San Gabriel Mission, led his company into the San Bernardino Valley in 1810. In observance of the feast day of St. Bernardine of Siena, Dumatz named the valley San Bernardino, as well as the nearby mountain range; the name was later given to the county.

In 1842, the Mexican government granted the Lugo family Rancho San Bernardino, a holding of 37,700 acres encompassing the entire San Bernardino Valley. Captain Jefferson Hunt, of the Mormon Battalion, led a group of settlers into San Bernardino. In 1851, the Mormon Colony purchased the Rancho from the Lugos and occupied the area until 1857 when Joseph Smith recalled his flock to Salt Lake City because of the threat of invasion by federal troops. The resulting mass exodus resulted in the loss of half the Euro-American population of the San Bernardino Valley and the hindrance of valley development by Euro-Americans. As early as the 1840s vineyards were planted in the Cucamonga area and by 1870, San Bernardino County was producing 48,720 gallons of wine. Starting in the 1850s, settlers planted oranges in the East Valley, and by 1882, tons of oranges and lemons grown in San Bernardino County were being shipped all over the United States by railroad (Kyle, 2002).

In 1850, following the discovery of gold in Coloma, California was admitted into the United States and on April 26, 1853, legislature created San Bernardino County from parts of Los Angeles, San Diego and Mariposa Counties. In 1854, voters incorporated the city of San Bernardino as the county seat. In 1860 miners discovered gold in Holcomb and Bear Valleys in the San Bernardino Mountains, and placer mining began in Lytle Creek. By the 1870s, miners began mining silver Ivanpah in 1870, and the silver mines of the Calico district developed in the 1880s. Borax was first discovered in 1862 in the Searles Dry Lake area near Trona, and transported out by mule team wagons (Kyle, 2002).

Twentynine Palms

Colonel Henry Washington conducted the first American exploration of the Twentynine Palms area in 1855. Washington made contact with individuals from the Chemehuevi tribe living near a water source locals called "Marrah," which came to be known as the Oasis of Mara. As the only reliable water source in the vicinity, this oasis served as the basis of settlement in the area (O'Hara, 2007).

After the search for gold spread from the foothills to more arid regions, prospectors discovered gold in the Twentynine Palms area in 1879. Miners and later settlers used the Oasis at Mara as a

base to build homes and businesses. The prosperity of mining in the area ceased following the end of World War I, but between World War I and II, the area became known as a health spa for returning veterans and asthma patients. Dr James Luckie, a World War I medical officer with a practice in Pasadena, sent patients to Twentynine Palms to recover from poison gas injuries sustained during the war (O'Hara, 2007).

The establishment of Joshua Tree National Monument in 1936 created a draw for thousands of tourists to the area, resulting in an economic impetus that continues to the present day. In 1941, the military established Condor Field five miles outside of town. During World War II, the Army Air Corps used the airfield for training through the end of the war. The United States Marine Corps arrived in the area in 1952 and established a base at Twentynine Palms in 1957 (O'Hara, 2007).

Records Search Methodology and Results

Museum staff conducted a cultural resources literature and records search at the CHRIS San Bernardino County Museum Archaeological Information Center (AIC) on December 7, 2012. The records search included an examination of previous cultural resources survey coverage and reports, and known cultural resources within a .5-mile radius of the APE (records search study area). According to information available in the AIC files, there have been five area specific cultural resource studies previously completed within .5 miles of the project area (**Table 3.4-2**). One of these previous studies (Robbins-Wade, 1987) was conducted within a small portion of the Reservation.

TABLE 3.4-2
PREVIOUS CULTURAL RESOURCES INVESTIGATIONS CONDUCTED WITHIN .5- MILE OF THE PROJECT SITE

Author	AIC #	Title	Date
Napton, Kyle & Elizabeth Greathouse	84-73	Unknown Title (Survey of the Twenty-Nine Palms Indian Reservation) * Report is missing from AIC	1984
Robbins-Wade, Mary	1061656	Cultural Resources Inventory: Joshua Tree/Twentynine Palms Temporary Asphalt Plant	1987
Hearn, Joseph	1060657	Archaeological Resources Assessment of E1/2 of SW ¼ of Sec. 33 T1N R9E, Twentynine Palms Quadrangle	1978
Fox, Gregory	1063180	Adobe Road Closure and Scarification	1993
Keswick, Jan	1065885	Monitoring Report for Adobe and Baseline Road Testings: Thornton Property	2001

The AIC also identified six historic archaeological sites located outside of the Reservation, but within the .5 mile study area (**Table 3.4-3**).

TABLE 3.4-3
PREVIOUSLY RECORDED CULTURAL RESOURCES WITHIN .5 MILE OF THE PROJECT SITE

Primary Number	Permanent Trinomial	Description	Date Recorded
P36-10696	SBR-10696H	Concrete slab foundation, trash scatter, landscaping, pen, stone retaining walls	2001
P36-10694	SBR-10694H	Landscaping features from a historic farm property (planters and tree stumps)	2001
P36-10691	SBR-10691H	Concrete slab foundation and structural debris	2001
P36-10695	SBR-10695H	Remains of a house, septic tank, landscaping, driveway and trash scatter	2001
P36-10693	SBR-10693H	Remains of a historic residential property, including foundation, stone fireplace, landscaping, wooden pen, and dirt road network.	2001
P36-10692	SBR-10692H	Remains of a stone structure mortared with concrete	2001

The AIC identified the project area as highly sensitive for prehistoric archaeological resources and moderately sensitive for historic archaeological resources. Two California Points of Historical Interest are present within one mile of the project area: an archaeological site known as the "Oasis of Mara" and an Indian cemetery known as the "Chemehuevi Cemetery." Neither of these resources is within the Reservation.

Native American Contact

ESA contacted the Native American Heritage Commission (NAHC) by letter on December 7, 2012, to request information about traditional cultural properties such as cemeteries and sacred places in the study area. The NAHC responded on December 21, 2012 indicating a search of the Sacred Lands file failed to identify the presence of Native American cultural resources in the immediate study area, but noted that there are Native American cultural resources in proximity to the project area. The NAHC also provided a list of individuals and groups indicated by the NAHC as having affiliation with the area, and ESA staff sent letters to these individuals on December 21, 2012. The record search conducted at the San Bernardino Archaeological Information Center of CHRIS also did not indicate the presence of Native American traditional cultural properties.

3.4.2 Impact Analysis

Proposed Project

Known resources

Archival review completed for the project identified previous archaeological surveys, but only one that occurred within the Reservation. The review did not identify any cultural resources within the Reservation, although there are known archaeological and historical resources within one mile of the Reservation.

As proposed construction and operation earthwork is limited to the project site, there would be no impact to off-Reservation cultural or historic resources.

Unknown resources

While archival review identified no previously recorded resources within the project site, the project site is within an area identified as having a high sensitivity for prehistoric archaeological resources and moderate sensitivity for historic archaeological resources. There is a moderate to high potential for currently unidentified cultural resources of regional significance, or significance to local tribes, to be within the project site. For this reason, mitigation measures are proposed, including construction monitoring and processes for accidental discovery to reduce impacts to a less-than-significant level.

> **Mitigation Measure CUL-1.** Due to the possibility of unanticipated discoveries, the Tribe shall, prior to construction, retain the services of an archaeologist that meets the Secretary of Interior's Professional Qualification Standards (36 CFR Part 61; hereafter qualified archaeologist) to observe construction activities. Daily monitoring forms would be prepared and the monitors would report to the Tribal Historic Preservation Office and Tribal Council.
>
> **Mitigation Measure CUL-2.** Prior to initiation of earth moving activities and construction, contractors and equipment operators who work on the site shall be instructed by a qualified archaeologist on anticipated types of potential resources and proper procedures for action following accidental discovery. Contractors and operators are also required to watch for potential archaeological artifacts and sites, along with human remains. In the event contractors and/or operators find prehistoric or historic resources (including Native American resources), all work would stop within a circumference of 100 feet from the find until a qualified archaeologist approved by the Tribe has assessed the discovery and determined appropriate avoidance or treatment measures.
>
> **Mitigation Measure CUL-3.** In the unlikely event that human remains are discovered during project construction, work would stop at the discovery location and any nearby area reasonably suspected to overlie adjacent human remains. The county coroner would be contacted to determine if the cause of death must be investigated. If the remains are determined to be of Native American origin, they shall be subject to the procedures of the Native American Graves Protection and Repatriation Act (25 USC 3001 et seq.).

No Action Alternative

No development would occur under this alternative in the near term on the Reservation, and thus there would be no impact to known, off-Reservation cultural resources or unknown resource on the Reservation. If the Reservation were ultimately developed similar mitigation to that identified above should be adopted.

3.5 Geology and Soils

3.5.1 Setting

The following setting is informed by a geotechnical investigation conducted by Pezonella Associates (2012) for the project site and included as Appendix C.

Geology

The Reservation is situated in the southeastern Mojave Desert. The region is characterized by rugged, discontinuous mountain ranges that trend from the southeast to the northwest. The site is surrounded by three regional mountain ranges—the Bullion Mountains located to the north, the Sheephole Mountains located due east, and the Pinto Mountains, which are adjacent to the site to the south.

The Reservation is currently undeveloped. The site surface grades slightly to the north at a gradient of less than five percent for the majority of the Reservation. The southwest quadrant of the parcel rises steeply into the eastern end of the Pinto Mountains. This portion of the site is rugged and steep and contains undifferentiated metamorphic rock estimated to be Pre-Cenozoic in age. The parcel is covered moderately with a variety of desert vegetation including cacti, low shrubs, annual grasses, and weedy species. The non-mountainous portion of the site contains a scattering of angular and subangular rock fragments. The Reservation also contains evidence of recent and historic flash flooding as revealed by several incised channels crossing the property (Pezonella Associates, 2012).

Soils

Based on test bores conducted on the site, the underlying soils are primarily silty sand with gravel and cobbles, poorly graded sand with gravel, and well-graded sand with silt and gravel. Soils on the Reservation are mapped as Quaternary alluvium, consisting of valley fill, alluvial fan deposits, stream gravels, talus and other modern materials (Pezonella Associates, 2012).

Liquefaction is a phenomenon in which loose, water-saturated, granular soils temporarily behave like a fluid when subjected to high-intensity ground shaking. Liquefaction occurs when three general conditions exist: 1) shallow groundwater, 2) low-density silty or fine sandy soils, and 3) high-intensity ground motion. According to the City of Twentynine Palms, the Reservation is not located in an area where groundwater has been historically found at depths of less than 50 feet (City of Twentynine Palms, 2010). Test bores completed on the site (N = 13) revealed no free water in the all bores up to 31 feet deep (Pezonella Associates, 2012). Therefore, the absence of water in the upper 31 feet and the dense nature of the soils suggest that the potential for liquefaction is low.

Radon is a colorless, odorless, radioactive gas which is found in nearly all rocks and soils. San Bernardino County is considered to have moderate radon potential with predicted average indoor

radon screening levels between 2 and 4 picocuries per liter (pCi/L). The U.S. Environmental Protection Agency (EPA) recommends that corrective actions be taken for structures with indoor radon levels of 4 pCi/L or more (EPA, 2012).

Seismicity

The nearest faults are the northwest trending Camp Rock Emerson-Copper Mountains fault zone, Copper Mountain section (approximately nine miles northwest of the project site), an apparent splay of the east-trending Pinto Mountain fault zone (about 0.55 miles north of the project site), and the northwest-trending Mesquite Lake fault (about 3 miles northeast of the project site), the latter two of which appear to intersect about 3 miles east of the project site. The USGS Quaternary Fault and Fold Database (2003) indicate the nearest active fault is associated with the east-trending Holocene-active Pinto Mountain fault zone, a sinistral strike-slip fault that forms the boundary between the Transverse Ranges and the Mojave Desert. The fault zone, including the Morongo Valley fault, extends approximately 55-60 miles from east of Twentynine Palms to the San Andreas fault. The Alquist-Priolo Special Studies Zones Map for the area shows the nearest mapped strand of the Pinto Mountain fault zone occurs northeast of the property, at the Oasis of Mara.

The primary seismic hazard on and in the vicinity of the Reservation would be in the form of ground shaking during an earthquake. The Pinto Mountain fault is capable of producing an earthquake near the Reservation in the range of magnitude (M_W) 6.5 -7.5. Based on the USGS Earthquake Hazards Program, 2008 National Earthquake Hazard Reduction Program (NEHRP) Seismic Design Provisions, an earthquake of this size would produce Peak Ground Acceleration (PGA) of 0.36g with a 10 percent probability of exceedance in 50 years (Pezonella Associates, 2012).

Significant seismic events occurring within the region over the last 40 years have included the following:

- 1975 Galway Lake Earthquake – M_W 5.0
- 1979 Homestead Valley Earthquake – M_W 5.3
- 1988 Upland Earthquake – M_W 4.7
- 1990 Upland Earthquake – M_W 5.5
- 1992 Joshua Tree Earthquake – M_W 6.1
- 1992 Landers Earthquake – M_W 7.3
- 1992 Big Bear Earthquake – M_W 6.3
- 1997 Calico Earthquake – M_W 5.3
- 1999 Hector Mine Earthquake – M_W 7.1

3.5.2 Impact Analysis

Proposed Project

Development of the proposed project would involve earthwork within the project site boundaries and thus would not affect geologic, soils or seismic conditions off-Reservation. The project area is at risk for seismic ground shaking and presence of radon which present potential safety hazards. The proposed facilities would be designed according to the building codes identified in Section 2 which would reduce the risk of structural failure during seismic events.

In order to fully reduce impacts to a less-than-significant level **Mitigation Measure GEO-1** is provided to ensure geologic and soils hazards are fully addressed by the project design.

> **Mitigation Measure GEO-1:** The project design would incorporate the recommendations of the geotechnical investigation (Appendix C, Section VI). Through the course of project design and construction variations from these recommendations may be made if they are approved by a licensed geotechnical engineer and are consistent with applicable building codes.

The risk of indoor radon levels exceeding EPA's recommended action level of 4 pCi/L within a new, commercial facility is relatively low given the heating, ventilation and cooling system would be designed to positively pressurize the building, which reduces radon levels. The project description includes installation of an underslab vapor barrier under the proposed facilities which would reduce the radon risk to a less-than-significant level.

No Action Alternative

As no development is proposed for this alternative, the no action alternative would not impact off-Reservation geologic resources, soil conditions, or seismic issues.

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3.6 Hazards and Hazardous Materials

3.6.1 Setting

This section addresses the hazards and hazardous materials issues related to the project site and surrounding area. Flooding is discussed in Section 3.13, Water Resources.

Hazardous Materials

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency, or if it has characteristics defined as hazardous by such an agency. A hazardous waste is any hazardous material that is discarded, abandoned, or to be recycled. The criteria that render a material hazardous also apply to wastes that are determined to be hazardous. Factors that influence the health effects of exposure to hazardous material include the dose to which the person is exposed, the frequency of exposure, the exposure pathway, and individual susceptibility. Enforcement of applicable laws and regulations regarding hazardous materials would occur by a tribal program that is under consultation with the EPA.

The following information was obtained from a review of the Geotracker, EnviroStor, and NEPAssist databases (SWRCB, 2011; DTSC, 2011; EPA, 2012). According to the record searches, the project site is not associated with any hazardous spills or storage. Site visits in 2006 and 2008 made no mention of any tanks, structures, drums, or debris piles within the site boundaries.

Wildland Fire

According to the California Department of Forestry and Fire Protection (CAL FIRE), there have been no large wildland fires (10 acres or larger) in the Twentynine Palms area between 1950 and 2008, including the project site (City of Twentynine Palms, 2010). In the last 30 years, there have been four wildland fires (less than 10 acres in size) reported within one mile of the project site:

- Mara Oasis Fire – 1982 (>10.0 acres)
- Kiddie Fire – 1985 (> 0.25 acre)
- Five Palms Fire – 1988 (>0.25 acre)
- Robertson Fire – 1997 (.0.25 acre)

Though there are no records of wildland fires occurring within the boundaries of the project site, the project site is designated as being in a Moderate to High Wildland Fire Threat area (City of Twentynine Palms, 2010c).

3.6.2 Impact Analysis

Proposed Project

Hazardous Materials

Under the proposed project, small amounts of hazardous and/or toxic materials such as diesel fuel, lubricants, solvents, and paints could be used during construction activities and during the maintenance of heavy equipment. The Stormwater Pollution Prevention Plan (SWPPP) would include a hazardous materials spill control and countermeasure component. In the event of any accidental spillage to soil or surface water bodies, the site-specific program would be adhered to, and containment and clean-up activities would be implemented, among other activities identified in the program. Additional measures are provided to ensure that impacts remain less than significant.

> **Mitigation Measure HAZ-1:** A construction safety office will inspect all equipment and materials on the construction site, develop a safety plan and conduct briefings before the start of every work day. The Tribal Emergency Response Manager will be updated and notified of any hazardous materials held on site or hazardous waste that will be generated by the project. The Tribal Emergency Response Manager will be given copies of the site safety plan. All materials safety data sheets will be kept in an organized manner at an accessible location for construction personnel.

Wildland Fire

As with any construction project, construction of the proposed developments may introduce potential sources for fire. Equipment and vehicles used during grading and construction activities may create sparks that could ignite vegetation and dry grass on the property and spread to off-Reservation areas. The use of power tools and acetylene torches may also increase the risk of fire hazard. This risk, which is similar to that found at other construction sites, is considered potentially significant during construction. **Mitigation Measure HAZ-2** has been incorporated to reduce impacts to a less-than-significant level during construction.

Operation of the project would have a potentially significant impact if a structural fire spread to adjacent areas and became a wildland fire. The project design would be built according to the standards of the California Building Code and Uniform Fire Code, including requirements for fire-resistant construction, fire sprinklers and adequate fire flow. Section 10.4 of the Tribal-State Compact also requires that the Tribe make reasonable provisions for adequate emergency fire, medical and related relief and disaster services for patrons and employees of the gaming facility. The Tribe will have the Tribal Fire Authority inspect building plans and provide fire safety inspections. Mitigation Measure HAZ-3 has also been incorporated to reduce the risk of the project contributing to a wildland fire during operation of the project to a less-than-significant level.

> **Mitigation Measure HAZ-2:** Any construction equipment that normally includes a spark arrester shall be equipped with an arrester in good working order. This includes, but is not limited to, vehicles, heavy equipment, and chainsaws. During construction, staging areas,

welding areas, or areas slated for development using spark-producing equipment shall be cleared of dried vegetation or other materials that could serve as fire fuel. To the extent feasible, the contractor shall keep these areas clear of combustible materials in order to maintain a firebreak.

Mitigation Measure HAZ-3: Ash trays for exterior use shall be incorporated into the project design to minimize wildland fire hazards from smoking on the project site.

No Action Alternative

Under the no action alternative, the project site would remain unchanged, thus there would be no increased risk of hazardous materials or wildland fire to off-Reservation lands from this alternative.

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3.7 Land Use

3.7.1 Setting

Project Site and Vicinity

The project site is currently undeveloped. Directly to the west and approximately 0.75 miles south of the project site are undeveloped, mountainous areas within Joshua Tree National Park. To the north are low-density residential uses (3-4 dwelling units per acre) and open space designated for low-density residential use (1-2 dwelling units per acre). To the east and directly south are low-density residential (0 to 0.4 dwelling units per acre). Other nearby uses include Palm Vista Elementary School located approximately 3,375 feet northeast of the project site across Baseline Road and the Oasis of Mara and associated Visitor Center approximately 4,000 feet to the northeast of the project site.

Regulatory Setting

Land use in Joshua Tree National Park is managed by the Department of Interior, National Parks Service. Land use on the Reservation is subject to the Tribe and is exempt from local land use and zoning policies. Land use within the City of Twentynine Palms is guided by the City's General Plan (2012).

3.7.2 Impact Analysis

Proposed Project

The off-Reservation analysis considers whether the proposed project, development of commercial uses and associated facilities on the project site, would conflict with existing or proposed off-Reservation land uses and land use policies. For the purposes of this analysis the proposed development is considered closest in description to the City's land use designation of Tourist Commercial which includes resorts and entertainment facilities.

The City's General Plan Land Use Map includes several areas where Tourist Commercial uses are designated adjacent to Single-Family Residential uses and Public Lands (including the Oasis of Mara). Thus, the location of the proposed development on the Reservation (similar to Tourist Commercial), adjacent to single-family residential and public lands is considered generally consistent with the City's planning policies.

To meet the goal of adequately addressing the potential impact of new development on the existing community (Goal LU-4 of the General Plan), the City has created several policies for new development. Relevant policies include: considering and addressing the potential impacts of new development on surrounding properties (Policy LU-4.1), requiring that development proposed adjacent to Joshua Tree be consistent in context and character (Policy LU-4.2), maintain

parking requirements that adequately meet the needs of commercial uses and protect adjacent residential neighborhoods from overflow parking encroachment (Policy LU-4.3), adequately buffer commercial uses from existing or planned residential uses (Policy LU-4.4), address and meet California Environmental Quality Act (CEQA) requirements (Policy LU-4.5).

With respect to Policies LU-4.1 and LU-4.5, the Tribe is not subject to CEQA but has committed to following a CEQA-like process which assesses the potential impacts on the surrounding community pursuant to the Tribal-State Compact and Tribe's Environmental Ordinance. The environmental impacts on the surrounding community are discussed throughout Chapter 3 of this document. With mitigation all off-Reservation impacts were determined to be less than significant.

With respect to Policy LU-4.2, the TEA addresses the aesthetic impacts (encompassing context and character) given the proximity to Joshua Tree. The nearest designated recreational area within Joshua Tree National Park to the west is the 49 Palms Oasis, approximately 3 miles away. This area is separated by hilly terrain and such a distance that the proposed project would not be visible or otherwise apparent to a significant number or recreational users in this area.

With respect to Policy LU-4.3, the Tribe has designed the project facility to meet the anticipated parking needs of the project based on anticipated visitation and facility capacity (536 gaming positions). To this end the Tribe has included 450 surface parking spaces initially, with additional room for surface parking between these 450 parking spaces and retention basins to the north. This would prevent the encroachment of parking onto adjacent lands.

With respect to Policy LU-4.4, the proposed buildings are setback from Baseline Road (and uses to the north and northeast) by the proposed on-site retention basins and surface parking lot, providing at least 400 feet of separation. The proposed development is setback at least a ¼-mile from both the eastern and southern boundaries of the Reservation. The proposed buildings are setback from Adobe Road (and uses to the west) by open space and paved parking areas, providing at least 600 feet of separation between the proposed buildings and Adobe Road/Joshua Tree National Park. These setbacks are considered adequate given that there were off-Reservation impacts with incorporation of mitigation were determined to be less than significant. In other words, the TEA determined that with mitigation there would not be significant spillover effects to off-Reservation areas, such as light, noise, air pollution, etc.

Overall, in reviewing the City's Land Use map, City's General Plan policies related to new development, and the recreational uses within Joshua Tree National Park, the proposed project would not conflict with existing or planned use of off-Reservation areas. Thus off-Reservation land use impacts are considered less than significant.

No Action Alternative

Under the no action alternative, the project site would not be developed. As the project site would remain the same as existing conditions there would be no impact to off-Reservation land use.

3.8 Noise

3.8.1 Setting

Noise can be generally defined as unwanted sound. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) which is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain. Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ears decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA).

Noise Exposure and Community Noise

An individual's noise exposure is a measure of noise over a period of time. A noise level is a measure of noise at a given instant in time. Community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual.

These successive additions of sound to the community noise environment vary the community noise level from instant to instant requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

Leq: the energy-equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The Leq is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

Lmax: the instantaneous maximum noise level for a specified period of time.

Ldn: 24-hour day and night A-weighted noise exposure level which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night

("penalizing" nighttime noises). Noise between 10:00 p.m. and 7:00 a.m. is weighted (penalized) by adding 10 dBA to take into account the greater annoyance of nighttime noises.

CNEL: similar to Ldn, the Community Noise Equivalent Level (CNEL) adds a 5-dBA "penalty" for the evening hours between 7:00 p.m. and 10:00 p.m. in addition to a 10-dBA penalty between the hours of 10:00 p.m. and 7:00 a.m.

As a general rule, in areas where the noise environment is dominated by traffic, the L_{eq} during the peak-hour is generally within one to two decibels of the Ldn at that location.

Effects of Noise on People

A way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called "ambient noise" level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- except in carefully controlled laboratory experiments, a change of 1-dBA cannot be perceived;
- outside of the laboratory, a 3-dBA change is considered a just-perceivable difference;
- a change in level of at least 5-dBA is required before any noticeable change in human response would be expected; and
- a 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause adverse response

These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion, hence the decibel scale was developed.[1]

Noise Attenuation

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate between 6 dBA for hard sites and 7.5 dBA for soft sites for each doubling of distance from the reference measurement. Hard sites are those with a reflective surface between the source and the receiver such as parking lots or smooth bodies of water. No excess ground attenuation is assumed for hard sites and the changes in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft sites have an absorptive ground surface such as soft dirt, grass or scattered bushes and trees. In addition to geometric spreading, an excess ground attenuation value of 1.5 dBA (per doubling distance) is normally assumed for soft sites. Line sources (such as traffic noise from vehicles) attenuate at a rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement (Caltrans, 1998).

[1] Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

Fundamentals of Vibration

As described in the Federal Transit Administration's *Transit Noise and Vibration Impact Assessment* (FTA, 2006), ground-borne vibration can be a concern for nearby neighbors of a transit system route or maintenance facility, causing buildings to shake and rumbling sounds to be heard. In contrast to airborne noise, ground-borne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of ground-borne vibration are trains, buses on rough roads, and construction activities such as blasting, pile-driving and operating heavy earth-moving equipment.

The effects of ground-borne vibration include movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by only a small margin. A vibration level that causes annoyance will be well below the damage threshold for normal buildings. The FTA measure of the threshold of architectural damage for conventional sensitive structures is 0.2 in/sec peak particle velocity (PPV) (FTA, 2006).

Existing Noise Environment and Sensitive Receptors

Some land uses are considered more sensitive to ambient noise levels than others, due to the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved. Residences, motels and hotels, schools, libraries, churches, hospitals, nursing homes, auditoriums, and parks and other outdoor recreation areas generally are more sensitive to noise than are commercial (other than lodging facilities) and industrial land uses. Noise-sensitive uses nearest to the project include one school (Palm Vista Elementary School) located approximately 3,375 feet northeast of the project site across Baseline Road, residential development 350 feet north of the project site near the intersection of Adobe Road and Baseline Road, and residential development 2,200 feet southeast of the project site.

As described in the *City of Twentynine Palms General Plan Noise Element* (2010), major sources of noise in the City are traffic, combat exercises on the Marine Corps Air Ground Combat Center (MCAGCC), construction and other types of human activity.

3.8.2 Impact Analysis

Methodology

Noise impacts are assessed based on a comparative analysis of the noise levels resulting from the proposed project and the noise levels under baseline or existing conditions. Analysis of temporary construction noise effects is based on typical construction phases and equipment noise levels and attenuation of those noise levels due to distances between sensitive receptors in the project vicinity and the construction activity. Non-transportation-related noise impacts were assessed by examining the proposed uses on-site. Lastly, traffic noise impacts were estimated using the Federal Highway

Administration (FHWA) Highway Noise Prediction Model (RD-77-108), the nationally accepted method for calculating traffic noise levels.

Vibration from construction can be evaluated for potential impacts at sensitive receptors. Typical activities evaluated for potential building damage due to construction vibration include demolition, pile driving, and drilling or excavation in close proximity to structures. The ground-borne vibration can also be evaluated for perception to eliminate annoyance.

Thresholds of Significance

In general, a long-term increase in noise is considered significant if it substantially increases ambient noise levels at noise-sensitive locations in the vicinity of the project site or along roads serving project-related traffic. An increase in noise of 3 dBA over the ambient environment is typically considered noticeable to those hearing the sound. While projects located on tribal trust land are exempt from local noise-related standards and policies, a discussion of local noise standards and policies is appropriate for potential off-Reservation noise impacts. Specifically, the *City of Twentynine Palms General Plan Noise Element* establishes desired maximum noise levels by land use type, as depicted below in **Table 3.8-1**. For this analysis, the impact of traffic noise on residential receptors would thus be considered significant if noise increased by 3 dBA and exceeded the noise standards included in Table 3.8-1.

TABLE 3.8-1
INTERIOR AND EXTERIOR NOISE STANDARDS

Land Use Categories		Noise Standards	
Categories	**Uses**	**Interior CNEL**	**Exterior CNEL**
Residential	Single Family	45[1]	65[2]
	Multi Family	45[1]	65[3]
	Additional Standard for Residential within Mixed Use	30 dB Outdoor to Indoor Noise Reduction[4]	--
Commercial	Hotel, Motel, Transient Lodging	45[1]	--
Institutional	Hospital, School Classroom, Church, Library	45	--
Open Space	Parks[5]	--	65

1. Applied to indoor environment excluding bathrooms, toilets, closets, and corridors.
2. Outdoor environment limited to private yard of single family; normally this is the rear yard.
3. Applies to first floor patio area where there is an expectation of privacy (i.e., not a patio area which also serves as the primary entrance into the unit).
4. Standard recognized that residential in mixed use areas may be exposed to noise environments which may have late night noise and may change substantially from time to time.
5. Only applies to parks where peace and quiet are determined to be of prime importance. Generally not applied to urban parks or active parks.

In addition to the General Plan, the *City of Twentynine Palms Development Code, Chapter 19.74 Noise Control,* includes a noise standard of 55 dBA for residential districts, or 60 dBA if the existing noise level exceeds the standard. These noise standards are designed to control non-transportation noise (i.e., construction noise, commercial activities, etc.) generated on private property and impacting

another parcel of property. Notably, temporary construction between 7:00 a.m. and 7:00 p.m., except on Sundays and Federal holidays, is exempt from this noise standard. Further, during the summer months of May through September, temporary construction is exempt during the hours of 6:00 a.m. to 7:00 p.m. The vibration standard included in the *City of Twentynine Palms Development Code* is 0.2 inches per second at or beyond the property line. Temporary construction between 7:00 a.m. and 7:00 p.m., except on Sundays and Federal holidays, is exempt from this vibration standard.

Impact and Mitigation Measures

Proposed Project

Construction

Construction activity noise levels at and near the project site would fluctuate depending on the particular type, number, and duration of uses of various pieces of construction equipment. Construction activities associated with the proposed project would involve excavation, grading, and earth movement. Construction-related material haul trips would raise ambient noise levels along haul routes. The level of increase would depend on the number of haul trips made and types of vehicles used. **Table 3.8-2** shows typical noise levels during different construction stages. **Table 3.8-3** shows typical noise levels produced by various types of construction equipment.

TABLE 3.8-2
TYPICAL CONSTRUCTION NOISE LEVELS

Construction Phase	Noise Level (dBA, Leq) a
Ground Clearing	84
Excavation	89
Foundations	78
Erection	85
Finishing	89

a Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.

SOURCE: U.S. Environmental Protection Agency, Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, 1971.

TABLE 3.8-3
TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT

Construction Phase	Noise Level (dBA, Leq) a
Dump Truck	88
Portable Air Compressor	81
Concrete Mixer (Truck)	85
Scraper	88
Jack Hammer	88
Dozer	87
Paver	89
Generator	76
Pile Driver	101
Backhoe Finishing	85

SOURCE: Cunniff, Environmental Noise Pollution, 1977.

Construction of the proposed project would generate significant amounts of noise corresponding to the appropriate phase of building construction and the noise generating equipment used during those phases. The closest sensitive receptors to the project site are several rural residential properties 350 feet north of the site and 2,200 feet southeast of the site, as well as a school 3,375 feet to the northeast. Noise from construction activities generally attenuates at a rate of 6 to 7.5 dBA per doubling of distance and thus other sensitive receptors in the project vicinity would be exposed to construction noise at incrementally lower levels. Assuming an attenuation rate of 7.5 dBA per doubling of distance, these receptors would be exposed to 68 dBA Leq, 48 dBA Leq, and 43 dBA Leq, respectively during excavation and finishing, the loudest of the activities that would occur during project construction. Construction noise would be negligible at the school and residences southeast of the site. However, this increase in noise due to construction of the proposed project would result in a 3-dBA or more increase over existing noise levels and would exceed the 55 dBA noise standard at the residential receptors to the north of the site. Construction noise would therefore be considered a significant impact without mitigation. However, as discussed below, this impact can be mitigated to less than significant.

The nature and extent of ground-borne vibration would depend on a number of factors, including the type of equipment used, the type of activity, the depth of construction, and the type and conditions of geologic materials. Although these specific factors are not known, vibration levels for large bulldozers and loaded trucks are assessed in **Table 3.8-4** below. Under normal propagation conditions, vibration levels at the nearest residences would be below the FTA threshold of 0.20 in/sec and 80 RMS; resulting in a less-than-significant impact without mitigation.

TABLE 3.8-4
VIBRATION VELOCITIES FOR CONSTRUCTION EQUIPMENT

Equipment/Activity	*PPV at 25 ft (inches/second)*[a]	*PPV at nearest receptor*	*RMS at 25 ft (Vdb)*[c]	*RMS at nearest receptor*
Large Bulldozer	0.089	0.002	87	53
Loaded Trucks	0.076	0.03	86	77

a. Buildings can be exposed to ground-borne vibration levels of 0.2 PPV without experiencing structural damage.
b. The nearest receptor for the large bulldozer was assumed to be 3350 feet. The loaded trucks were set at 50 feet.
c The human annoyance response level is 80 RMS.

SOURCE: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.

Lastly, construction-related material haul trips and vehicle traffic to and from construction sites could raise ambient noise levels along construction haul routes, thus affecting sensitive receptors along these routes. In particular, trucks generate noise levels of approximately 85 dBA at 50 feet. At the same time, these trips and their associated noise would be intermittent over the course of any day where there is construction activity, as opposed to occurring in a constant stream throughout the day. Given the intermittent nature of this noise, it is reasonable to assume that over a 24-hour period, the noise level would not increase by 3 dBA. However, truck traffic would generate temporary and intermittent noise in excess of the City's noise standards. Specifically, while noise from a truck in motion would generally last less than one minute as perceived by sensitive receptors, their associated noise level would be in excess of the County daytime standard of 70 dBA Lmax (over a 1-minute cumulative period). With the implementation of measures listed below, noise impacts can be mitigated to less than significant.

Mitigation Measure NOI-1: The Tribe shall require construction contractors to limit construction to the hours of 7:00 a.m. through 7:00 p.m., except on Sundays and Federal holidays. If construction would occur during the summer months of May through September, construction shall be allowed during the hours of 6:00 a.m. to 7:00 p.m.

Mitigation Measure NOI-2: To reduce daytime noise impacts due to construction, the project applicant shall require construction contractors to implement the following measures:

- Equipment and trucks used for project construction shall use the industry standard noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically-attenuating shields or shrouds, wherever feasible).

- Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used where feasible; this could achieve a reduction of 5 dBA. Quieter procedures, such as use of drills rather than impact tools, shall be used whenever feasible.

- Stationary noise sources shall be located as far from adjacent receptors, whenever feasible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or other measures to the extent feasible.

Operation

To assess the impact of project traffic on roadside noise levels, noise level projections were made using the FHWA Noise Prediction Model for those road segments that would experience the greatest increase in traffic volume and/or that would pass through residential areas. The model is based on the Calveno reference noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site.

The results of the modeling effort are shown in **Table 3.8-5** for the *Existing*, *Existing Plus Project*, *Cumulative*, and *Cumulative Plus Project* scenarios. In analyzing the effects of traffic noise, the general rule is applied that in areas where traffic dominates the noise environment, the Leq during the peak-hour is roughly equivalent (within about 2 dBA) to the CNEL at that location. The modeled traffic-related noise would be to the exterior (outside) noise environment of the residences. As shown in Table 3.8-5, exterior traffic noise associated with project operations would not be significant for the *Existing Plus Project* and *Cumulative Plus Project* scenarios for residences along the modeled roadway segments. In addition, interior noise levels would meet the California 45 dB CNEL interior standards without any additional soundproofing of residences. Thus, the impact associated with increased traffic noise at residences along the roadway network in the project vicinity would be considered less than significant without mitigation.

No Action Alternative

Although traffic and associated noise would still increase on the roadway network due to projected development in the region, the no action alternative would not generate any construction or operation related traffic or noise and would not result in any associated noise impacts in the vicinity of the project site.

TABLE 3.8-5
EXISTING AND PROJECTED PM PEAK-HOUR TRAFFIC NOISE LEVELS ALONG ROADWAYS IN THE PROJECT VICINITY

	Peak-Hour Noise Level, dBA, Leq1							
Roadway Segment (Distance to Road Centerline in Feet)	Existing	Existing Plus Project	Incremental Increase	Significant? (Yes or No)[2]	Cumulative No Project	Cumulative Plus Project	Incremental Increase	Cumulatively Significant? (Yes or No)[2]
1. Adobe Rd north of State Route 62 (50')	68.2	68.4	0.2	No	68.9	69.0	0.2	No
2. Adobe Road south of State Route 62 (50')	62.3	64.6	2.3	No	62.6	64.8	2.2	No
3. State Route 62 east of Adobe Rd (100')	62.8	62.8	0.0	No	64.7	64.7	0.0	No
4. State Route 62 west of Adobe Rd (100')	64.6	65.1	0.5	No	65.8	66.1	0.3	No
5. Baseline Rd east of Adobe Rd (150')	49.2	55.0	5.8	No	49.4	55.0	5.6	No
6. Baseline Rd west of Utah Trail (100')	51.6	54.0	2.4	No	51.8	54.1	2.3	No
7. Baseline Rd east of Utah Trail (50')	59.6	59.8	0.2	No	60.1	60.2	0.1	No
8. Utah Trail north of Baseline Rd (50')	62.2	62.8	0.6	No	62.6	63.2	0.6	No
9. Utah Trail south of Baseline Rd (50')	59.9	60.0	0.1	No	60.3	60.4	0.1	No
10. Utah Trail north of State Route 62 (50')	64.1	64.4	0.3	No	64.8	65.0	0.2	No
11. State Route 62 east of Utah Trail (100')	57.2	57.5	0.3	No	58.1	58.3	0.2	No
12. Utah Trail north of 2 Mile Rd (50')	64.0	64.2	0.2	No	64.5	64.8	0.3	No
13. 2 Mile Rd west of Adobe Rd (50')	66.6	66.6	0.0	No	66.9	66.9	0.0	No
14. Adobe Rd north of 2 Mile Rd (50')	69.8	69.9	0.1	No	70.1	70.2	0.1	No
15. State Route 62 east of Old Woman Springs (100')	67.3	67.5	0.2	No	67.9	68.1	0.2	No
16. State Route 62 west of Old Woman Springs (100')	67.5	67.7	0.2	No	68.1	68.3	0.2	No

BOLD values show potentially significant noise increases prior to any mitigation.
1. Noise levels were determined using FHWA Traffic Noise Prediction Model (FHWA RD-77-108).
2. Considered significant if exterior noise level exceeds 65 dBA CNEL and if the incremental increase in noise is greater than 3 dBA.

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3.9 Socioeconomic Conditions

3.9.1 Setting

Population Characteristics

According to the 2010 Census, San Bernardino County has an estimated population of 2,035,210 persons, of which approximately 25,048 live within the City of Twentynine Palms where the project site is located (U.S. Census Bureau, 2010). The population in 2000 was estimated to be 14,764 persons, so the City has had a 59% increase in the last 10 years. The population is estimated to reach 37,000 by the year 2020.

The ethnic makeup of the City was 17,938 (71.6%) White, 2,063 (8.2%) African American, 329 (1.3%) Native American, 979 (3.9%) Asian, 345 (1.4%) Pacific Islander, 1,678 (6.7%) from other races, and 1,716 (6.9%) from two or more races. Hispanic or Latino of any ethnicity was 5,212 (20.8%) (U.S. Census Bureau, 2010).

Housing

In 2010, the City contained 9,431 housing units at an average density of 159.5 per square mile, of which 2,742 (33.9%) were owner-occupied, and 5,353 (66.1%) were renter-occupied. The homeowner vacancy rate was 3.6% and the rental vacancy rate was 9.2%. Approximately 6,876 people (27.5% of the population) lived in owner-occupied housing units and 14,825 people (59.2%) lived in rental housing units (U.S. Census Bureau, 2010).

Employment and Economics

The City had an annual average unemployment rate of 15.8% during 2011 while San Bernardino County had a rate of 13.2% during the same period (EDD, 2012). As of April of 2012, the City's unemployment rate was 14.1%. For 2010, the median household income was $40,723 in the City, while the percentage of the population living below the poverty level was 15.7% (U.S. Census Bureau, 2010).

3.9.2 Impact Analysis

Proposed Project

Population

The proposed project would employ approximately 100 full-time and part-time employees. At this level it is anticipated that employees could be found locally or within a reasonable commute distance. The project is not anticipated to cause a significant increase in the local population.

Housing

The project would not involve the development of any off-Reservation land and no housing is currently located on the project site. Therefore, the proposed project would not displace existing housing. Impacts to housing would be less than significant.

Employment and Economics

The proposed project would result in net beneficial socioeconomic impacts through employment opportunities and revenue generation. The construction of the project would utilize approximately 50 workers for nine months. The construction alone would generate a local payroll of approximately $1,440,000.[1]

When completed, the proposed project would employ approximately 100 full and part-time employees. The majority of the new employees would be hired from the local community, providing both jobs and income. The Tribe would also benefit from the additional income and employment. No significant negative impacts to employment and economics would occur.

No Action Alternative

Under this alternative, none of the socioeconomic benefits associated with the proposed project would occur. As there would be no development of the project site, no anticipated impacts to population or housing would occur.

[1] 1,440 hours x 50 workers x $25/hr average wage. Average construction industry hourly wage published by the Bureau of Labor Statistics, Current Employment Statistics, Available online at: http://www.bls.gov/ces/, accessed January 18, 2013.

3.10 Public Services

3.10.1 Setting

Police Services

Police protection is provided to the City of Twentynine Palms (City), including the project site, by a contract between the City and the San Bernardino County Sheriff's Department. Police service is provided from the Morongo Basin Sheriff's Station located in Joshua Tree, California (14 miles west of the City) and Sheriff's Department personnel are also stationed at a satellite office located in the Twentynine Palms City Hall. There are approximately 14 Sheriff's Department personnel assigned to the City from the Morongo Basin station (City of Twentynine Palms, 2010).

Patrol officers assigned to the City handle all traffic duties within the City borders. Traffic issues and other police duties occurring in the unincorporated areas around the City are handled by the California Highway Patrol.

The Sheriff's Department has police services mutual aid agreements with both Joshua Tree National Park and the Provost Marshal Office at the Marine Corps Air Ground Combat Center - Twentynine Palms.

Fire and Emergency Services

The Twentynine Palms Fire Department, a subsidiary agency to the Twentynine Palms Water District, provides the City and surrounding area (approximately 88 square miles of coverage), including the project site, with fire protection services. The City maintains two fire stations—Station 421 located at 6560 Adobe Road and Station 422 at 3834 Lear Avenue. The full-time staff consists of the Fire Chief and six company officers (two Captains and four Engineers). They are assisted by one part time Administrative Assistant and 30 volunteer reserve firefighters (City of Twentynine Palms, 2012).

The City fire department has a mutual aid agreement with the San Bernardino County Fire Department (SBCFD) to provide fire protection services to areas not serviced by the City fire department but within the City's Sphere of Influence. The SBCFD maintains a fire station in the area—Wonder Valley Station 119 at 80526 Amboy Road, Twentynine Palms. The City also has a mutual aid agreements with the Marine Corps Air Ground Combat Center Fire Department located on the Marine Corps base and with the California Department of Forestry and Fire Protection's San Bernardino Operational Unit which has responsible for wildland fire protection in the Joshua Tree Nation Park area (City of Twentynine Palms, 2010).

Medical response and ambulance services in the City are provided by the Morongo Basin Ambulance District (MBA). The MBA maintains two ambulance units at their Twentynine Palms station located just south of the City's Station 421 on Adobe Road. The units are manned 24 hours a day, 7 days a week with State-certified emergency response personnel. Hospitals in the

vicinity of the project site include the Robert E. Bush Naval Hospital located on the Marine Corps base for military personnel and their dependents and the Hi-Desert Medical Center located in the Joshua Tree.

3.10.2 Impact Analysis

Proposed Project

Police Services

The proposed project would increase the demand for police services which is considered a potentially significant impact. To offset the additional demands created by the presence of a casino in the community, the Twenty-Nine Palms Band of Mission Indians Tribe, under the Tribal-State Compact, has paid into a Special Distribution Fund. These funds are placed into the County of San Bernardino's "Indian Gaming Special Distribution Fund". These funds are released from this account by the "San Bernardino Local Community Benefit Committee" pursuant to the method established by California Government Code 12710, which has established by this section for local jurisdictions impacted by tribal casinos. In mitigating Indian Gaming impacts, the Special Distribution Fund provides additional resources, not available from the County or City General Fund, to provide a focused approach to mitigate crime, calls for service, traffic congestion and quality of life issues arising from the project. The project would also include full-time, on-site security. For these reasons, impacts to police services would be less than significant.

Fire and Emergency Services

The project would increase demands on fire and ambulance services which is considered a potentially significant impact. As described above for impacts to police services, the Tribe has paid into a Special Distribution Fund pursuant to the Tribal-State Compact, to offset the additional demands created by the presence of a casino in the community. In mitigating Indian Gaming impacts, the Special Distribution Fund provides additional resources, not available from the County or City General Fund, to provide a focused approach to mitigate calls for fire and emergency service issues arising from the project. The project would also be built according to the standards of the California Building Code and Uniform Fire Code, including requirements for fire-resistant construction and adequate fire flow. The Tribe will have a Tribal Fire Authority to inspect building plans and provide fire safety inspections. For these reasons, impacts to fire and emergency services would be less than significant.

No Action Alternative

Under this alternative, there would be no development and thus no impact to existing off-Reservation public services.

3.11 Transportation and Circulation

3.11.1 Setting

Regional Access

The proposed project is located approximately one mile south of State Route 62 (SR 62), also known as Twentynine Palms Highway, at the southeast quadrant of the intersection of Adobe Road and Baseline Road in Twentynine Palms. Regional access to the project site is provided by SR 62, SR 177 and Interstate 10 (I-10). In addition to being part of the state highway system, the four-lane *SR 62* is designated a Congestion Management Program (CMP) arterial by the San Bernardino Association of Governments (SANBAG), connecting with I-10 near White Water about 42 miles to the southwest and with the State of Arizona about 112 miles to the east. In the project vicinity, SR 62 has a signalized intersection at Adobe Road. *SR 77* (aka Desert Center Rice Road) is a two-lane road that intersects SR 62 about 52 miles to the east of the project site, and connects with I-10 (a four-lane freeway) at an interchange to the south.

Local Roadway System

Direct access to the project site would be provided from Baseline Road east of Adobe Road (and west of Utah Trail). *Baseline Road* is a two-lane east-west local road that begins at Adobe Road and intersects Utah Trail, as it extends about three miles to the east. *Adobe Road* is a two-lane north-south local road that begins at Baseline Road and intersects SR 62 (Twentynine Palms Highway) and Two Mile Road at signalized intersections, as it extends about five miles north of Two Mile Road. *Utah Trail* is a two-lane north-south arterial that runs through Joshua Tree National Park south of Twentynine Palms, and intersects SR 62 (Twentynine Palms Highway) and Two Mile Road at unsignalized intersections, as it extends about three miles north of Two Mile Road.

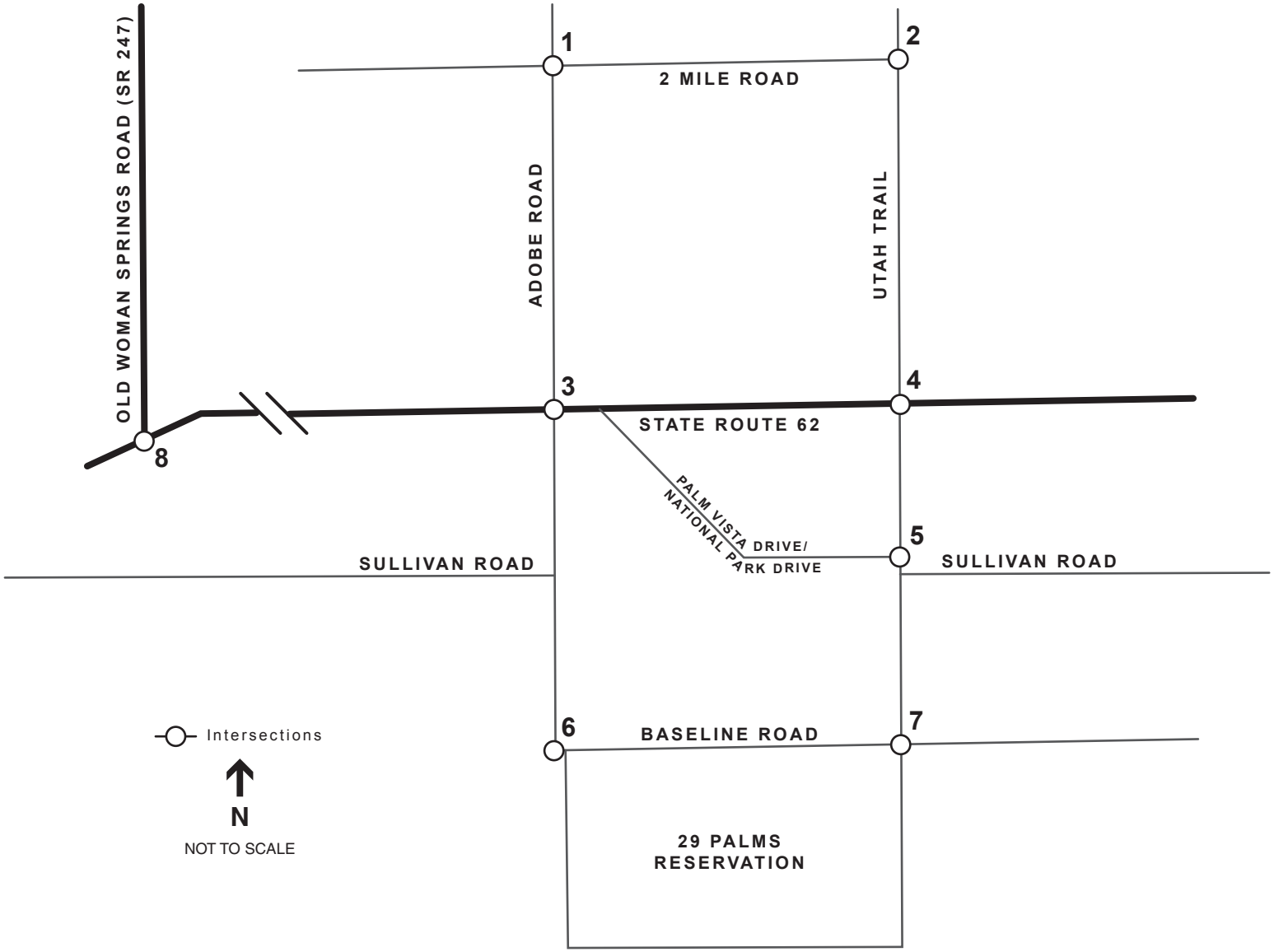
Existing Peak Hour Traffic Volumes

Seven intersections in the project vicinity were selected for evaluation of potential adverse effects caused by the proposed action. In addition, an eighth study intersection (the signalized intersection of Old Woman Spring Road (SR 247) and SR 62, in Yucca Valley, about 20 miles west of the project site) was selected for evaluation to determine the impacts of the proposed action at this SANBAG CMP-designated intersection. Morning and evening peak-hour traffic turning movement counts were conducted at the study intersections in May 2012.[1]

The eight study intersections are as follows (see **Figure 8**):

1. Adobe Road and Two Mile Road (signalized)
2. Utah Trail and Two Mile Road (all-way stop controlled)
3. Adobe Road and State Route 62 (signalized)

[1] AM Peak hour approximately 7:45 to 8:45 AM, and PM Peak hour approximately 4:30 to 5:30 PM. May vary slightly by study intersection.



SOURCE: ESA, 2012

Figure 8
Local Study Intersections

4. Utah Trail and State Route 62 (side-street stop controlled)
5. Utah Trail and Palm Vista Drive / National Park Drive (side-street stop controlled)
6. Adobe Road and Baseline Road (side-street stop controlled)
7. Utah Trail and Baseline Road (side-street stop controlled)
8. Old Woman Spring Road (State Route 247) and State Route 62 (signalized)

Existing Traffic Operating Conditions

Traffic operating conditions at intersections are evaluated on the basis of the intersection's Level of Service (LOS), which is defined as a qualitative measure that describes operational conditions within a traffic stream, generally in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. That is, LOS is a measure of "quality-of-flow". There are six levels of service, LOS A through LOS F, which relate to traffic flow conditions from best to worst, respectively. **Table 3.11-1** summarizes the relationship between delay and LOS for signalized and unsignalized intersections.

For signalized intersections, the *Highway Capacity Manual* (HCM) analysis methodology is based on factors including traffic volumes, traffic signal green time for each vehicle movement, signal phasing, whether or not the signals are coordinated, truck traffic, and pedestrian activity to estimate the average delay (seconds per vehicle) and LOS experienced by motorists traveling through an intersection (Transportation Research Board, 2000).

For unsignalized (all-way stop-controlled and side-street stop-controlled) intersections, traffic conditions are evaluated using the HCM operations methodology. With this methodology, the LOS is related to the total delay per vehicle for the intersection as a whole (for all-way stop-controlled intersections), and for each stop-controlled movement or approach only (for side-street stop-controlled intersections).

The LOS analysis of each intersection was performed using the TRAFFIX software program (Version 8.0), using the HCM methodologies described above. As shown in **Table 3.11-2**, all study intersections are currently operating at LOS C or better, which is considered to be acceptable conditions in the project area.

It is noted that existing 2012 traffic operating conditions are similar to the conditions reported in a previous (2009) Tribal Environmental Assessment for a larger casino proposal. Those LOS C or better conditions were based on July 2007 traffic counts at the same study intersections.

TABLE 3.11-1
DEFINITIONS FOR INTERSECTION LEVEL OF SERVICE

Unsignalized Intersections			Signalized Intersections	
Description	**Average Total Vehicle Delay (Seconds)**	**Level of Service Grade**	**Average Control Vehicle Delay (Seconds)**	**Description**
No delay for stop-controlled approaches.	≤10.0	A	≤10.0	Free Flow or Insignificant Delays: Operations with very low delay, when signal progression is extremely favorable and most vehicles arrive during the green light phase. Most vehicles do not stop at all.
Operations with minor delay.	>10.0 and ≤15.0	B	>10.0 and ≤20.0	Stable Operation or Minimal Delays: Generally occurs with good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average delay. An occasional approach phase is fully utilized.
Operations with moderate delays.	>15.0 and ≤25.0	C	>20.0 and ≤35.0	Stable Operation or Acceptable Delays: Higher delays resulting from fair signal progression and/or longer cycle lengths. Drivers begin having to wait through more than one red light. Most drivers feel somewhat restricted.
Operations with increasingly unacceptable delays.	>25.0 and ≤35.0	D	>35.0 and ≤55.0	Approaching Unstable or Tolerable Delays: Influence of congestion becomes more noticeable. Longer delays result from unfavorable signal progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop. Drivers may have to wait through more than one red light. Queues may develop, but dissipate rapidly, without excessive delays.
Operations with high delays, and long queues.	>35.0 and ≤50.0	E	>55.0 and ≤80.0	Unstable Operation or Significant Delays: Considered to be the limit of acceptable delay. High delays indicate poor signal progression, long cycle lengths and high volume to capacity ratios. Individual cycle failures are frequent occurrences. Vehicles may wait through several signal cycles. Long queues form upstream from intersection.
Operations with extreme congestion, and with very high delays and long queues unacceptable to most drivers.	>50.0	F	>80.0	Forced Flow or Excessive Delays: Occurs with oversaturation when flows exceed the intersection capacity. Represents jammed conditions. Many cycle failures. Queues may block upstream intersections.

SOURCE: Transportation Research Board, *Highway Capacity Manual*, 2000.

TABLE 3.11-2
EXISTING INTERSECTION LEVELS OF SERVICE (LOS)

Intersection	A.M. Peak		P.M. Peak	
	Delay[a]	LOS	Delay[a]	LOS
1. Adobe Road / Two Mile Road (signalized)	29.3	C	25.1	C
2. Utah Trail / Two Mile Road (all-way stop controlled)	9.1	A	8.9	A
3. Adobe Road / State Route 62 (signalized)	22.0	C	21.1	C
4. Utah Trail / State Route 62 (side-street stop controlled)	11.8	B	17.7	C
5. Utah Trail / /Palm Vista Drive (side-street stop controlled)	8.5	A	9.2	A
6. Adobe Road / Baseline Road (side-street stop controlled)	8.3	A	8.4	A
7. Utah Trail / Baseline Road (side-street stop controlled)	9.4	A	10.3	B
8. Old Woman Spring Road / State Route 62 (signalized)	16.8	B	17.7	B

a. Whole intersection weighted average total delay for signalized and all-way stop-controlled intersections (expressed in seconds per vehicle). For two-way stop controlled intersections, delays for worst approach are shown.

SOURCE: ESA, 2012, using the TRAFFIX 8.0 analysis software program, and the HCM methodologies.

3.11.2 Impact Analysis

The analysis approach used for this TEA is to evaluate the changes in circumstances (in current traffic conditions and in the proposed project) since the preparation of the previous TEA in 2009, and to make impact determinations based on those evaluations and on the impact determinations presented in the 2009 TEA. The 2009 TEA traffic analysis is incorporated herein by reference (CH2MHill, 2008).

Proposed Project

Construction Impacts

Construction of the project would result in a temporary increase in traffic associated with the movement of construction vehicles, equipment, and personnel over the local street and highway systems. Construction could begin as early as February 2013 and would last approximately eight months, with a workforce of about 50 workers per day, five days per week. Construction staging (and parking for worker vehicles) would be located on the project site. On a worst-case basis, assuming all workers drove to and from the project site in their own vehicle, there would be a total of about 124 one-way vehicle trips per day (50 morning trips to the site, 50 afternoon trips away from the site, and 24 one-way midday trips [e.g., for lunch]). Work shifts would be scheduled to avoid peak commute hours so that traffic by construction workers would not affect the level of service at intersections in the vicinity of the project site.

As discussed in Section 2, construction would require the importation of approximately 50,000 cubic yards (CY) of fill material over a two-month period. Based on an average haul load of 10- to 15-CY per truck and a 6-day construction work week, it is estimated that an average of about 77 truck haul round trips (154 one-way trips), and a peak of up to 96 truck haul round trips (192 one-way trips), would be generated per work day, with the truck trips occurring over the

10-hour work day. Construction would also require the use of machinery and vehicle trips to deliver equipment and materials throughout each construction period. For the most part, the machinery used during construction (estimated to be approximately 30 pieces of machinery) would be delivered to the site, and removed from the site after construction is completed. It also is assumed that there would be approximately 10 to 15 daily trips by delivery vehicles intermittently throughout the construction. Most of the above-described trips would access the site by traveling east on SR 62 and south on Adobe Road.

As described above, all study area intersections are operating at acceptable levels of service. Because trips by construction workers would occur primarily during off-peak hours, trips delivering imported fill would be spread over multiple days, and over the course of those days, and the trips delivering machinery and equipment to the site would be intermittent and also primarily during off-peak hours, construction activities would not have a significant impact on traffic operating conditions in the project area.

Operations Impacts

Project Trip Generation

Trip generation estimates for the proposed project were derived from several sources, in recognition of the proposed land use and its location. The first source considered (for the sake of consistency) was the trip generation rates used for the 70,000 square-foot casino component of the previous proposed project analyzed in the 2009 TEA. However, those trip rates were taken from an Institute of Transportation Engineers (ITE) Journal article entitled "Recalibration of Trip Generation Model for Las Vegas Hotel/Casinos". It was decided to not use those trip generation rates because casinos in Las Vegas are not representative of a casino in Twentynine Palms.

A recent (2008) Final Environmental Impact Statement for the Cowlitz Indian Tribe Trust Acquisition and Casino Project (in southern Washington State) assessed daily and PM peak-hour trip generation rates used for a dozen other proposed casino projects, with a focus of case studies in environments similar to that of the proposed project (i.e., rural or suburban fringe, limited fixed-route transit service, and no competing casinos within 50 miles of the site). On the basis of that assessment, and the assumption that basing trip generation on the proposed number of gaming positions at the casino provides the most-accurate estimate, the following trip generation rates are used for this TEA:

Weekday daily trips = 2.54 trips per gaming position
Weekday PM peak-hour trips = 0.37 trips per gaming position
Weekday AM peak-hour trips = 0.10 trips per gaming position

As shown in **Table 3.11-3**, the proposed project (with 536 gaming positions) would generate about 1,362 daily trips, with about 54 and 198 trips during the AM and PM peak hours, respectively. In comparison, the proposed project analyzed in the 2009 TEA was estimated to generate about 460 and 700 trips during the AM and PM peak hours, respectively; that analysis did not include an estimate of daily trips.

TABLE 3.11-3
ESTIMATED VEHICLE TRIP GENERATION FOR THE PROPOSED ACTION

	Daily		A.M. Peak Hour		P.M. Peak Hour	
Proposed Land Use	**Trip Rate**	**Trips**	**Trip Rate**	**Trips**	**Trip Rate**	**Trips**
Casino with 536 Gaming Positions (500 slot machines, and 6 tables with 6 positions each)	2.54	1,362	0.10	54	0.37	198

SOURCE: ESA, 2012.

Given that the proposed casino would be less than half the size of the 70,000 square-foot casino analyzed in the 2009 TEA, and that the baseline (existing) traffic operating conditions at area intersections are similar (acceptable levels of service) to those reported in the 2009 TEA, the proposed project would not have a significant traffic impact at any of the study intersections.

Parking

The project provides 450 parking spaces, which is based on the number of gaming positions and anticipated visitation. Additional overflow parking as shown on the site plan and grading plan could be developed between these planned spaces and the retention basin, to accommodate a gradual increase in visitors which is expected to occur over time. Separate employee parking would be provided. With the allocated parking spaces and area for additional parking there would be adequate room for project parking to avoid off-Reservation parking effects. Thus, there would be less-than-significant impacts.

While parking impacts are anticipated to be less than significant, temporary impacts could occur from atypical circumstances such as opening day; however, these situations would be infrequent. The Tribe will develop a plan for parking management on anticipated high visitation days.

No Action Alternative

The no action alternative would not generate any new traffic on area roads and would not result in traffic impacts on intersections in the vicinity of the project site.

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3.12 Utilities

3.12.1 Setting

Water

Water service is provided in the vicinity of the project site by the Twentynine Palms Water District. There is an existing District 8-inch water line along Baseline Road, which is the northern boundary of the project site. The District provides services to 87 square miles including the City of Twentynine Palms and portions of unincorporated San Bernardino County. Water is supplied by ten active production wells. Additional wells are inactive and/or used for groundwater monitoring. Total water demand in the District was 2,674 acre-feet (AF) in 2010, with a projected demand of 5,119 AF in 2035 (Twentynine Palms Water District, 2011). Total pumping capacity of the District's wells is 6,340 gallons per minute or a maximum of 10,248 AF per year. The California Department of Water Resources has issued recommendations to limit pumping to prevent overdraft in two of the groundwater basins covered by the District. Considering these recommendations, the total pumping capacity available is considered to be 6,985 AF per year. Based on the findings of the District's 2010 Urban Water Management Plan, the District is anticipated to have adequate water supplies available to meet demands during normal, single-dry, and multiple dry years through 2035 (Twentynine Palms Water District, 2011).

Wastewater

The project site does not currently receive wastewater service. The majority of the area is served by septic systems with disposal fields that allow wastewater to percolate into soils (City of Twentynine Palms, 2010).

Solid Waste

Solid waste collection and disposal in the project site vicinity is provided by Burrtec Waste Industries. Solid waste is collected and then sorted at Burrtec's Material Recovery Facility which removes recyclables from the waste stream. Residual solid waste is disposed of at several landfills. For example, in 2011 the City of Twentynine Palms disposed approximately 19, 369 tons between seven in-state landfills with approximately 11,444 tons disposed at Landers Sanitary Landfill and 7,576 tons disposal at U.S. Marine Corps 29 Palms Disposal Facility (CalRecycle, 2012).

Energy

Southern California Edison is the electricity provider for the project site vicinity. Service is provided adjacent to the project site at the 480V distribution level. Natural gas service is provided by Southern California Gas Company to the project site vicinity. The nearest natural gas line for residential or business connection is located 3,300 feet east of the entrance of the proposed development, along Baseline Road. There are also several propane providers for the area including Amerigas, FerrellGas and G&K Propane.

3.12.2 Impact Analysis

Proposed Action

Water

Water would be provided by Twentynine Palms Water District via a new extension from the 8-inch water line on Baseline Road. The Tribe's Spotlight 29 Casino in Coachella, California potable water demand averaged 78,019 gallons per day over a period of 10 months in 2012 (Chavez, 2012). Based on factors including the number of gaming positions, employees, gaming area, building area, and restaurant and bar space it is estimated that the proposed project would have an average potable demand of 19,500 gallons per day or 13.5 gallons per minute.[1]

The 2010 UWMP indicates that the District has adequate water supplies for planned uses and additional capacity through 2035 in both normal and dry years; however, the Tribe would be required to coordinate with the District for water service. Increased demand for service is thus considered a significant impact without a service agreement. Mitigation Measure UTI-1 would reduce impacts to a less-than-significant level.

> **Mitigation Measure UTI-1:** Prior to project operation, the Tribe would enter into a service agreement with the Twentynine Palms Water District for potable water service.

Wastewater

The proposed project would have average day flows of approximately 17,000 gallons per day, with maximum day flows of 25,000 gallons per day for which the on-site treatment plant would be sized (ECOfluid Systems, 2012). The treatment plant would provide at least secondary treatment and treated effluent would be disposed via seepage pits and/or leachfield. With provision of on-site wastewater treatment, the proposed project would not affect off-Reservation service providers.

Energy

Electricity would be provided by Southern California Edison which provides service adjacent to the site at the 480V distribution level. The project electrical load is estimated at 1.5 mega-volt amperes. For heating the use of propane is planned; however the Tribe is also considering service from Southern California Gas Company, which is the natural gas utility provider for the area. The increased use of energy is potentially significant. Mitigation Measure UTI-2 would reduce impacts to a less-than-significant level.

> **Mitigation Measure UTI-2:** Prior to project operation, the Tribe would enter into a service agreement with Southern California Edison for the provision of electricity to the project site. If natural gas is utilized the Tribe would enter into a service agreement with Southern California Gas Company for natural gas service, prior to operation.

[1] For the listed factors, the existing Spotlight 29 Casino has 400% to 600% more than the proposed project.

Solid Waste

Solid waste from the proposed project would ultimately be disposed at one of several landfills with varying capacities. The primary landfill for the Twentynine Palms area is the Landers Landfill which is nearing capacity under the current permit. Future disposal options would include expansion of the landfill or increased disposal to other landfills. As multiple landfills are used the effect of the project's solid waste stream on any one landfill cannot be determined; however, the project's annual waste disposal was estimated and compared to landfills which currently service the City. Based on CalRecycle's estimated waste disposal rate of 0.9 tons per employee per year (CalReycle, 1999)[2], the proposed project would generate approximately 900 tons per year, which is within the remaining capacity of landfills which currently receive solid waste from the City of Twentynine Palms. As there is adequate capacity in several landfills which serve the area, this impact is considered less than significant. Additionally, the Tribe would pay for solid waste collection which would provide a fair share contribution towards the waste disposal industry's development of future solid waste recycling and disposal facilities necessary to serve the project. Though not required, the Tribe proposed to implement Mitigation Measure UTI-3 below to further reduce the project's contribution to area landfills.

> **Mitigation Measure UTI-3:** Prior to project construction, the project would coordinate with Burrtec Waste Industries to incorporate recycling into construction. Prior to operation, the Tribe would coordinate with Burrtec Waste Industries to incorporate recycling into operations.

No Action Alternative

Under the no action alternative there would be no development on the project site and thus no increased demand on water supply, wastewater, solid waste collection/disposal, or energy service providers.

[2] CalRecycle estimate for Services—Other Miscellaneous includes Amusement and Recreation Services

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3.13 Water Resources

This section describes the water resources within and in the vicinity of the project site, including hydrology, water quality, and flooding. Water resources data were collected based on documentation available from federal, state, and local sources, as well as prior Tribal evaluations of the project site and vicinity. An impact analysis is included which evaluates potential water resources consequences that could occur as a result of implementation of the proposed project. Mitigation measures are applied, to the extent warranted to ensure that potential water resources impacts would be minimized.

3.13.1 Setting

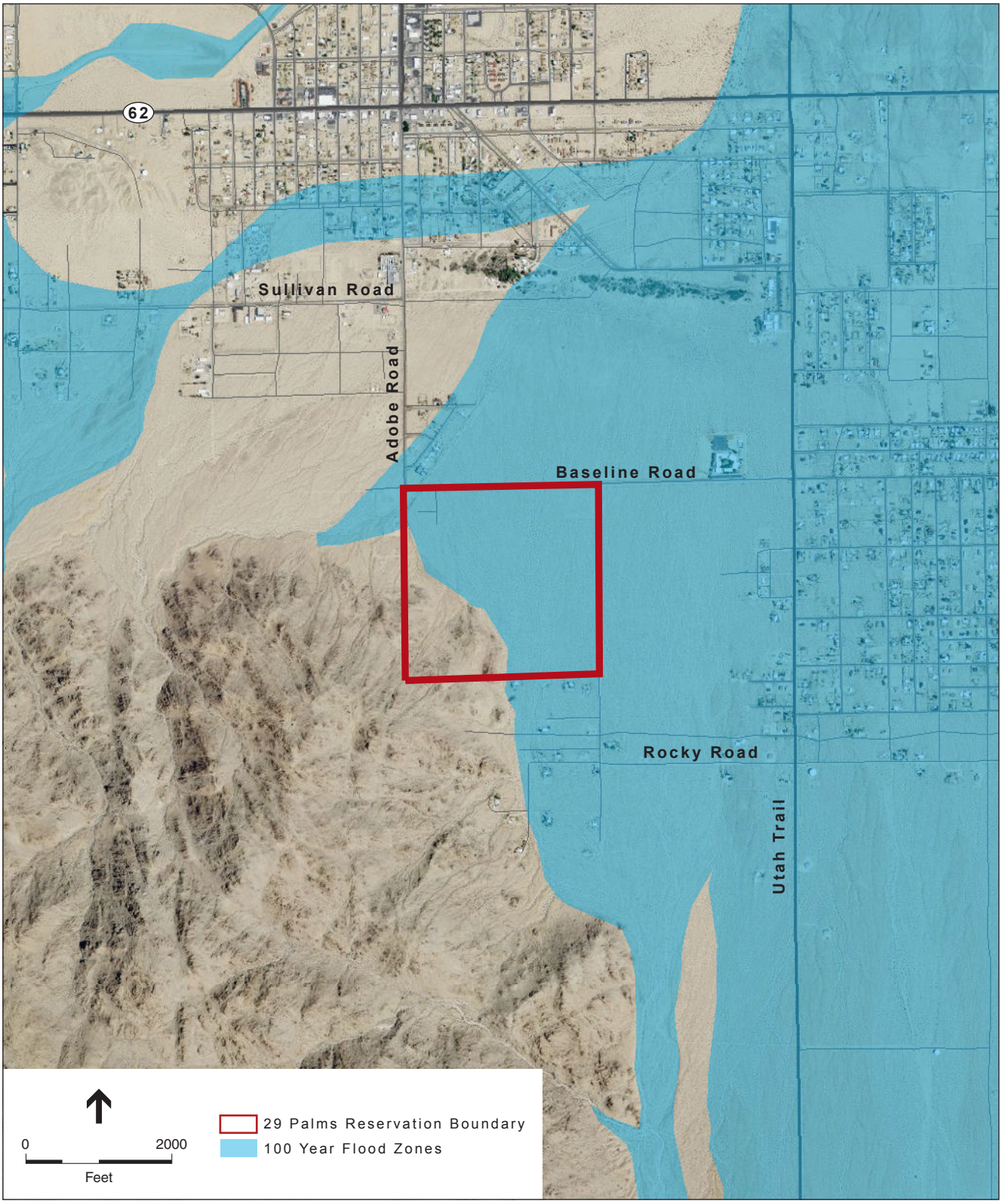
The Reservation is situated immediately north and east of the Joshua Tree National Monument, and approximately 0.5 mile south of the City of Twentynine Palms. The northeastern two-thirds of the Reservation is composed of alluvial/desert wash deposits, which slope gently from an elevation of approximately 2,180 feet above mean sea level (msl) along the southern boundary of the Reservation, to approximately 2,055 msl along the northern boundary of the Reservation. The alluvial fan formation is associated with a desert wash that originates south of the Reservation, within the Joshua Tree National Monument. The southwestern third of the Reservation includes areas of higher relief topography, which lead into mountainous areas of Joshua Tree National Monument, to the southwest. Elevations within this area vary, up to approximately 2,310 msl near the southwestern corner of the Reservation.

Annual rainfall within the Reservation averages about 4 to 5 inches per year, most of which occurs during the winter months. However, three-quarters of the annual rainfall can occur during a single summer thunderstorm event (City of Twentynine Palms, 2002). The desert climate of the Reservation is characterized by limited precipitation in the form of rain and sometimes snow.

Surface Water, Drainage, and Flooding

There are no perennial surface water features within the project site or its immediate vicinity. During minor storm events, rainfall in the project site evaporates or quickly infiltrates into surficial sediments, which have high infiltration capacity. Runoff occurs during larger storm events. During very large storm events, runoff from the mountains to the south of the site flows along the desert washes on site. Channels are poorly defined on site and in the vicinity of the project site. Drainage flows generally in a northerly direction along wash features within the project site, towards the Oasis of Mara and the City of Twentynine Palms, located north of the project site.

The Federal Emergency Management Agency (FEMA) is responsible for delineating areas that are expected to be subject to flooding during a 100-year flood event. A 100-year flood zone is defined as the area that is expected to be inundated by flood flows during a rainfall event that would have an annual probability of occurrence of 1 percent. As shown on **Figure 9**, the central



SOURCE: ESRI, 2011; USDA, 2012; FEMA, 2012; and ESA, 2012

Twentynine Palms Casino Project Tribal EA . 120307

Figure 9

FEMA 100 Year Flood Zone

and northeastern portions of the Reservation are within Flood Hazard Zone AO (shaded), which is subject to 100-year flooding.[1] Flood Hazard Zone AO represents areas with flood depths of 1 to 3 feet (usually sheet flow on sloping terrain). The depth of flow within these areas on the Reservation is 1 foot and the velocities range from 4 ft/sec to 6 ft/sec (Pezonella Associates, 2012). Development is allowed in these areas, while requiring habitable structures to be elevated above the identified flood depth (City of Twentynine Palms, 2002).

Groundwater

The project site overlies an area of the northern portion of the Joshua Tree Groundwater Basin. The project site is located approximately 0.5 mile south of the Pinto Mountain Fault, which functions as a barrier to groundwater movement, and is the northern edge of the groundwater basin. The Pinto Fault is a strong barrier to groundwater flow, with the water table lower by about 100 feet in the Twentynine Palms Valley Groundwater Basin than in the Joshua Tree Groundwater Basin to the south (DWR, 2004). The Oasis of Mara, located along the trace of the fault line, was historically fed by groundwater that was driven to the surface by fault related structures. Today, the Oasis of Mara is artificially fed with groundwater.

The productive water-bearing materials in this basin consist of unconsolidated to partly consolidated Miocene to Quaternary continental deposits (DWR, 2004). Wells in Joshua Tree Basin reach a maximum depth of about 785 feet without encountering bedrock. Groundwater in the basin is unconfined and typically occurs in interbedded gravels, conglomerates, and silts deposited in alluvial fan systems. Other less productive deposits include active silt, clay, and sandy clay deposits in Coyote Lake playa; and dune sands (DWR, 2004).

The portion of the Joshua Tree Groundwater Basin where the project site is located has historically been divided into three subbasins: 1) Indian Cove, 2) Fortynine Palms and 3) Eastern. The project site is located in the Eastern subbasin, which is approximately 2,500 acres in size, and is located south of the Pinto Mountain Fault, west of the Mesquite Springs Fault, and east of Mesquite Springs Road. The City of Twentynine Palms is provided water service by the Twentynine Palms Water District, which relies solely on groundwater as its water supply. Potable water service is described further in **Section 3.12**, Utilities.

Regulatory Setting

Clean Water Act

The Clean Water Act (CWA) (CWA, 33 USC 1251-1376) is the major federal legislation governing water quality. The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Section 402 establishes the National Pollutant Discharge Elimination System (NPDES) Program. Construction activities disturbing over one acre of land are required to obtain coverage under an NPDES stormwater permit and implement Stormwater Pollution Prevention Plans (SWPPP) that reduce or prevent discharge of pollutants

[1] FEMA Community Panel Number 06071C8935F, dated March 18, 1996.

into receiving waters. The U.S. Environmental Protection Agency (EPA) is the administrating authority for Tribal land in California. The Tribe would apply for coverage under the EPA's 2012 Construction General Permit.

Federal Safe Drinking Water Act

The Safe Drinking Water Act was established to protect the quality of waters actually or potentially designated for drinking use, whether from above ground or underground sources. The UIC Program is responsible for regulating the construction, operation, permitting, and closure of injection wells that place fluids underground for storage or disposal. Both leach fields and seepage pits are Class V shallow injection wells. Minimum requirements of the UIC Program include submitting inventory information to the U.S. EPA, operating wells in a way that does not endanger underground sources of drinking water, and properly closing wells when they are no longer in use.

Executive Order 11988

Under Executive Order 11988, FEMA is responsible for management of floodplain areas defined as the lowland and relatively flat areas adjoining inland and coastal waters subject to a one percent or greater chance of flooding in any given year (i.e., the 100-year floodplain). The National Flood Insurance Program (NFIP), in combination with EO 11988, establishes the minimum standards for floodplain management (44 CFR Section 60.3).

3.13.2 Impact Analysis

The impact analysis provided below considers potential hydrologic resources impacts that could occur off-Reservation, or that could affect patrons on site (i.e., flooding) as a result of implementation of the proposed project.

Proposed Action

Flooding

Implementation of the proposed project would result in the installation of facilities within an area that is currently located within a FEMA-delineated 100-year floodplain, as indicated in **Figure 9**. However, as discussed in **Section 2**, Alternatives, all proposed buildings would be constructed on fill so as to be elevated out of the 100-year floodplain. This would reduce impacts to a less-than-significant level.

Construction Stormwater Runoff

Construction of the proposed project would involve the use of heavy machinery on site, such as bulldozers, earth movers, graders, and other heavy equipment. Use of heavy machinery could result in accidental release of fuels, oils, antifreeze, greases, and other equipment related pollutants into the environment. Other construction related potential water quality pollutants that could

accidentally be released into the environment may include paints, cement washout, and other construction related debris. During a storm event, these potential water quality pollutants could become entrained in stormwater on site, and be discharged from the project site, migrating downstream into offsite areas. Entrained pollutants could also infiltrate into the subsurface on site or off site, resulting in contamination of groundwater.

As discussed in Section 2, Alternatives, the proposed project would include implementation of a Stormwater Pollution Prevention Plan with a series of Best Management Practices (BMPs) that would be designed to avoid or minimize potential degradation of water quality. Generally, the BMPs applied provide measures that would manage stormwater quality during construction of the proposed facilities, including identification and minimization of potential construction related pollutant sources, thereby minimizing pollutant releases during storm events and/or stormwater discharge. The SWPPP will comply with the requirements of the EPA's 2012 Construction General Permit which include erosion and sediment control best management practices (BMPs), control of other wastes at the construction site and procedures for inspection and enforcement of BMPs. Implementation of a SWPPP that meets these requirements would reduce impacts to a less-than-significant level.

Operation Stormwater Runoff

As discussed above, stormwater from the project site drains in a northerly direction towards the City of Twentynine Palms. Implementation of the proposed project would result in the installation of new impervious surfaces on site. Impervious surfaces prevent the infiltration of stormwater into the underlying pervious sediments, and could therefore result in a net increase in the volume of stormwater discharged from the project site, and a shift in the timing of that discharge. These anticipated changes in stormwater runoff from the project site could in turn result in the discharge of stormwater from the project site at an elevated rate, in comparison to existing conditions. As a result, increases in the volume of stormwater discharged, especially during large storm events, could exceed available capacity in downstream stormwater control facilities, and could potentially contribute to increases in localized flooding, unintended scour/erosion, and sedimentation off site. The proposed project has preliminary grading plans to route drainage north to retention basins between the proposed parking lot and Baseline Road (Appendix A). In order to fully minimize potential impacts, implementation of **Mitigation Measure WAT-1** would be required. With mitigation, impacts would be reduced to a less-than-significant level.

> **Mitigation Measure WAT-1:** Prior to the initiation of construction activities on site, a drainage management plan for the project site would be developed. The drainage management plan shall consider all proposed facilities on site, including new impervious surfaces associated with proposed buildings, roadways, and other facilities. The drainage management plan shall estimate existing rates of stormwater discharge from the project site, and shall provide an analysis, using stormwater modeling software, of anticipated increases in stormwater discharge from the project site following implementation of the proposed project. The drainage management plan shall also provide for the installation of drainage management measures and facilities, including but not limited to stormwater retention basins, swales, and other facilities designed to retain stormwater on site. The drainage management plan shall provide for the incorporation of stormwater retention or other stormwater management

facilities on site to the extent warranted to ensure that no net increase in stormwater emissions from the project site would occur, up to the 24-hour, 100-year storm event. Recommendations from the drainage management plan shall be incorporated into design of the proposed facilities on site. Tribal EPA would provide a review of the drainage management plan.

Groundwater

The project would include development of seepage pits and/or a leach field within the project site to dispose of at least secondary treated effluent from the wastewater treatment plant. The Tribe must meet the requirements of the Underground Injection Control Program which include notification to EPA and not endangering underground sources of drinking water. Initial borings to 30 feet below ground did not encounter groundwater (**Appendix C**). The depth indicates that there would be an adequate vertical separation depth from the base of the UIC wells to the groundwater table. Thus, impacts to groundwater from wastewater disposal facilities would be less than significant.

No Action Alternative

This alternative will result in no change within or outside of the project site. Therefore, this alternative would not impact water resources, including water quality, flooding, and hydrology, of off-Reservation areas.

SECTION 4
Cumulative Effects

This section describes the cumulative effects of implementing the proposed project along with past, present and reasonably foreseeable projects in the vicinity of the project site. Information regarding actions within the vicinity was obtained from the City of Twentynine Palms, Community Development Department staff.[1] Recently completed projects in the City have been limited to the approval of a conditional use permit for a mini-storage facility on Adobe Road. Proposed future development in the area includes a 200 unit apartment complex east of Condor Road on the northern boundary of the City adjacent to the Marine Corps Air Ground Combat Center and a Dollar General store on Datura Avenue, near Twentynine Palms Highway. In addition, the cumulative effects consider the proposed buildout of the City's recently adopted General Plan (2012). There are no projects currently under construction within the City or on the project site.

4.1 Aesthetics

Future development would be developed in accordance with the City's development policies including design, lighting, and setback requirements, among other visual considerations. While increased development in the project site vicinity under buildout conditions would reduce some views of the boundary of Joshua Tree National Park, the City has adopted overlays to balance protection of scenic views with economic development and housing needs. Thus, cumulative aesthetic impacts would be less than significant.

4.2 Air Quality

No long-term air quality impacts are expected from the proposed project and therefore no cumulative impacts are anticipated. As discussed in Section 3.2, with mitigation the proposed project does not exceed the local air district or federal thresholds for construction, operational or greenhouse gas emissions.

4.3 Biological Resources

Cumulative development in the project site vicinity has the potential to impact desert tortoise. The West Mojave Plan is a multiple species conservation planning effort with a primary focus on

[1] Brenda Simmons, City of Twentynine Palms Community Development Department, personal communication with ESA, December 11, 2012.

desert tortoise and the State-listed Mohave ground squirrel. The Plan has not been adopted by the City; however, until it is adopted General Plan Policy CO-1.1 requires that proposed development projects on previously undeveloped land with suitable habitat for special-status biological resources prepare a biological assessment in accordance with State and federal requirements and adopt appropriate mitigation measures. As this policy would minimize impacts to protected species and the Tribe proposes to adopt a Tribal Habitat Conservation Plan and the mitigation measures within this TEA, cumulative impacts to biological resources would be less than significant.

4.4 Cultural Resources

The proposed project would not impact off-site cultural resources and has adopted mitigation for recovery of unknown resources discovered during earth moving activities. With mitigation, the project would not contribute to any cumulative cultural resource impacts.

4.5 Geology and Soils

Impacts with respect to geology and soils generally do not extend past an individual project's development area and thus are not cumulative in nature.

4.6 Hazards and Hazardous Materials

The Tribe would implement mitigation for wildfire prevention and accidental hazards releases. With the recommended mitigation the project is not anticipated to contribute to a cumulative impact during construction. The project does not involve any operational activities that would result in hazardous emissions or the handling of hazardous or acutely hazardous materials and thus does not contribute to a cumulative impact during operation.

4.7 Land Use

The project would not prevent the use of land in the vicinity as planned within the General Plan; therefore it would have a less-than-significant cumulative impact to land use.

4.8 Noise

Operation of the project is not anticipated to create significant sources of noise at the project site nor would the planned residential uses in the project site vicinity under buildout of the City. Cumulative traffic noise on local roadways was analyzed in Section 3.8. Adobe Road south of Twentynine Palms Highway would experience noise levels which exceed external noise expectations for residential uses under City buildout. No feasible mitigation is available to reduce noise along the length of Adobe Road and thus this cumulative impact would remain significant.

4.9 Socioeconomic Conditions

The project would not adversely affect population or housing and thus would not contribute to any cumulative effects for these resources. The project is anticipated to contribute to cumulatively beneficial effects to employment and the local economy along with future development in the City.

4.10 Public Services

Future development with buildout of the City would increase demands on police and fire services. Property taxes and development fees would help to offset the cost of increased demands from new residences and businesses. The Tribe also pays into the "Special Distribution Fund" pursuant to the Tribal-State Compact which provides grants for police and fire services which would reduce the contribution of the project to cumulative impacts to a less-than-significant level.

4.11 Traffic

As discussed in Section 3.11, the project would not result in significant impacts to study area intersections. The 2009 Tribal EA, prepared for a larger casino development on the Reservation, assessed cumulative traffic impacts using regional growth assumptions from the San Bernardino Associated Governments (CH2MHILL, 2008). The analysis determined that all study area intersections are projected to operate at level of service (LOS C) or better in both the AM and PM peak hours under cumulative conditions without the need for signalizing any unsignalized intersections. The addition of project traffic would cause an LOS grade change at the intersection of Old Woman Springs Road/ SR 62 from LOS B to C in the PM peak hour. The LOS change is within the recommended levels for a signalized intersection on a Congestion Management Program arterial (LOS D with a 45 second delay). Therefore, cumulative plus project impacts were determined to be less than significant. As this assessment was done for a larger project, it is reasonable to assume that a project reduced in size would also have less than significant cumulative impacts.

4.12 Utilities

As discussed in Section 3.12, the Twentynine Palms Water District's 2010 Urban Water Management Plan, determined that the District would have adequate water supplies available to meet demands during normal, single-dry, and multiple dry years through 2035 with additional capacity (Twentynine Palms Water District, 2011). Thus, under cumulative conditions the District would have capacity for the project, though the Tribe enter into a service agreement to ensure impacts remain less than significant.

As wastewater service would be provided by a private on-site facility there would be no impacts to off-site wastewater service providers.

For electricity and natural gas service, Southern California Edison and Southern California Gas Company are the certified carriers and to date have taken no action to close commercial rates to new or additional electric and gas requirements. Extensions and services are made in accordance with approved tariffs with the California Public Utilities Commission; thus, energy would be made available on a first-come, first served basis for all future projects. If natural gas extension is infeasible propane gas is an option in the region. Due to the State's regulatory requirements, energy is anticipated to be available for cumulative development and thus impacts with respect to energy would be less than significant.

Solid waste for the project along with existing and future development in the project site vicinity would ultimately be disposed at one of several landfills with varying capacities. The primary landfill for the Twentynine Palms area is the Landers Landfill which is nearing capacity under the current permit. As multiple landfills are used, the cumulative impact on any particular landfill cannot be determined; however, the EIR for the City General Plan determined that approximately 91% of capacity remains at landfills that serve the planning area, which is a significant amount of remaining capacity (City of Twentynine Palms, 2012). In order to reduce solid waste impacts project mitigation includes incorporation of recycling into construction and operational phases. The City would continue to implement solid waste reduction, recycling and re-use measures in accordance with State requirements. Considering waste reduction efforts and significant remaining capacity for landfills serving the planning area, impacts would be less than significant.

4.13 Water Resources

The Tribe would implement a Stormwater Pollution Prevention Plan and off-Reservation projects are required to comply with Title 18, Building and Construction of the City Municipal Code, which includes grading and erosion control measures to address sedimentation and runoff from construction activities. For these reasons, cumulative impacts to water quality from construction runoff would be less than significant.

The project incorporates drainage facilities (retention basins) and mitigation for full drainage design which would ensure that future off-site flows do not exceed existing flows including under the cumulative scenario. Thus the project would not contribute to cumulative drainage impacts.

Regarding groundwater and flooding, the project site would include retention basins to offset the proposed increase in impervious surfaces. Additionally, most of the Reservation would remain undeveloped or pervious. While the proposed facilities would be built above the floodplain, fill would be balanced on site and thus would not create flooding issues off site. For these reasons the project would not contribute to cumulative impacts for groundwater or flooding issues.

SECTION 5
Mitigation Measures

The following mitigation measures shall be implemented as part of the proposed project.

Mitigation Measure AIR-1

The following measures shall be implemented during construction:

- The contractors shall utilize equipment and vehicles tuned and maintained in accordance with manufacturer specifications.
- Standard techniques for dust suppression such as watering of access roads and active construction areas; application of surfactants to exposed soils; limiting truck speeds on unpaved surfaces; covering trucks hauling soil, sand, and other loose materials; prohibiting grading activities if wind speeds exceed 25 miles per hour; and replanting vegetation in disturbed areas as quickly as possible shall be required of the contractor to minimize particulates to the atmosphere. The Tribe's dust control and suppression plan shall be consistent with California air quality standards best practices throughout the construction of the project.

Mitigation Measure AIR-2

The applicant shall require busses and diesel loading trucks to comply with the California Air Resource Board's Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling (California Code of Regulations, Title 13, Division 3, Article 1, Chapter 10, Section 2458) which requires that the driver shall not idle for more than 5 minutes at any location, except in the case of passenger boarding where a ten minute limit is imposed, or when passengers are onboard.

Mitigation Measure BIO-1

The Tribe shall implement the following measures:

Prior to and During Construction

- Prior to construction of the proposed project, the Tribe shall construct a desert tortoise-proof fence surrounding the project site. The height and depth of the fence would be approved by Tribal EPA and a qualified biologist employed by the Tribe to prevent burrowing or breach of the barrier by tortoises. Pipe cattle guards would be utilized at vehicle gates. Installation of the fence and cattle guards shall be monitored by a qualified biologist approved by the Tribe.
- A qualified biologist approved by the Tribe would monitor initial grading of the project site.
- All parking for construction-related vehicles on the Reservation shall be within the fenced project site.

- A Tribal EPA-authorized biologist or designated Tribal representative would meet with all construction personnel to administer a desert tortoise awareness program. This person will keep records to ensure that all construction personnel have participated in the awareness program. The Tribal EPA must receive, review and approve the awareness program prior to its presentation. The goal of the awareness program would be to avoid take during construction activities and to reinforce the protocol for construction personnel should a tortoise be sighted. Workers will be instructed not to touch, handle, or otherwise disturb desert tortoise. Workers will also be instructed to check beneath their vehicles and equipment for the presence of desert tortoise prior to their movement.
- In the event a desert tortoise is observed within the project site, all activity would be ceased and a qualified biologist would be contacted. The desert tortoise may not be touched, handled, or otherwise disturbed. If appropriate, a breach should be opened in the desert tortoise proof fence on the west, east, or south side to facilitate the animal's movement off the site. Following movement from the project site, the desert tortoise proof fence shall be immediately repaired to prevent access.
- If an incidental take occurs during construction, work would stop and USFWS would be contacted to discuss what actions would be necessary.
- Project vehicles will be restricted to 15 MPH while on the project site, Adobe Road and Baseline Road. Access to Desert Knoll Avenue will be prohibited.

Construction and Operation Measures

- The proposed project would use secure containers for storage of recycling and solid waste to prevent predators, including coyote and raven, from attracting to the project site.
- The Tribe would maintain the installed fence to prevent deterioration and repair damage. Maintenance of the fence would occur from existing access roads or disturbed areas.

Mitigation Measure CUL-1

Due to the possibility of unanticipated discoveries, the Tribe shall, prior to construction, retain the services of an archaeologist that meets the Secretary of Interior's Professional Qualification Standards (36 CFR Part 61; hereafter qualified archaeologist) to observe construction activities. Daily monitoring forms would be prepared and the monitors would report to the Tribal Historic Preservation Office and Tribal Council.

Mitigation Measure CUL-2

Prior to initiation of earth moving activities and construction, contractors and equipment operators who work on the site shall be instructed by a qualified archaeologist on anticipated types of potential resources and proper procedures for action following accidental discovery. Contractors and operators are also required to watch for potential archaeological artifacts and sites, along with human remains. In the event contractors and/or operators find prehistoric or historic resources (including Native American resources), all work would stop within a circumference of 100 feet from the find until a qualified archaeologist approved by the Tribe has assessed the discovery and determined appropriate avoidance or treatment measures.

Mitigation Measure CUL-3

In the unlikely event that human remains are discovered during project construction, work would stop at the discovery location and any nearby area reasonably suspected to overlie adjacent

human remains. The county coroner would be contacted to determine if the cause of death must be investigated. If the remains are determined to be of Native American origin, they shall be subject to the procedures of the Native American Graves Protection and Repatriation Act (25 USC 3001 et seq.).

Mitigation Measure GEO-1

The project design would incorporate the recommendations of the geotechnical investigation (Appendix C, Section VI). Through the course of project design and construction variations from these recommendations may be made if they are approved by a licensed geotechnical engineer and are consistent with applicable building codes.

Mitigation Measure HAZ-1

A construction safety office will inspect all equipment and materials on the construction site, develop a safety plan and conduct briefings before the start of every work day. The Tribal Emergency Response Manager will be updated and notified of any hazardous materials held on site or hazardous waste that will be generated by the project. The Tribal Emergency Response Manager will be given copies of the site safety plan. All materials safety data sheets will be kept in an organized manner at an accessible location for construction personnel.

Mitigation Measure HAZ-2

Any construction equipment that normally includes a spark arrester shall be equipped with an arrester in good working order. This includes, but is not limited to, vehicles, heavy equipment, and chainsaws. During construction, staging areas, welding areas, or areas slated for development using spark-producing equipment shall be cleared of dried vegetation or other materials that could serve as fire fuel. To the extent feasible, the contractor shall keep these areas clear of combustible materials in order to maintain a firebreak.

Mitigation Measure HAZ-3

Ash trays for exterior use shall be incorporated into the project design to minimize wildland fire hazards from smoking on the project site.

Mitigation Measure NOI-1

The Tribe shall require construction contractors to limit construction to the hours of 7:00 a.m. through 7:00 p.m., except on Sundays and Federal holidays. If construction would occur during the summer months of May through September, construction shall be allowed during the hours of 6:00 a.m. to 7:00 p.m.

Mitigation Measure NOI-2

To reduce daytime noise impacts due to construction, the project applicant shall require construction contractors to implement the following measures:

- Equipment and trucks used for project construction shall use the industry standard noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically-attenuating shields or shrouds, wherever feasible).

- Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools.
- Where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used where feasible; this could achieve a reduction of 5 dBA. Quieter procedures, such as use of drills rather than impact tools, shall be used whenever feasible.
- Stationary noise sources shall be located as far from adjacent receptors, whenever feasible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or other measures to the extent feasible.

Mitigation Measure UTI-1

Prior to project operation, the Tribe would enter into a service agreement with the Twentynine Palms Water District for potable water service.

Mitigation Measure UTI-2

Prior to project operation, the Tribe would enter into a service agreement with Southern California Edison for the provision of electricity to the project site. If natural gas is utilized the Tribe would enter into a service agreement with Southern California Gas Company for natural gas service, prior to operation.

Mitigation Measure UTI-3

Prior to project construction, the project would coordinate with Burrtec Waste Industries to incorporate recycling into construction. Prior to operation, the Tribe would coordinate with Burrtec Waste Industries to incorporate recycling into operations.

Mitigation Measure WAT-1

Prior to the initiation of construction activities on site, a drainage management plan for the project site would be developed. The drainage management plan shall consider all proposed facilities on site, including new impervious surfaces associated with proposed buildings, roadways, and other facilities. The drainage management plan shall estimate existing rates of stormwater discharge from the project site, and shall provide an analysis, using stormwater modeling software, of anticipated increases in stormwater discharge from the project site following implementation of the proposed project. The drainage management plan shall also provide for the installation of drainage management measures and facilities, including but not limited to stormwater retention basins, swales, and other facilities designed to retain stormwater on site. The drainage management plan shall provide for the incorporation of stormwater retention or other stormwater management facilities on site to the extent warranted to ensure that no net increase in stormwater emissions from the project site would occur, up to the 24-hour, 100-year storm event. Recommendations from the drainage management plan shall be incorporated into design of the proposed facilities on site. Tribal EPA would provide a review of the drainage management plan.

SECTION 6
List of Preparers

6.1 Preparers of the Environmental Assessment

Environmental Science Associates

Erich Fischer – Project Director

Jennifer Wade – Project Manager

Bob L. Jones – Deputy Project Manager/Biologist

Jamie Galos – Senior QA/QC

Greg Ainsworth - Biologist

Kathy Anderson – Cultural Resources

Rebecca Allen – Cultural Resources

Robert Eckard – Water Resources

Matt Morales – Air Quality/Noise

Jack Hutchison – Traffic

Brad Allen - GIS

Tom Wyatt – Graphics

Logan Sakai – Production

SECTION 7
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