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FILED WITH THE PUBLIC UTILITIES COMMISSION OF NEVADA - 8/22/2023

Holland & Hart

Bryce C. Alstead
Partner
Phone 775.327.3067
balstead@hollandhart.com

August 22, 2023

Ms. Trisha Osborne
Assistant Commission Secretary
Public Utilities Commission of Nevada
1150 East William Street
Carson City, Nevada 89701-3109

Re: Docket No. 23-_____: Application of Escape Solar LLC, for a permit to construct a 185 MW solar energy generating facility, a 138 kV generation-tie line, and associated facilities, including an energy storage system, to be located in unincorporated Lincoln County, Nevada, pursuant to the Utility Environmental Protection Act.

Dear Ms. Osborne,

Enclosed for filing with the Public Utilities Commission of Nevada please find the Application of Escape Solar LLC, for a Permit to Construct a one hundred eighty-five (185) MW solar energy generating facility, a one hundred thirty-eight (138) kV generation-tie line, and associated facilities, including an energy storage system, to be located in Lincoln County, Nevada, under the Utility Environmental Protection Act.

An ACH payment in the amount of $200.00 has been submitted electronically for payment of the filing fee.

Should you have any questions, or require additional information, please advise.

Best regards,

Bryce C. Alstead, Esq.
Amber L. Rudnick, Esq.
of Holland & Hart LLP

Attorneys for Escape Solar LLC

BCA:cpm

Location
5441 Kietzke Lane, Suite 200
Reno, NV 89511-2094

Contact
p: 775.327.3000 | f: 775.786.6179
www.hollandhart.com

BEFORE THE PUBLIC UTILITIES COMMISSION OF NEVADA

Application of Escape Solar LLC, for a permit to construct a 185 MW solar energy generating facility, a 138 kV generation-tie power line, and associated facilities, including an energy storage system, to be located in Lincoln County, Nevada, pursuant to the Utility Environmental Protection Act	)	Docket No. 23-_____

APPLICATION OF ESCAPE SOLAR LLC, FOR A PERMIT TO CONSTRUCT A 185 MW SOLAR ENERGY GENERATING FACILITY, A 138 kV GENERATION-TIE POWER LINE, AND ASSOCIATED FACILITIES, INCLUDING AN ENERGY STORAGE SYSTEM, PURSUANT TO THE UTILITY ENVIRONMENTAL PROTECTION ACT

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RENO, NV 89511

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Exhibit J Affidavit of Publication
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I. INTRODUCTION

Pursuant to NRS 704.870(1) and NAC 703.423, Escape Solar LLC, (the "Applicant") hereby files with the Public Utilities Commission of Nevada (the "Commission") an application ("Application") for a Permit to Construct ("PTC") the Escape Solar Project (the "Project"), comprising a one hundred eighty-five (185) megawatt ("MW") photovoltaic ("PV") solar generation facility, a one hundred thirty-eight (138) kilovolt ("kV") generation-tie power line ("Gen-tie"), and associated facilities, including an up to four hundred (400) megawatt-hours ("MWh") energy storage system, in Lincoln County, Nevada, pursuant to the requirements of the Utility Environmental Protection Act, NRS 704.820 *et seq.* ("UEPA").

The Project will be located on approximately two thousand nine hundred (2,900) acres of private lands identified as a portion of Lincoln County Assessor's Parcel Number ("APN") 008-261-20, which Applicant is under contract to purchase from C&O Holdings LLC, and Lincoln County APN 008-261-09, which Applicant is under contract to purchase from Sharet Holdings II LLC. Specifically, the Project will rest on approximately one thousand seven hundred (1,700) of the two thousand nine hundred (2,900) acres on a portion of APN 008-261-20 and APN 008-261-09 as more particularly described in **Exhibit "B"** attached hereto and incorporated herein by this reference.

The Project falls within the definition of a "utility facility" as set forth in NRS 704.860 because the Project's primary component will be a renewable energy generating plant which will have a nameplate capacity of greater than seventy (70) MW, making it a utility facility under NRS 704.860(1). Additionally, the Project's Gen-tie will be an electric transmission line designed to operate at one hundred thirty-eight (138) kV, which is below the threshold set forth in NRS 704.860(2). As such, the Project's Gen-tie is referenced in this Application as an ancillary facility of the Project's generating facility.

The U.S. Fish and Wildlife Service ("USFWS") conducted an environmental review of one million seven hundred eighty thousand one hundred forty (1,780,140) acres within the southeastern portion of Lincoln County, Nevada, including the Project area, in January 2010. The Environmental Impact Statement ("EIS") is provided in **Exhibit "G,"** attached hereto and

incorporated herein by this reference. An environmental statement specific to Project area was conducted in July of 2023 and is attached hereto as **Exhibit "H"** and incorporated herein by this reference.

This Application is providing the information required under NRS Chapter 704 and NAC Chapter 703 for a UEPA application, including a discussion of the environmental review conducted and the Exhibits to the Application. The Applicant respectfully requests the Commission's approval of the Application and, following the subsequent filing of all requisite permits and approvals, the issuance of a PTC for each phase of the Project, as described herein.

II. INFORMATION REGARDING THE APPLICANT

1. Applicant is a wholly-owned subsidiary of Estuary Power LLC ("Estuary").

2. Estuary is an independent power producer based in Reno, Nevada that develops, constructs, manages, and operates domestic electric-generating facilities that sell power into the wholesale energy markets.

3. Applicant was formed for the purpose of developing and constructing a utility-scale solar and energy storage facility in Lincoln County, Nevada.

4. Applicant is a Delaware limited liability company authorized to conduct business in the State of Delaware.

5. Applicant's principal place of business, mailing address, and telephone number are as follows:

Escape Solar LLC
c/o Estuary Power LLC
50 West Liberty Street, Suite 430
Reno, Nevada 89501
(415) 254-3419

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5441 KIETZKE LANE, SECOND FLOOR
RENO, NV 89511

6. All correspondence concerning this Application should be directed to:

Bryce C. Alstead
Amber L. Rudnick
Holland & Hart LLP
5441 Kietzke Lane, Second Floor
Reno, Nevada 89511
Phone: (775) 327-3000
balstead@hollandhart.com
alrudnick@hollandhart.com

With copies to the following person:

Kim Primerano
Vice President
Estuary Power LLC
50 West Liberty Street, Suite 430
Reno, Nevada 89501
Phone: (619) 823-3230
Kimberly.Primerano@EstuaryPower.com

III. RESPONSES TO REQUIRED DISCLOSURES

This information required by NRS 704.870 and NAC 703.423 is provided in the following sections.

IV. DESCRIPTION OF LOCATION

1. A description of the location of the proposed utility facility as required by NRS 703.870(1)(A), including:

(a) A general description of the location of the proposed utility facility, including a regional map that identifies the location of the proposed utility facility. (NAC 703.423(1)(a))

The Project is generally located approximately five miles north of Mesquite, in unincorporated Lincoln County, Nevada. The Project area is a part of the Lincoln County Land Act of 2000 ("LCLA"), public land auctioned to provide for economic development in Lincoln County. A regional map identifying the location of the Project is provided in **Exhibit "A"** attached hereto and incorporated herein by this reference.

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(b) A legal description of the site of the proposed utility facility, with the exception of electric lines, gas transmission lines, and water and wastewater lines, for which only a detailed description of the site is required. (NAC 703.423(1)(b))

A legal description of the site of the generating and storage components of the Project is provided in **Exhibit "B,"** which in turn is broken out by the Project phases proposed in Section IV of this Application. Additionally, a detailed description of the location of the linear infrastructure portions of the Project is provided in **Exhibit "C"** attached hereto and incorporated herein by this reference.

(c) Appropriately scaled site plan drawings of the proposed utility facility, vicinity maps, and routing maps. (NAC 703.423(1)(c))

Appropriately scaled site plan drawings, vicinity maps, and routing maps are provided in **Exhibit "D"** attached hereto and incorporated herein by this reference.

DESCRIPTION OF THE PROPOSED FACILITY

2. A description of the proposed utility facility, including:

(a) The size and nature of the proposed utility facility. (NAC 703.423(2)(a))

At full build-out, the Project will consist of a one hundred eighty-five (185) MW alternating current ("AC") solar PV energy generating facility, a battery energy storage facility with a capacity of up to four hundred (400) MWh, and an on-site substation, inverters, fencing, roads, operations and maintenance facility, and a supervisory control and data acquisition ("SCADA") system. The Project will also include a roughly one-fifth of a mile long, one hundred thirty-eight (138) kV generation-tie line, which will connect the on-site substation to the existing Mesa Substation, which is owned and operated by Lincoln County Power District 1 ("LCPD"). In total, Project construction is expected to take place over approximately nineteen (19) months because the construction phases will overlap. Once operational, the Project would be monitored through the Project's SCADA, which will allow the remote operations center to control the Project remotely in case of an emergency or dispatch technicians as needed and periodic inspections and maintenance activities would occur.

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The Project site is located on approximately one thousand seven hundred (1,700) acres of private lands in Lincoln County and will be constructed in three Phases, which are described generally in this paragraph and are described in greater detail in this Application. *See infra* Section V. The first phase would be the construction of the tortoise fence and site security fence for the first seventy (70) MW of solar. The second phase would be seventy (70) MW of solar, the Gen-tie line, and the project substation. The third phase would consist of up to one hundred fifteen (115) MW of solar and up to four hundred (400) MWh of BESS.

The components of the Project are discussed in greater detail below.

Solar PV Energy Generation System

The one hundred eighty-five (185) MW solar energy generation system will be broken into two phases. The first portion consists of an approximately seventy (70) MW AC solar energy generation facility. The seventy (70) MW portion of the Project would require up to approximately seven hundred (700) acres of land. Construction of the seventy (70) MW portion of the Project is anticipated to begin in January 2024 and take place over the course of ten (10) months.

Applicant would also build a one hundred fifteen (115) MW AC solar energy generation system. The one hundred fifteen (115) MW portion of the Project would require up to approximately nine hundred (900) acres of land. Construction of the one hundred fifteen (115) MW portion of the Project is anticipated to begin in March 2024 and take place over the course of sixteen (16) months.

The Project site would house all structures, including single-axis, horizontal tracker mounting system, inverters, transformers, AC cabling, and solar panels. Solar energy would be captured by an array of PV panels, which will be mounted on the tracker system. Energy will be collected and transported to the transformers and inverters on-site. AC-cabling will transfer the energy to the project substation. Access roads would be spread throughout the site for access during construction and operations.

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Energy Storage Facility

The Applicant proposes a battery energy storage system ("BESS") with a maximum capacity of four hundred (400) MWh, which would be connected using an AC-coupled system. Up to one hundred seven (107) containers containing lithium-ion batteries, HVAC systems, and fire suppression systems would be placed near the on-site substation. Each container is approximately thirty (30) feet by 5.5 feet by 9 feet. The total BESS area would comprise approximately 3.7 acres.

On-Site Substation

An on-site substation will be located about one-fifth of a mile from the Mesa Substation where the Project will interconnect. The on-site substation will include a step-up transformer, circuit breaker, and associated equipment.

(b) The natural resources that will be used during the construction and operation of the proposed utility facility. (NAC 703.423(2)(b))

No significant impacts to natural resources are anticipated from construction or operation of the Project. Natural resources that will be used during construction of the Project include cement, gravel and aggregate, water for dust suppression (estimated at four hundred (400) acre-feet annually), mineral oil for the transformers and metals such as copper and steel. Heavy-duty construction equipment, as well as the haul trucks will use diesel fuel. Once operational, the Project's total water need is estimated to be less than 10 acre-feet annually and will not require the use of petroleum.

(c) Layout diagrams of the structures at the proposed utility facility and its associated equipment. (NAC 703.423(2)(c))

Layout diagrams are provided in **Exhibit "E"** attached hereto and incorporated herein by this reference.

(d) Scaled diagrams of the structures at the proposed utility facility. (NAC 703.423(2)(d))

Scaled diagrams are provided in **Exhibit "F"** attached hereto and incorporated herein by this reference.

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(e) A statement concerning whether the proposed utility facility is an electric generating plant or the associated facilities of an electric generating plant that uses renewable energy as its primary source of energy to generate electricity. (NAC 703.423(2)(e))

The proposed Project includes an electric generating plant that uses renewable energy as its primary source of energy to generate electricity.

SUMMARY OF ENVIRONMENTAL IMPACT STUDIES

3. A copy and summary of any studies which have been made of the environmental impact of the proposed utility facility as required by Subsection 1 of NRS 704.870. (NAC 703.423(3))

In 2009, the USFWS conducted an environmental review to assess the impacts of implementing the Southeastern Lincoln County Habitat Conservation Plan ("SLCHCP") and issuing three incidental take permits under Section 10(a)(1)(B) of the Endangered Species Act. The SLCHCP covers one million seven hundred eighty thousand one hundred forty (1,780,140) acres ("Covered Area") within the southeastern portion of Lincoln County, Nevada and includes the LCLA lands that the Project rests on. "The SLCHCP's goal is to achieve a balance between 1) long-term conservation and recovery of native species of plants and animals present on southeastern Lincoln County lands: and 2) the orderly and beneficial use of private land to promote the economy, health, and well-being of the future population within Lincoln County." EIS (Exh. "G"), at 1. This review culminated in an EIS in January 2010, which served as the National Environmental Policy Act compliance document for the USFWS in the analysis of the effects of implementing the Proposed Action (Preferred Alternative) and the anticipated development which included the transfer of lands from BLM to non-Federal owners. The EIS, provided in Exhibit "G," anticipated residential, commercial, and public facilities development, and acknowledged that development of the LCLA could occur over a thirty (30) year period.

The Applicant retained BEC Environmental, Inc. ("BEC") to develop an Environmental Statement ("ES") specific to the Project evaluating the applicability of potential impacts evaluated and mitigation measures developed in the EIS. BEC scientists conducted a desktop review of the EIS and pertinent environmental changes since the 2010 EIS and field

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reconnaissance to identify any changes that may have occurred since the 2010 EIS. ES (Exh. "H"), at 6.

A summary of the pertinent analyses in the EIS and the ES is as follows:

- Wildlife

The EIS evaluated potential impacts of the area's development on the two species listed as threatened or endangered under the Endangered Species Act ("ESA") at the time: the desert tortoise and the southwestern willow flycatcher. *See* EIS (Exh. "G"), at Section 5.4.2.1.1. The desert tortoise is present within the Project Area and is listed as threatened under the ESA and protected by the State of Nevada. *Id.* The EIS found that land development activities, including development of the LCLA lands, could result in a substantial impact to the species because of the loss of potential desert tortoise habitat and the removal of tortoises potentially present in the Project Area prior to construction. *Id.* However, the EIS recognized that implementation of the mitigation measures described in Section 3.3 would limit mortality, and determined that these impacts would not jeopardize the continued existence of the species. *Id.*; *see also* ES (Exh. "H"), at 3.

The EIS also determined that no southwestern willow flycatcher habitat was identified within the LCLA. *Id.* Accordingly, the EIS reported no direct effects on the southwestern willow flycatcher or their habitat would result from development activities associated with the LCLA lands. *Id.* In general, utility construction and maintenance on non-Federal land is not a major threat to the southwestern willow flycatcher within the Covered Area. *Id.*

- General Vegetation

The EIS also outlines the vegetation communities and land covers observed or anticipated to occur near the Project site. EIS (Exh. "G"), at Section 5.4.2.1.3. The vegetation in the Project area is typical Mojave Desert Scrub dominated by white bursage (Ambrosia dumosa) and creosote (Larrea tridentata) with other shrub and herbaceous species present. ES (Exh. "H"), at 2. The EIS found that the Project may disturb some vegetation on BLM and private lands on both permanent and temporary bases. *Id.* The EIS also evaluated the potential for presence of plant species identified as BLM sensitive or Critically Endangered by the State of Nevada in the

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project area, such as sticky buckwheat (Eriogonum viscidulum), threecorner milkvetch (Astragalus geyeri var. triquetrus), and Las Vegas buckwheat (Eriogonum corymbosum). EIS (Exh. "G"), at Section 5.4.2.1.3; ES (Exh. "H"), at 3. However, the EIS found that disturbance would be mitigated through reclamation to the extent feasible and efforts to promote reestablishment of native plant habitat and revegetation efforts. EIS (Exh. "G"), at Sections 5.4.2.1.3; Section 3.2.2.3. Additionally, known occurrences of these species were reported outside of LCLA lands, and accordingly, outside the Project area. EIS (Exh. "G"), at Section 5.4.2.1.3; ES (Exh. "H"), at 3.

- Hydrology and Water Quality

Although LCLA lands do not have any perennial surface waters to disturb, the EIS provides that direct effects to hydrology and water quality could occur as a result of land development and flood control activities. EIS (Exh. "G"), at Sections 5.5.2.1.1, 5.5.2.2.1. The EIS found that construction activities could increase the potential for erosion from precipitation affected water quality. ES (Exh. "H"), at 3. However, the EIS noted that implementation of mitigation measures and best management practices such as buffers along all major ephemeral washes, silt fences, gravel berms, earthen perimeter dikes, sediment traps and other barriers would limit impacts to these surface waters and thereon downstream would minimize temporary and long-term increases in sedimentation of ephemeral washes and downstream streams and rivers. EIS (Exh. "G"), at Sections 5.5.2.1.1, 5.5.2.2.1.

- Floodplains, Wetlands, and Waters of The United States

As of the date of the EIS, the Project area was not within any mapped FEMA floodplains and, based on a brief review of available FEMA floodplain maps by BEC, the area remains unmapped. EIS (Exh. "G"), at Sections 5.5.2.1.1; ES (Exh. "H"), at 4. The EIS also determined that the Project area contained no areas with the potential to be considered wetlands and, upon BEC review of remote imagery and the USFWS National Wetland Inventory maps, this has not changed. *Id.* The Project Area is bisected by numerous ephemeral dry washes which flow only in response to local rain events. *Id.* However, in May 2023 the United State Supreme Court

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indicated ephemeral dry washes should not fall within Clean Water Act jurisdiction. ES (Exh. "H"), at 4.

- Cultural and Paleontological Resources

Relying on paleontological field reconnaissance of the LCLA lands, the EIS found no potential impacts to paleontological resources. EIS (Exh. "G"), at Sections 5.7.2.1.1; ES (Exh. "H"), at 4. In the event paleontological or cultural resources were discovered, mitigation measures would require workers to stop work and ensure that these resources were appropriately protected. *Id.* Given the nature of paleontological resources, it is unlikely that the resources—or the potential impacts to them—are likely to have changed since the EIS was released. ES (Exh. "H"), at 4.

- Soils and Geological and Agricultural Resources

The EIS concluded that development of the EIS Area would likely lead to ground disturbance, but avoidance, minimization, and mitigation measures would minimize soil loss and disturbance. EIS (Exh. "G"), at Section 5.8.2.1. Although the EIS found that there is highly erosive soil on LCLA lands, this soil is typically associated with slopes of fifteen (15) to fifty (50) percent. *Id.* Accordingly, the EIS determined that construction would likely occur on low to moderately erosive soils. *Id.* It is highly unlikely any development related to the Project would occur on these highly sloped lands. The EIS found that no agricultural resources are present within the Project Area. *Id.* at Section 5.11.2; ES (Exh. "H"), at 5.

- Visual Resources

The Project may impact the area's visual resources. *Id.* at Section 5.10.2.1; ES (Exh. "H"), at 5. The BLM identified the Project area as Visual Resource Management Class IV, an area expected to experience major modifications of the existing characterization of the landscape and include development that may dominate the view and be the major focus of a viewer's attention. ES (Exh. "H"), at 5. That said, the LCLA parcel is in the very southeastern corner of Lincoln County, where structures like a landfill and a water tank existed at the time of the EIS. EIS (Exh. "G"), at Section 5.10.2.1. The EIS noted that development would not be out of context with the growth around the City of Mesquite, located in neighboring Clark County, and that

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because LCLA lands do not connect to other areas of Lincoln County, the development would not affect the remainder of Lincoln County's visual resources. *Id.*

- Air Quality

The EIS acknowledged that particulate matter could be released into the air as a result of soil disturbance and other dust-causing activities during construction activities, but dust control plans would ensure that dust emissions would be reduced as much as possible. *Id.* at Section 5.12.2.1. The Project would have a dust control plan, as required for all projects disturbing more than twenty (20) acres, and any Project impacts would be limited to construction periods. *See* ES (Exh. "H"), at 5.

- Transportation

At the time of the EIS, the development of LCLA lands was projected to drastically increase traffic because the only existing traffic was from those accessing a nearby landfill or engaging in recreational activities. EIS (Exh. "G"), at Section 5.13.2.1. Additionally, the EIS determined that development around Interstate-15 was designed to handle interstate traffic. *Id.* Accordingly, the Project, located north of Interstate-15, is unlikely to add significant traffic. The EIS anticipated only short-term adverse circulation effects through construction for the up to forty-four thousand five hundred fifty (44,550) housing units (most of which have not been built), so the impacts associated with this Project, which is located on a smaller area and involves far less construction and long-term traffic impacts, should be similarly benign and short-lived. *See id;* ES (Exh. "H"), at 5.

- Noise

Any increase in noise levels associated with the Project is unlikely to be substantial. The EIS found that construction equipment generally produces noise ranging from eighty-five (85) to ninety-eight (98) dB at fifty (50) feet, in comparison to typical highway noise of up to seventy (70) dB. EIS (Exh. "G"), at Section 5.14.2.1. Considering that the increases would be localized and only occur on a temporary or short-term basis, noise impacts would not be considered substantial. *Id.* at Section 5.14.2.1.

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- Socioeconomics and Public Services

The EIS determined that LCLA land development could impact socioeconomics by increasing the population and shifting demographics, but the anticipated development included building homes for over one hundred eleven (111,000) additional residents. *Id.* at Section 5.18.2.2. The development of a portion of LCLA lands for solar energy could have an impact on socioeconomics, though any impact will be to a much lesser extent. See ES (Exh. "H"), at 5-6. While the EIS indicated that public services, specifically water distribution, may not be able to keep up with the development of housing on LCLA lands, the Project would need much less water, and only during construction periods. *See* EIS (Exh. "G"), at Section 5.17.2.2.

- Hazardous Materials

The EIS noted that construction and ongoing industrial and residential uses would generate solid waste. EIS (Exh. "G"), at Section 5.19.2.1. Such waste would be disposed of as required by local or state laws and regulations. *Id.* Similarly, operations of industrial or manufacturing facilities on the LCLA Lands could create the potential for hazardous wastes. *Id.*; *see also* ES (Exh. "H"), at 6. The Project would comply with NRS 444 and 459 when managing and disposing of any hazardous waste, and any fluids leaks or hazardous waste spills or releases would be stopped, cleaned, and repaired immediately at the time of occurrence. ES (Exh. "H"), at 6.

- Unaffected Elements

According to the 2010 EIS, several elements of the environment were not present or were not affected by the proposed development of the LCLA lands, including Environmental Justice, Indian Trust Resources, Wild and Scenic Rivers and other Unique Natural Resources, and Prime and Unique Farmland. *See* EIS (Exh. "G"), at Section 1.2.2 (describing why these elements were not addressed). The ES confirms that the conditions of the Project area, observed as of July 14, 2023, are consistent with the development activities anticipated and evaluated in the EIS.

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DESCRIPTION OF ALTERNATE LOCATIONS

4. Description of reasonable alternate locations for the proposed utility facility, a description of the comparative merits of the detriments of each location submitted, and a statement of the reasons why the location is best suited for the proposed facility, as required by Subsection 1 of NRS 704.870. (NAC 703.423(4))

The selected location is best suited for the Project. Other sites were considered that were within a physically reasonable distance to the electrical grid and economically feasible. These alternative sites were not large enough to fit a solar array with adequate capacity to serve the Project's customers. The alternative sites also had environmental concerns, such as wetlands and visual effects on surrounding neighborhoods. Finally, the alternative sites had longer generation-tie lines, which would have had a greater impact on people and the environment than the proposed Project site. Therefore, no reasonable cost-effective alternate locations for the Project exist outside of proposed Project site.

PROOF OF PUBLIC NOTICE

5. A copy of the public notice of the application and proof of the publication of the public notice, as required by Subsection 4 of NRS 704.870. (NAC 703.423(5))

A copy of the public notice of this Application is provided in **Exhibit "I"** attached hereto and incorporated herein by this reference, and proof of publication of the public notice of this Application in the Lincoln County Record is provided in **Exhibit "J"** attached hereto and incorporated herein by this reference.

PROOF OF SUBMITTAL TO THE NEVADA STATE CLEARINGHOUSE

6. Proof that a copy of the application has been submitted to the Nevada State Clearinghouse within the Department of Administration to enable energy review and comment. (NAC 703.423(6))

Proof of submission of this Application to the Nevada State Clearinghouse to enable agency review and comment, and proof of service on local governments in the area in which the facilities are to be located, is provided in **Exhibit "K"** attached hereto and incorporated herein by this reference.

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PROBABLE EFFECT ON ENVIRONMENT

7. An explanation of the nature of the probable effect on the environment, including:

(a) A reference to any studies described in Subsection 3, if applicable (NAC 703.423(7)(a)); and

Please *see* the ES and EIS. Note that the USFWS's analysis of the land the Project is located on suggests that it is unlikely that the Project's construction, operation, and/or maintenance of the Project will create any significant environmental impacts. *See* EIS (Exh. "G"), at Section 5.

(b) An environmental statement that includes:

i. The name, qualifications, professions and contact information of each person with primary responsibility for the preparation of the environmental statement; (NAC 703.423(7)(b)(2))

A list of the persons who contributed to the EIS, along with their respective titles, expertise, and contact information (to the extent known or available to the Applicant), is provided in Section 5 of the EIS. *See* EIS (Exh. "G"), at Section 5. The ES was prepared by Mariah Jackson, an environmental scientist employed by BEC. ES (Exh. "H"), at 7. Ms. Jackson's contact information is as follows: mariahj@becnv.com; (702) 304-9830.

ii. The name, qualifications, professions and contact information of each person who has provided comments or input in the preparation of the environmental statement; (NAC 703.423(7)(b)(2))

A list of the persons who contributed to the EIS, along with their respective titles, expertise, and contact information, is provided in Section 6 of the EIS. *See* EIS (Exh. "G"), at Section 6. The ES was contributed to by Danny Rakestraw, Senior Environmental Biologist at BEC and Erika Balderson, Senior Environmental Scientist. ES (Exh. "H"), at 7. Mr. Rakestraw's contact information is as follows: danny@becnv.com; (702) 304-9830. Ms. Balderson's contact information is as follows: erika@becnv.com; (702) 304-9830.

iii. A bibliography of materials used in the preparation of the environmental statement; (NAC 703.423(7)(b)(3)) and

A bibliography of materials used in preparation of the EIS is available at the end of each Section of the EIS. *See* EIS (Exh. "G").

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iv. A description of: (NAC 703.423(7)(b)(4))

(I) The environmental characteristics of the project area existing at the time the application is filed with the Commission; (NAC 703.423(7)(b)(4)(I))

The Project is generally located north of the Clark County line, west of the Utah-Nevada border, south of Township 3 South, and east of Range 62 East Mt. Diablo Meridian (MDM). More specifically, the Project site is approximately five miles north of Mesquite in unincorporated Lincoln County, Nevada. The topography of the Project area is typical of the region's Basin and Range geography and lies within both the Great Basin and Mojave Desert physiographic regions. The vegetation in the area is typical Mojave Desert Scrub dominated by white bursage (Ambrosia dumosa) and creosote (Larrea tridentata) with other shrub and herbaceous species present. ES (Exh. "H"), at 2. The climate of the area is dry throughout the year, with long, hot summers and short, mild winters. *Id.* Lincoln County is one of the most arid regions of the United States and receives little precipitation. *Id.* Maximum daily temperatures in the summer typically exceed one hundred (100) degrees Fahrenheit. *Id.* The Project area includes habitat for the desert tortoise, which is a threatened species under the ESA and protected by the State of Nevada. *Id.* at 3; EIS (Exh. "G"), at Section 5.4.2.1.1; *see* ES at Section IV(3).

(II) The environmental impacts that the construction and operation of the proposed utility facility will have on the project area before mitigation; (NAC 703.423(7)(b)(4)(II)) and

The total acreage of land disturbed by the Project will be limited to approximately one thousand seven hundred (1,700) acres of land. Project construction will last up to approximately nineteen (19) months, after which time only routine maintenance will be required. The EIS analyzed potential environmental concerns for the Project area, though not for this particular Project. *See* EIS (Exh. "G"), at Section 5; *see supra* Section IV(3). As more thoroughly described in Section IV(3) of this Application, the EIS suggests, and the ES concludes, that the impacts of the Project will not substantively impact the environment and that project-specific mitigation measures will mitigate any material adverse impacts on the environment. It is unlikely that the Project will pose a risk of substantive environmental impact.

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(III) The environmental impacts that the construction and operation of the proposed utility facility will have on the project area after mitigation. (NAC 703.423(7)(b)(4)(III))

As discussed above, analyses of the environmental concerns associated with the land the Project is located on are included in Section 5 of the EIS (Exh. "G") and throughout the ES.

NEED TO ENSURE RELIABLE SERVICE

8. An explanation of the extent to which the proposed utility facility is needed to ensure reliable utility service to customers in this State. (NAC 703.423(8))

The Project is exempt from this requirement pursuant to NRS 704.890(1)(b). NRS 704.890(1)(b) provides that the Commission must find that a utility facility is needed to ensure reliable utility service to customers in Nevada only if (i) the utility facility emits greenhouse gases, and (ii) does not use renewable energy as its primary source of energy to generate electricity. Here, because the Project uses renewable energy as its primary source of energy and does not emit greenhouse gases, NRS 704.890(1)(b)'s finding does not need to be made, and thus, the Project is exempt from NAC 703.423(8)'s requirement to explain why the Project is needed to ensure reliable utility service to customers in Nevada. With that said, the Applicant provides responses to the following subsections of NAC 703.423(8)(b) as background information.

(a) A description of the extent to which the proposed utility facility will provide utility service to customers in this State. (NAC 703.423(8)(b)(1))

The Project will be interconnected at the Mesa Substation, owned by LCPD. From Mesa Substation, power can then be wheeled across LCPD to Overton Power District ("OPD5") and NV Energy systems. Accordingly, the output of the Project will go to the State of Nevada's electrical grid and will likely be distributed to customers in the State of Nevada. The Project will also generate electrical energy and store energy to reduce emissions of carbon dioxide ("CO_2"), a greenhouse gas, by displacing the use of electrical energy from natural gas and coal burning power plants.

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(b) A description of the extent to which the proposed utility facility will enhance the reliability of utility service in this State. (NAC 703.423(8)(b)(2)

The Project will assist the State of Nevada in developing renewable resources of energy and displacing conventional power generation by supporting the construction of a solar electric energy generating facility designed to meet the state's increasing demand for clean, renewable electrical power. The Project will provide a reliable local and regional source of power, producing approximately five hundred thirty thousand (530,000) MWh of clean, emissions-free power each year. In doing so, the Project will fulfill a need for reliable and affordable clean energy in Nevada pursuant to Nevada's Renewable Portfolio Standard (NRS 704.7801-.7828, *inclusive*). The Project may include an energy storage component that will facilitate grid reliability in providing energy delivery during peak demand periods.

(c) A description of the extent to which the proposed utility facility will achieve interstate benefits by the proposed construction or modification of transmission facilities in this State, if applicable. (NAC 703.423(8)(b)(3))

NAC 703.423(8)(b)(3) is not applicable to the Project. All transmission infrastructure associated with the Project is located within the State of Nevada.

NEED VERSUS ENVIRONMENTAL EFFECT

9. An explanation **of how the need for the proposed utility facility as described in Subsection 8 balances any adverse effects on the environment as described in Subsection 7. (NAC 703.423(9))**

The need for the Project outweighs the potential environmental impacts of the Project. The Project will provide a reliable local and regional source of power, producing approximately five hundred thirty thousand (530,000) MWh of clean, emissions-free power each year, which will help fulfill both the environmental and statutory needs for reliable and affordable clean energy in Nevada. The Project will also allow for the reduction of approximately three hundred seventy-five thousand six hundred (375,600) metric tons of CO_2 annually.

The Project will include an energy storage component of up to four hundred (400) MWh that will fulfill a need for renewable energy storage and facilitate grid reliability by providing

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energy delivery during peak demand periods. Further, the Project will benefit the economy by generating approximately two hundred forty (240) jobs at peak construction, with an average workforce of approximately eighty (80) construction workers. The Project will also employ two full-time employee during Project operations at full build-out. The Project will also generate approximately $39.2 million in annual property taxes to Lincoln County and approximately $4.4 million in sales and use tax receipts to the State of Nevada.

In contrast, with the implementation of the recommended mitigation measures, the Project will likely have no significant impact to the natural environment. *See* EIS (Exh. "G"). Thus, by reducing annual carbon emissions in the State of Nevada and providing a reliable energy source for the power grid, the Project's benefits outweigh its minimal environmental effects.

MINIMUM ADVERSE IMPACT ON THE ENVIRONMENT

10. An explanation of how the proposed utility facility represents the minimum adverse effect on the environment, including: (NAC 703.423(10))

(a) The state of available technology; (NAC 703.423(10)(a))

The Project will use the latest available materials for the intended purpose of generation of electricity from a renewable resource. The Project will represent the minimum adverse effect on the environment.

(b) The nature of various alternatives; and (NAC 703.423(10)(b))

No reasonable alternative locations meeting the Applicant's criteria for the Project were identified outside of the Project site. Other sites were considered that were within a physically reasonable distance to the electrical grid and economically feasible. These alternative sites were not large enough to fit a solar array with adequate capacity to serve the Project's customers. The alternative sites also had environmental concerns, such as wetlands and visual effects on surrounding neighborhoods. Finally, the alternative sites had longer generation-tie lines, which would have had a greater impact on people and the environment than the proposed Project site.

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(c) The economics of various alternatives. (NAC 703.423(10)(c))

The proposed site is the most cost-effective option for the Project due to its proximity to interconnection facilities, easy access, and buildable, flat land. Approximately ten other sites were evaluated throughout Clark and Lincoln Counties, and the Project site was the only one that offered economic interconnection opportunities and sufficient land area. The alternative sites also had a mix of public and private land which would have also added development time.

AGENCY APPROVAL LIST AND DESCRIPTION OF REQUIRED PERMITS

11. An explanation of how the location of the proposed utility facility conforms to applicable state and local laws and regulations, including a list of all permits, licenses, and approvals required by federal, state and local statutes, regulations and ordinances. The explanation must include a list that indicates: (NAC 703.423(11))

(a) All permits, licenses, and approvals the applicant has obtained, including copies thereof; (NAC 703.423(11)(a))

The Applicant has not obtained any permits, licenses, or approvals as of the date of this Application.

(b) All permits, licenses, and approvals the applicant is in the process of obtaining to commence construction of the proposed utility facility. The applicant must provide an estimated timeline for obtaining these permits, licenses, and approvals; and (NAC 703.423(11)(b))

A list of all permits, licenses, and approvals the Applicant or its contractors are in the process of obtaining in order to commence construction, and an estimated timeline for obtaining these permits, is provided in **Exhibit "M."**

SERVING THE PUBLIC INTEREST

12. An explanation of how the proposed utility facility will serve the public interest, including: (NAC 703.423(12))

(a) The economic benefits that the proposed utility facility will bring to the applicant and this State; (NAC 703.423(12)(a))

The Project will have a direct beneficial impact on the local and regional economy during the construction period, which is expected to last approximately nineteen (19) months. The

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Project will provide a substantial opportunity for construction jobs because at peak construction for the full one hundred eighty-five (185) MW facility, approximately two hundred forty (240) workers are anticipated, with an average workforce of approximately eighty (80) construction workers. The Project is anticipated to staff two full-time employees. Additionally, the Project will generate approximately $39.2 million in annual property taxes to Lincoln County (subject to changes in the assessed value of the Project over its operational term) and over $4.4 million in sales and use tax receipts to the State of Nevada.

Further, the Project will provide a reliable source of electricity, which will benefit the economy in the long-term by ensuring that electricity is continuously provided by sources within the state. By providing a diverse source of electricity, the Project will help bring stability to the markets that serve consumers, benefitting Nevada's economy as a whole.

(b) The nature of the probable effect on the environment in this state if the proposed utility facility is constructed; (NAC 703.423(12)(b))

The EIS's analysis of the Project area and the ES indicate that development of the Project in this area would not pose a significant risk of environmental impact. *See* EIS (Exh. "G"); *see also* ES (Exh. "H"). Once operational, the Project will likely have a positive effect on the environment in the State of Nevada. The Project will provide a reliable and consistent source of electricity to Nevada, while reducing CO_2 emissions in the state. Further, the Project will be developed in a relatively undeveloped portion of the state, which will minimize any cumulative impacts associated with overlapping construction of nearby projects.

(c) The nature of the probable effect on the public health, safety, and welfare of the residents of this state if the proposed utility facility is constructed; and (NAC 703.423(12)(c))

The proposed utility facility will provide a clean, renewable source of energy and will not emit potentially harmful pollutants or greenhouse gases that could have an adverse impact on the public health, safety, and welfare of Nevada residents. In fact, the Project's production of solar energy will displace energy production using fossil fuels such as coal and natural gas. As stated previously, the State of Nevada will benefit from the creation of jobs during construction

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and operation, income from the Project, and from the reduction of CO_2 emissions by approximately three hundred seventy-five thousand six hundred (375,600) metric tons annually. Further, power generated by the Project may be delivered to Nevada customers via connection to the OPD5 and NV Energy electrical grids. Diversification of electricity sources is known to bring stability to the markets that serve consumers; thus, the clean, emissions-free power generated by the Project each year will be beneficial to the residents of Nevada.

(d) The interstate benefits expected to be achieved by the proposed electric transmission facility in this state, if applicable. (NAC 703.423(12)(d))

Construction of the facility will likely not increase interstate deliverability options for renewable energy generated at the Project. The Project will interconnect to Mesa Substation, owned by LCPD. From there, power may be wheeled to the OPD5 and NV Energy electrical grids.

V. CONSTRUCTION IN MULTIPLE PHASES

Should the Commission grant this Application subject to the Applicant's submission of outstanding compliance items, the Applicant requests that the Commission's compliance order allow for the issuance of three permits to construct for three phases of construction. The Applicant proposes that the phases may be constructed with some overlap in time, but no construction of any utility facility necessary to the Project will occur until the Applicant has satisfied the Commission that all necessary permits have been obtained for construction of that particular facility, consistent with the intent of UEPA. The proposed phases of construction are outlined below, along with references to the outstanding state and local permits that the Applicant must obtain for each phase prior to issuance of a PTC.

Phase 1: Activities in Phase 1 would include installation of tortoise exclusion fencing and security fencing. Phase 1 construction is expected to take 1 month starting in December 2023.

Phase 2: Activities in Phase 2 would include construction of seventy (70) MW of solar including site clearing, construction of access roads and other civil work, installation of racking and solar panels, AC cabling, construction of the on-site substation and associated equipment,

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and construction of the generation-tie line. The project will need a zone change and development agreement approval from Lincoln County and construction permits typical to utility-scale solar facilities. Phase 2 construction is expected to take ten (10) months starting in January 2024.

Phase 3: Activities in Phase 3 would construction of one hundred fifteen (115) MW of solar including installation of tortoise exclusion fencing, security fencing, site clearing, construction of access roads and other civil work, installation of racking and solar panels, AC cabling, and BESS facilities. Phase 3 construction is expected to take sixteen (16) months starting in March 2024.

VI. CONCLUSION AND REQUEST FOR RELIEF

Based on this Application, the Applicant respectfully requests that the Commission proceed in the manner required by law and, in accordance with NAC 703.535(d), issue an order that:

1. approves this Application and issues a UEPA PTC for the Project, subject to the Applicant's submission of the permits described herein to the Commission; and

2. issues a compliance order authorizing the construction of the utility facilities in three phases as described herein by authorizing four Permits to Construct, with each PTC specifying the utility facility or facilities in that phase.

Applicant reserves the right to amend and supplement this Application as permitted and contemplated pursuant to NRS 704.820 to 704.900 and NAC 703.415 to 703.427.

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Dated and respectfully submitted this 22nd day of August, 2023.

HOLLAND & HART LLP

By: _____

Bryce C. Alstead (NBN 9954)
Amber L. Rudnick (NBN 16314)
5441 Kietzke Lane, 2nd Floor
Reno, Nevada 89511
Telephone: (775) 327-3000
Facsimile: (775) 786-6179
BAlstead@hollandhart.com
ALRudnick@hollandhart.com

Attorneys for Escape Solar LLC

HOLLAND & HART LLP
5441 KIETZKE LANE, SECOND FLOOR
RENO, NV 89511

EXHIBIT A

Regional Map

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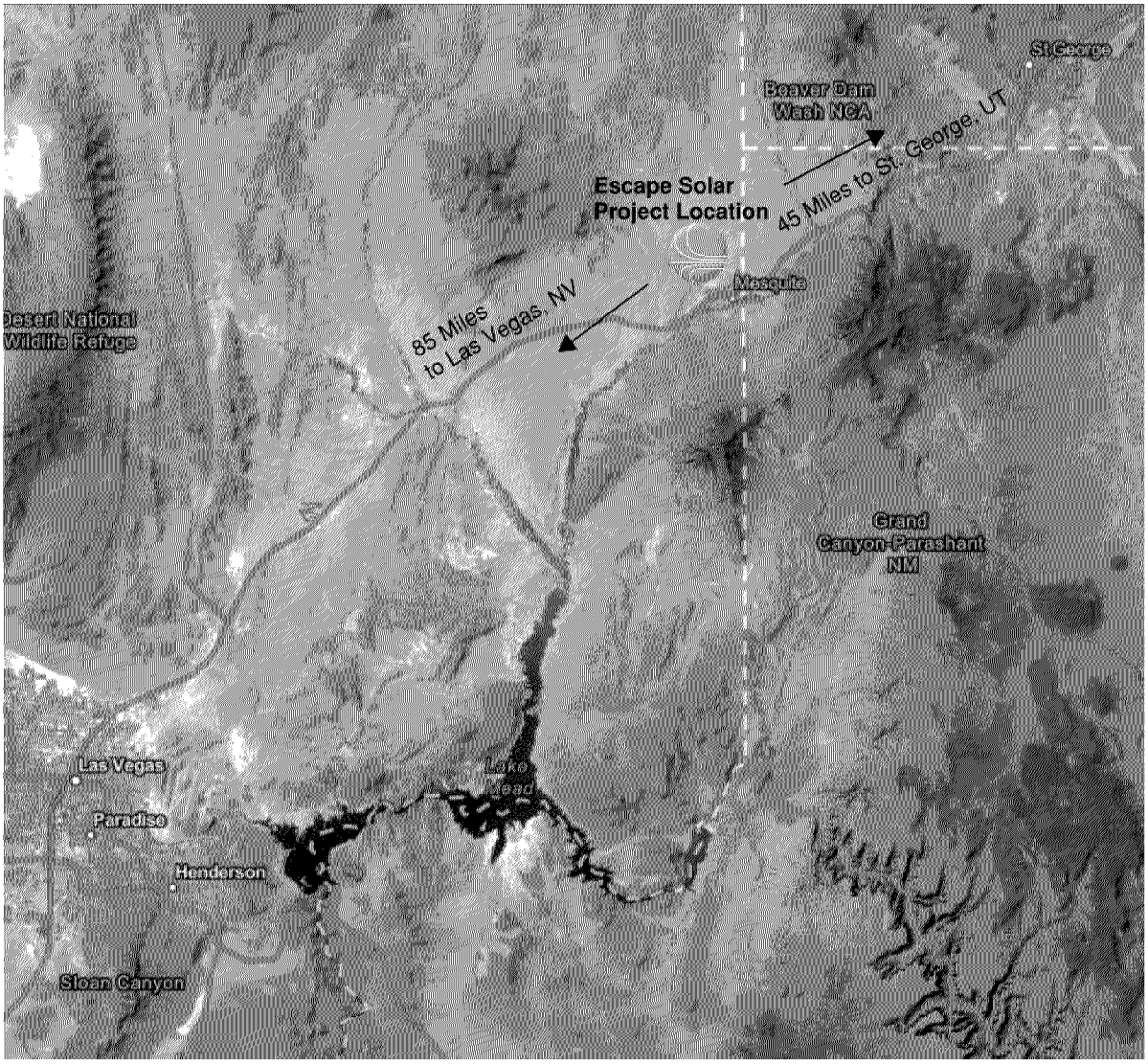
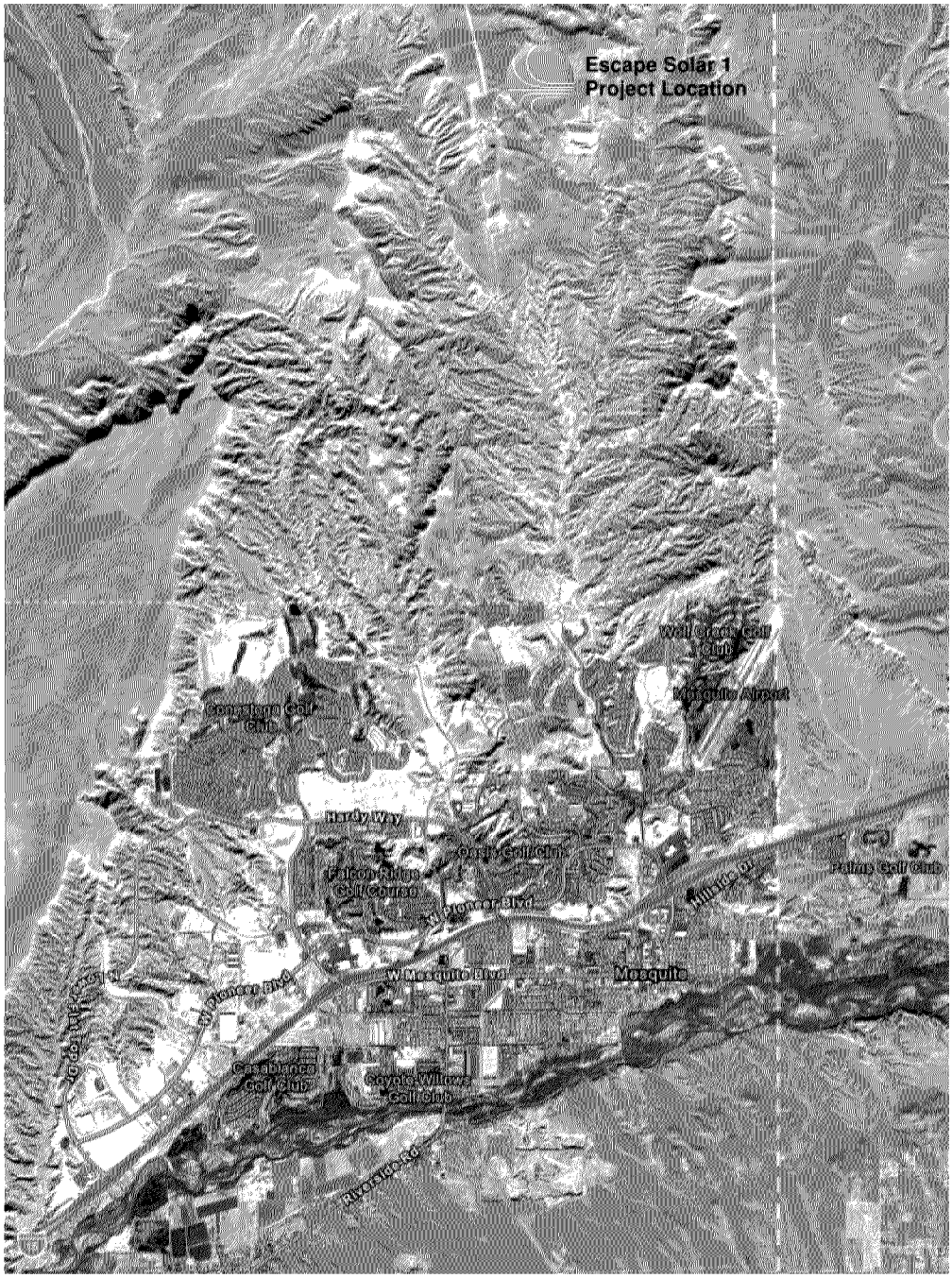
Regional Map



Regional Map
Escape Solar
June 2023

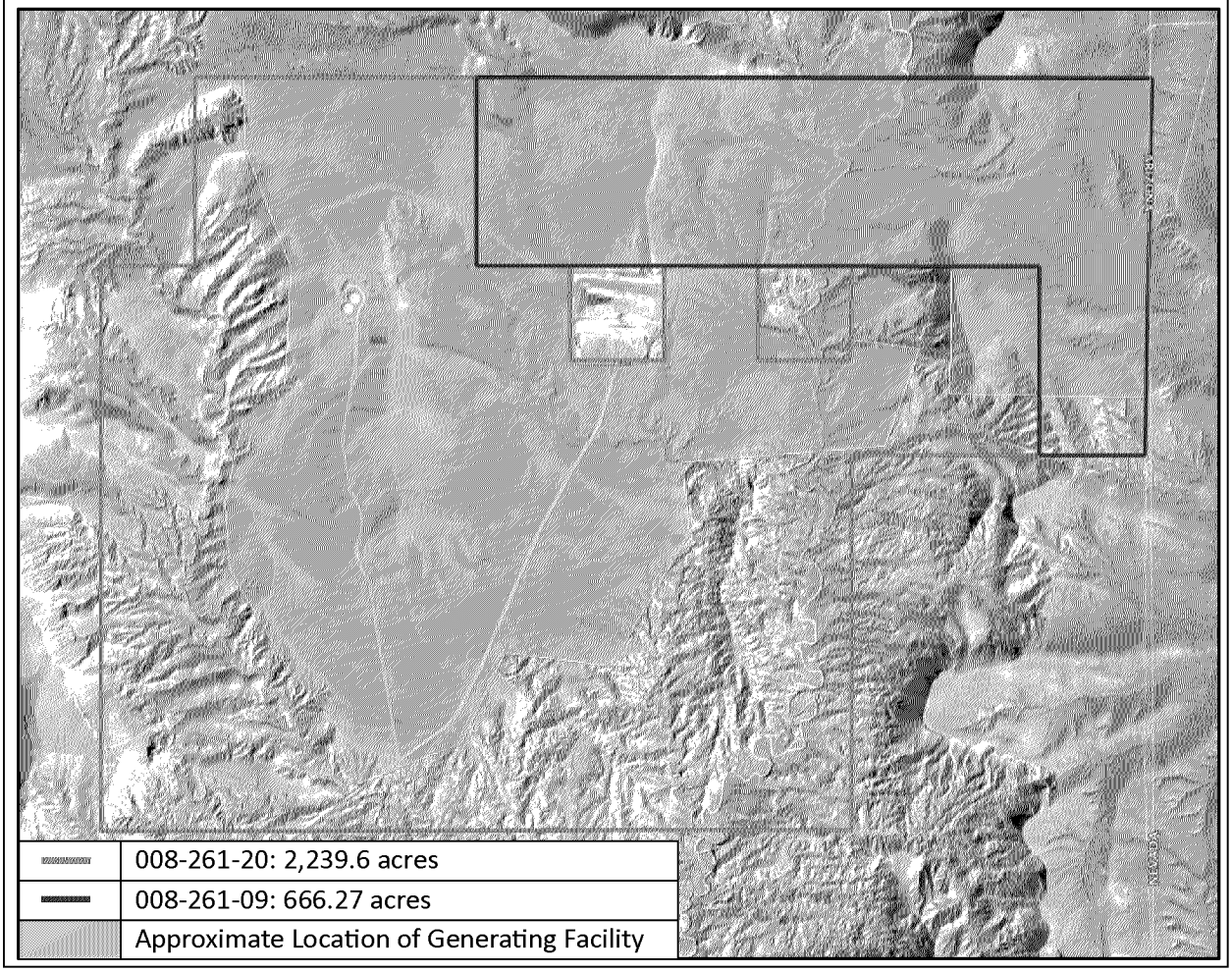
Project Location Map



Not to Scale

estuary POWER

Land Status Map



Escape Solar
June 2023

estuary POWER

EXHIBIT B

Legal Description of the Project

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RENO, NV 89511

WALLACE MORRIS KLINE SURVEYING, LLC
Land Survey Consulting

008-261-09 SHARET HOLDINGS II, LLC
008-261-08 C & O HOLDINGS, LLC

EXHIBIT "A"

EXPLANATION: THIS DESCRIPTION REPRESENTS THE ESCAPE SOLAR PROJECT SITE.

DESCRIPTION

LYING WITHIN SECTIONS 15, 16, 17, 18, 19, 21 AND 21, TOWNSHIP 12 SOUTH, RANGE 71 EAST, MOUNT DIABLO MERIDIAN, LINCOLN COUNTY, NEVADA AND BEING ALL OF A PARCEL OF LAND HELD IN TITLE BY SHARET HOLDINGS II, LLC PER A DOCUMENT RECORDED MAY 9, 2017, AS DOCUMENT NO. 151741, OFFICIAL RECORDS IN THE LINCOLN COUNTY RECORDER'S OFFICE, LINCOLN COUNTY, NEVADA AND A PORTION OF A PARCEL OF LAND HELD IN TITLE BY C & O HOLDINGS, LLC, PER A LAND PATENT ISSUED BY THE UNITED STATES OF AMERICA, NUMBER 27-2005-0159, AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF SAID SECTION 15;

THENCE WITH THE EAST LINE OF SAID RANGE 71 EAST, THE FOLLOWING TWO (2) COURSES:

1. SOUTH 01°17'43" EAST, 80.99 FEET;

2. THENCE SOUTH 00°13'25" WEST, 4,402.69 FEET;

THENCE DEPARTING SAID EASTERLY LINE, NORTH 89°48'26" WEST, 2,767.27 FEET;

THENCE NORTH 00°00'00" EAST, 1,791.26 FEET TO A POINT ON THE NORTH LINE OF THE SOUTH HALF OF THE AFOREMENTIONED SECTION 16;

THENCE WITH SAID NORTH LINE, SOUTH 89°10'25" WEST, 1,401.35 FEET TO A POINT ON THE WESTERLY LINE OF GOVERNMENT LOT 2 OF SAID SECTION 16;

THENCE WITH SAID WESTERLY LINE, SOUTH 00°53'04" EAST, 82.89 FEET TO A POINT ON THE NORTHERLY LINE OF TRACT 37 OF SAID SECTION 16;

THENCE WITH SAID NORTHERLY LINE, NORTH 89°09'31" EAST, 45.91 FEET TO A POINT ON THE EASTERLY LINE OF SAID TRACT 37;

THENCE WITH SAID EASTERLY LINE, SOUTH 00°50'14" EAST, 934.98 FEET;

C:\Users\bnewport\DC\ACCDocs\Projects\EST-23117 Lincoln County Solar\Project Files\Legals\23117-SOLAR SITE.docx
6525 W. Warm Springs Road, Suite 100, Las Vegas, Nevada 89118, Ph: 702.212.3967
Fx: 702.212.3963

THENCE DEPARTING SAID EASTERLY LINE, SOUTH 82°35'03" EAST, 927.20 FEET;

THENCE SOUTH 18°49'06" WEST, 1,447.29 FEET;

THENCE SOUTH 84°29'07" WEST, 2,868.69 FEET;

THENCE SOUTH 07°24'55" EAST, 995.76 FEET;

THENCE SOUTH 29°56'55" WEST, 2,176.74 FEET;

THENCE NORTH 83°36'20" WEST, 1,498.06 FEET;

THENCE SOUTH 24°40'23" WEST, 1,407.40 FEET;

THENCE SOUTH 67°47'27" WEST, 1,567.21 FEET;

THENCE NORTH 22°04'38" WEST, 1,038.57 FEET;

THENCE NORTH 45°19'10" WEST, 838.70 FEET;

THENCE NORTH 31°43'17" WEST, 1,655.02 FEET;

THENCE NORTH 05°13'28" WEST, 960.31 FEET;

THENCE NORTH 11°27'34" EAST, 1,167.02 FEET;

THENCE NORTH 48°27'45" EAST, 788.45 FEET;

THENCE NORTH 01°59'01" EAST, 1,635.73 FEET;

THENCE NORTH 21°58'59" WEST, 1,800.76 FEET;

THENCE NORTH 01°51'47" WEST, 986.44 FEET TO A POINT ON THE NORTHERLY LINE OF THE AFOREMENTIONED SECTION 18;

THENCE NORTH 89°02'11" EAST, 641.98 FEET TO A CORNER COMMON TO SECTIONS 7, 8, 17 AND 18;

THENCE WITH THE NORTHERLY LINE OF SAID SECTION 17 THE FOLLOWING TWO (2) COURSES:

1. NORTH 89°09'33" EAST, 2,639.06 FEET;
2. THENCE WITH THE NORTH 89°09'02" EAST, 2,639.01 FEET TO A CORNER COMMON TO SECTIONS 8, 9, 16 AND 17;

THENCE WITH THE NORTHERLY LINE OF SAID SECTION 16 THE FOLLOWING TWO (2) COURSES:

1. NORTH 89°10'39" EAST, 2,639.29 FEET;

2. THENCE NORTH 89°10'16" EAST, 2,639.37 FEET TO A CORNER COMMON TO SECTIONS 9, 10, 15 AND 16;

THENCE WITH THE NORTHERLY LINE OF SAID SECTION 15, NORTH 89°04'42" EAST, 1,585.67 FEET TO THE **POINT OF BEGINNING**.

EXCEPTING THEREFROM ALL LANDS WITHIN TRACT 37, LYING WITHIN SECTION 16, TOWNSHIP 12 SOUTH, RANGE 71 EAST, MOUNT DIABLO MERIDIAN, LINCOLN COUNTY, NEVADA. AS SHOWN BY AN INDEPENDENT RESURVEY PERFORMED BY THE BUREAU OF LAND MANAGEMENT AND DATED JULY 24, 2001.

FURTHER EXCEPTING THEREFROM ALL LANDS WITHIN TRACT 38, LYING WITHIN SECTIONS 16 AND 17, TOWNSHIP 12 SOUTH, RANGE 71 EAST, MOUNT DIABLO MERIDIAN, LINCOLN COUNTY, NEVADA. AS SHOWN BY AN INDEPENDENT RESURVEY PERFORMED BY THE BUREAU OF LAND MANAGEMENT AND DATED JULY 24, 2001.

FURTHER EXCEPTING THOSE PORTIONS OF AN EASEMENT FOR WATER TANKS AND RELATED FACILITIES IN FAVOR OF VIRGIN VALLEY WATER DISTRICT AS DESCRIBED BY BUREAU OF LAND MANAGEMENT RIGHT-OF-WAY GRANT N-63356, DATED JUNE 16, 2000;

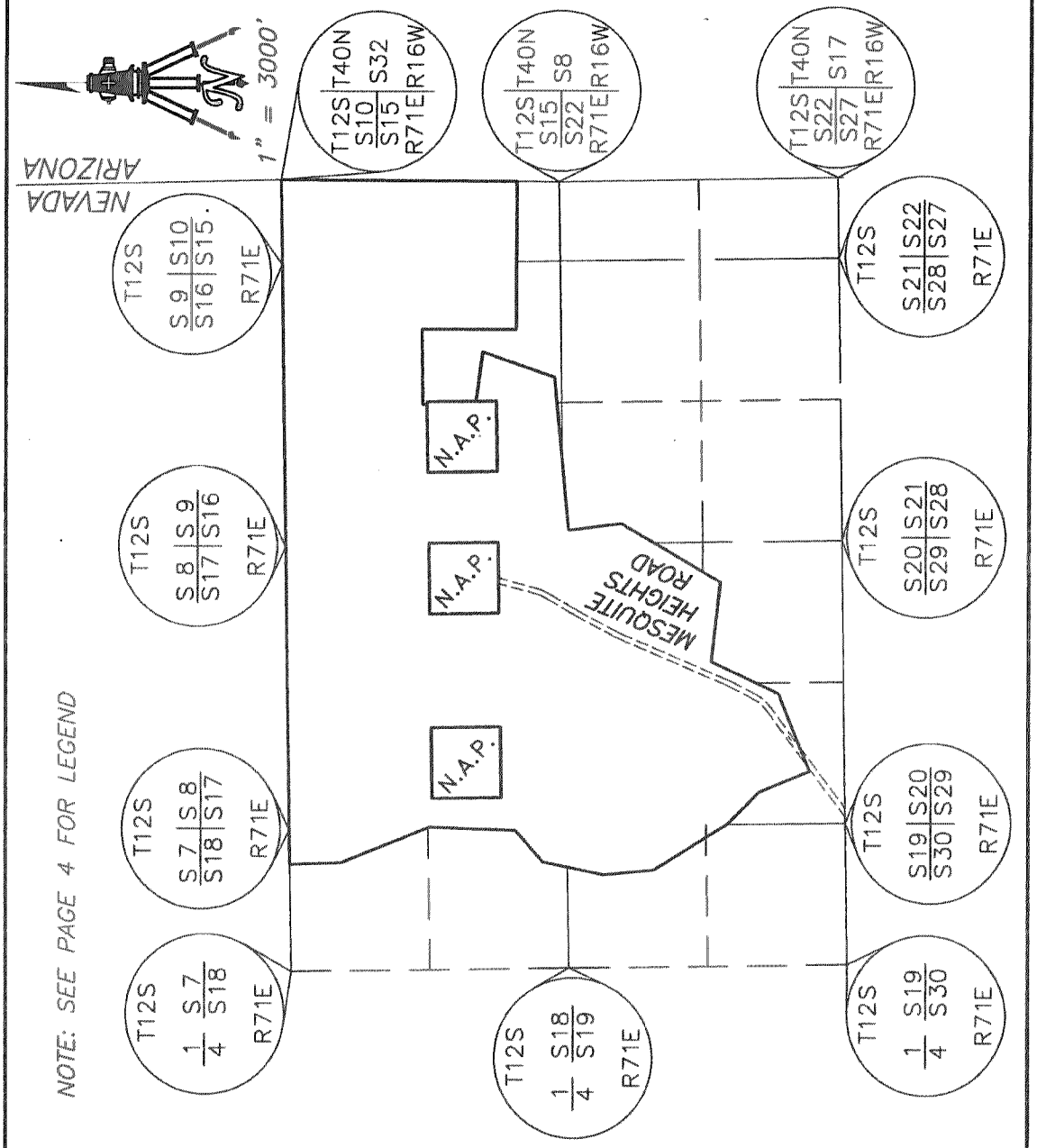
CONTAINING 1,742.61 ACRES.

SEE EXHIBIT "B" ATTACHED HERETO AND MADE APART HEREOF.

JASON PAUL HIGGINS, PLS
NEVADA CERTIFICATE NO. 13601

21 AUGUST 2023

008-261-09 SHARET HOLDINGS II, LLC
008-261-08 C & O HOLDINGS, LLC



NOTE: SEE PAGE 4 FOR LEGEND

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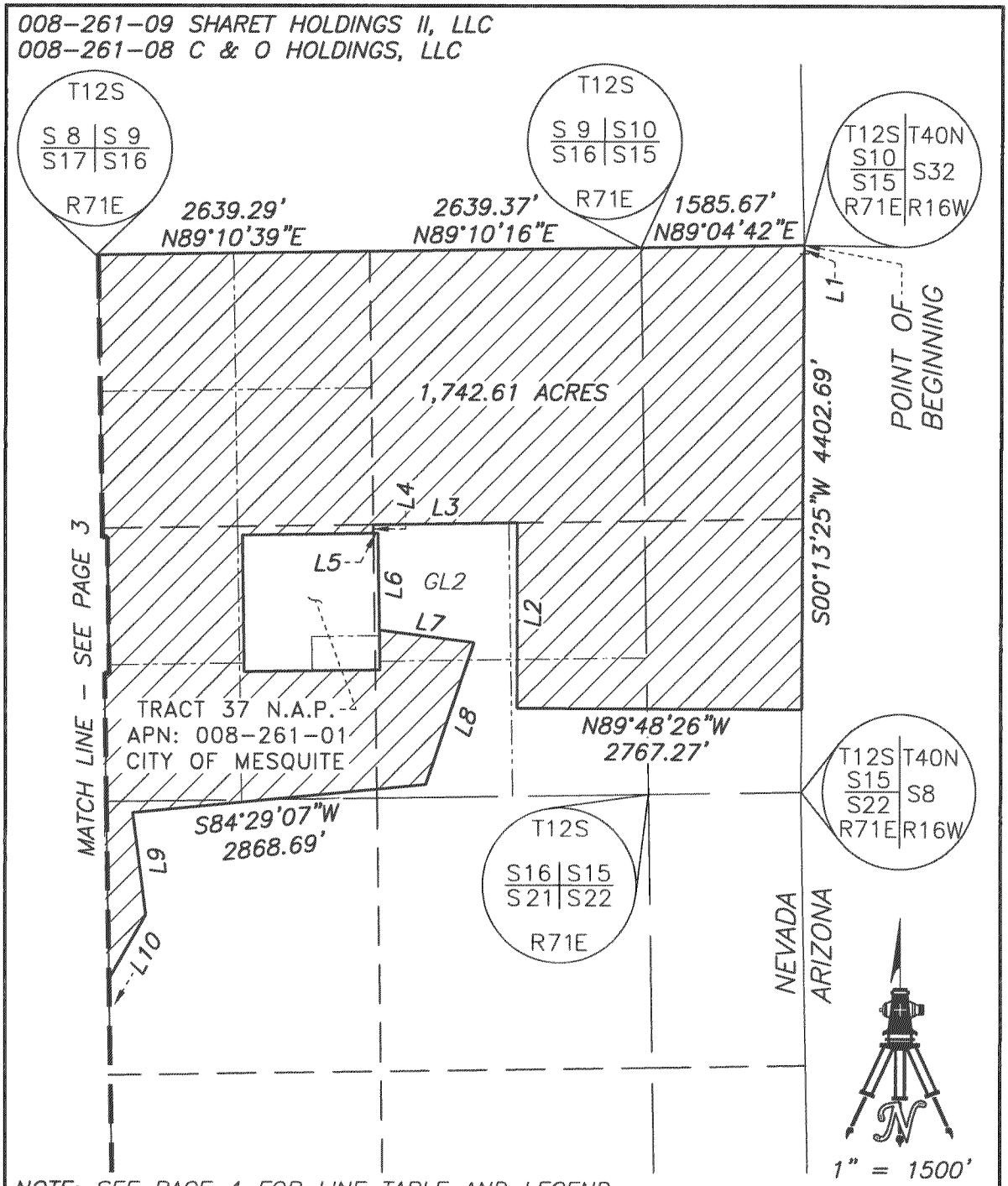
WALLACE MORRIS KLINE SURVEYING, LLC. LAND SURVEY CONSULTING	EXHIBIT "B"
6525 W. WARM SPRINGS RD. #100, LAS VEGAS, NV 89118	LYING WITHIN SECTIONS 15, 16, 17, 18, 19, 21 AND 21, TOWNSHIP 12 S., RANGE 71 E., MOUNT DIABLO MERIDIAN, LINCOLN COUNTY, NEVADA
	PAGE 1 OF 4



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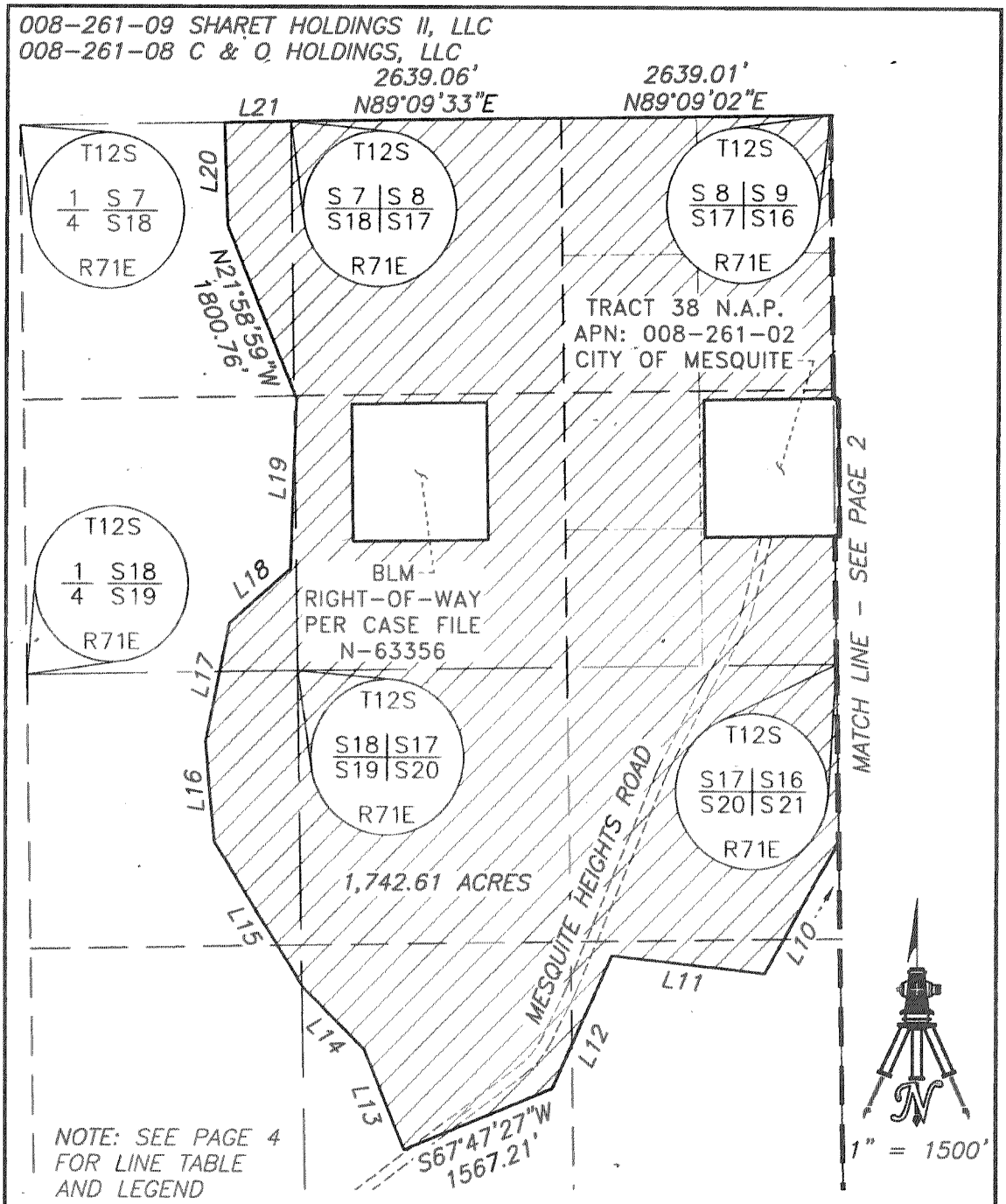
6525 W. WARM SPRINGS RD. #100, LAS VEGAS, NV 89118	LYING WITHIN SECTIONS 15, 16, 17, 18, 19, 21 AND 21, TOWNSHIP 12 S., RANGE 71 E., MOUNT DIABLO MERIDIAN, LINCOLN COUNTY, NEVADA
	PAGE 2 OF 4



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WALLACE MORRIS KLINE SURVEYING, LLC. LAND SURVEY CONSULTING	EXHIBIT "B"
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	PAGE 3 OF 4

008-261-09 SHARET HOLDINGS II, LLC
008-261-08 C & O HOLDINGS, LLC

LEGEND

N.A.P.	NOT A PART
BLM	BUREAU OF LAND MANAGEMENT
APN	ASSESSORS PARCEL NUMBER
L1	LINE LABEL SEGMENT
GL2	GOVERNMENT LOT NUMBER

LINE	BEARING	DISTANCE
L1	S01°17'43"E	80.99'
L2	N00°00'00"E	1791.26'
L3	S89°10'25"W	1401.35'
L4	S00°53'04"E	82.89'
L5	N89°09'31"E	45.91'
L6	S00°50'14"E	934.98'
L7	S82°35'03"E	927.20'
L8	S18°49'06"W	1447.29'
L9	S07°24'55"E	995.76'
L10	S29°56'55"W	2176.74'
L11	N83°36'20"W	1498.06'
L12	S24°40'23"W	1407.40'
L13	N22°04'38"W	1038.57'
L14	N45°19'10"W	838.70'
L15	N31°43'17"W	1655.02'
L16	N05°13'28"W	960.31'
L17	N11°27'34"E	1167.02'
L18	N48°27'45"E	788.45'
L19	N01°59'01"E	1635.73'
L20	N01°51'47"W	986.44'
L21	N89°02'11"E	641.98'

C:\EST-23117 LINCOLN COUNTY SOLAR\PROJECT FILES\DWG\EXHIBITS\23117-SOLAR.DWG

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LAND SURVEY CONSULTING
6525 W. WARM SPRINGS RD. #100, LAS VEGAS, NV 89118

EXHIBIT "B"

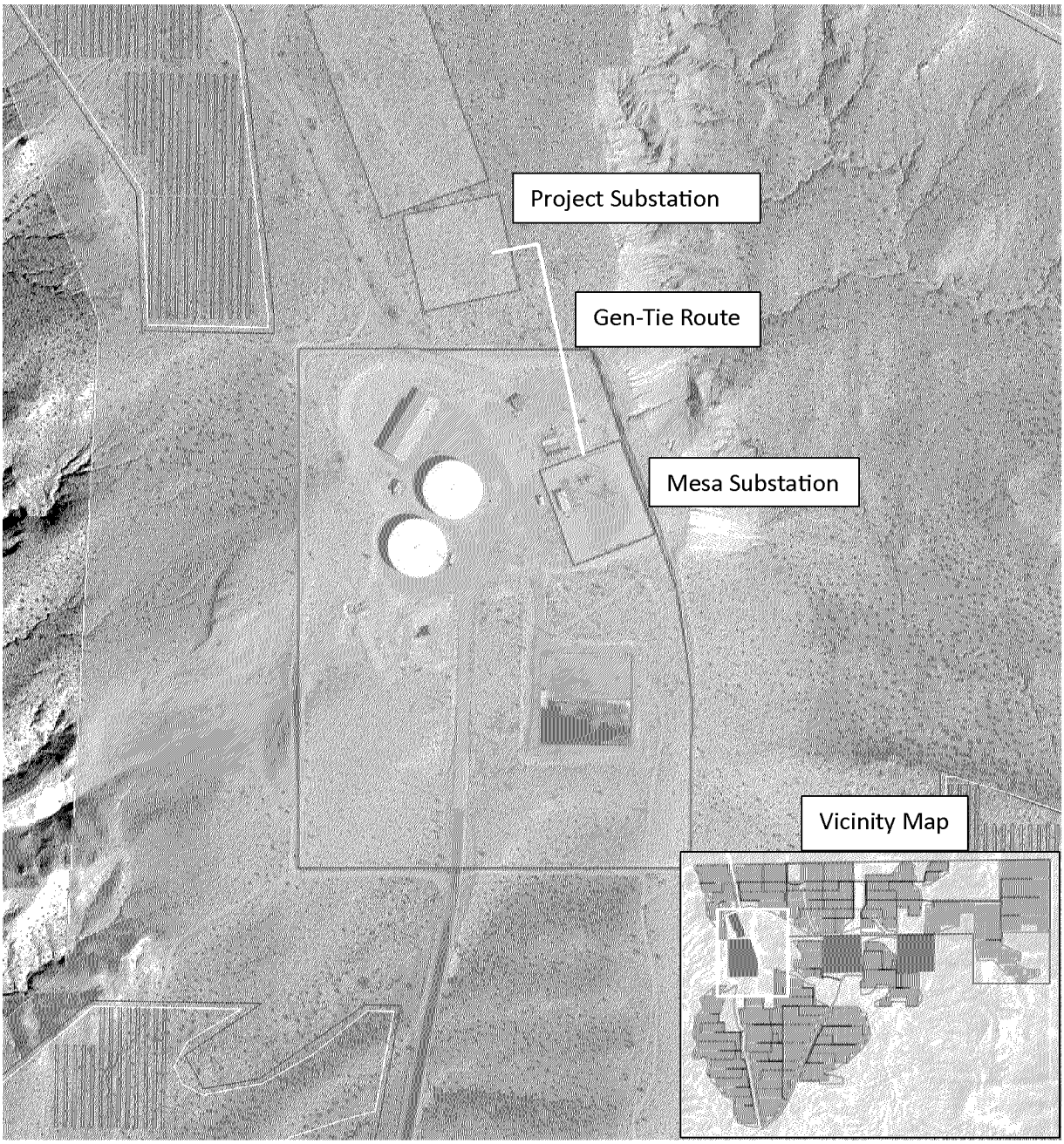
LYING WITHIN SECTIONS 15, 16, 17, 18, 19, 21 AND 21, TOWNSHIP 12 S., RANGE 71 E., MOUNT DIABLO MERIDIAN, LINCOLN COUNTY, NEVADA

EXHIBIT C

Detailed Description of the Location of the Gen-Tie

HOLLAND & HART LLP
5441 KIETZKE LANE, SECOND FLOOR
RENO, NV 89511

Project Gen-Tie Map



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June 2023

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EXHIBIT D

Site Plan Drawings, Vicinity Maps,

& Routing Maps

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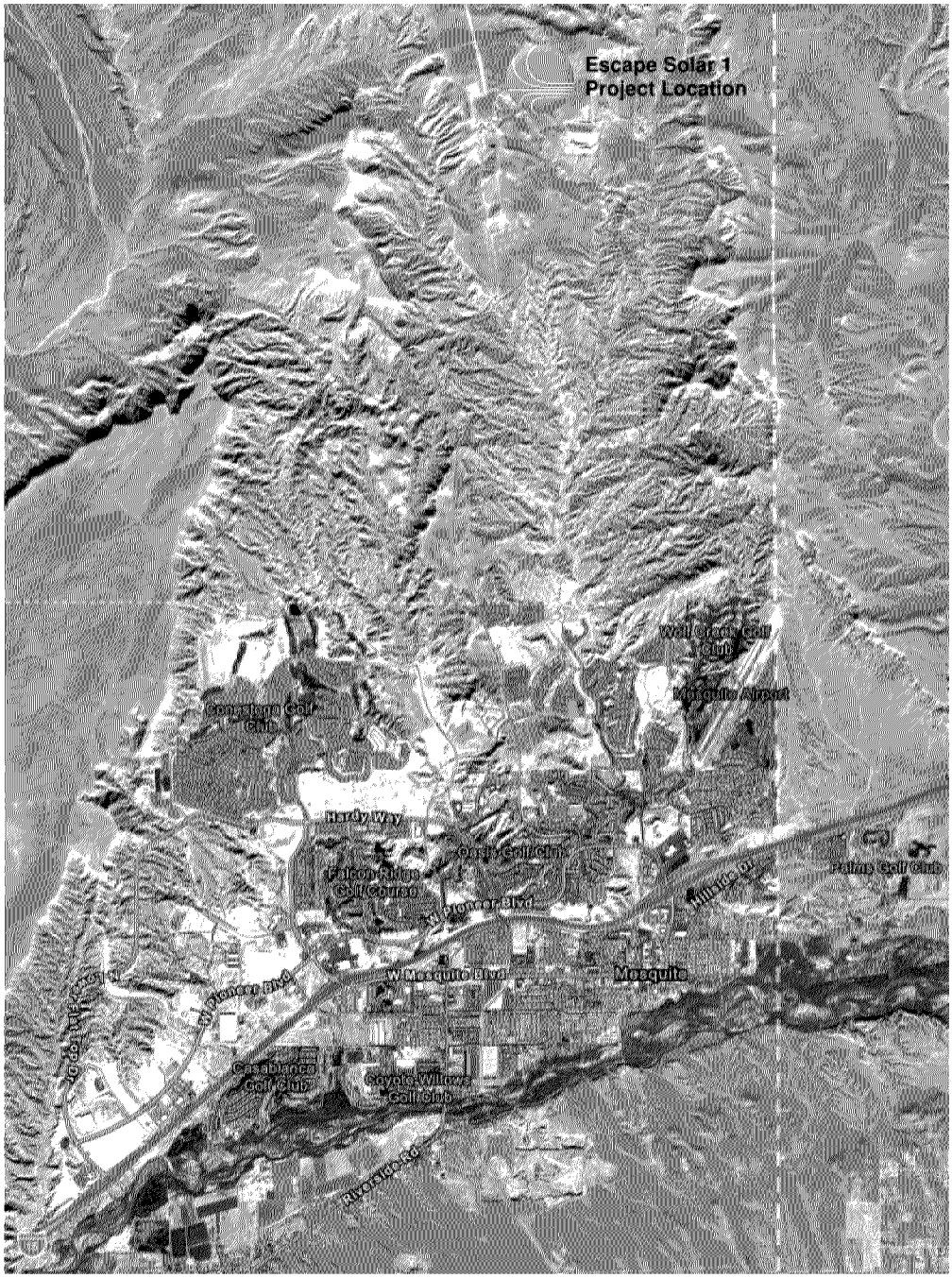
Project Location Map



Not to Scale

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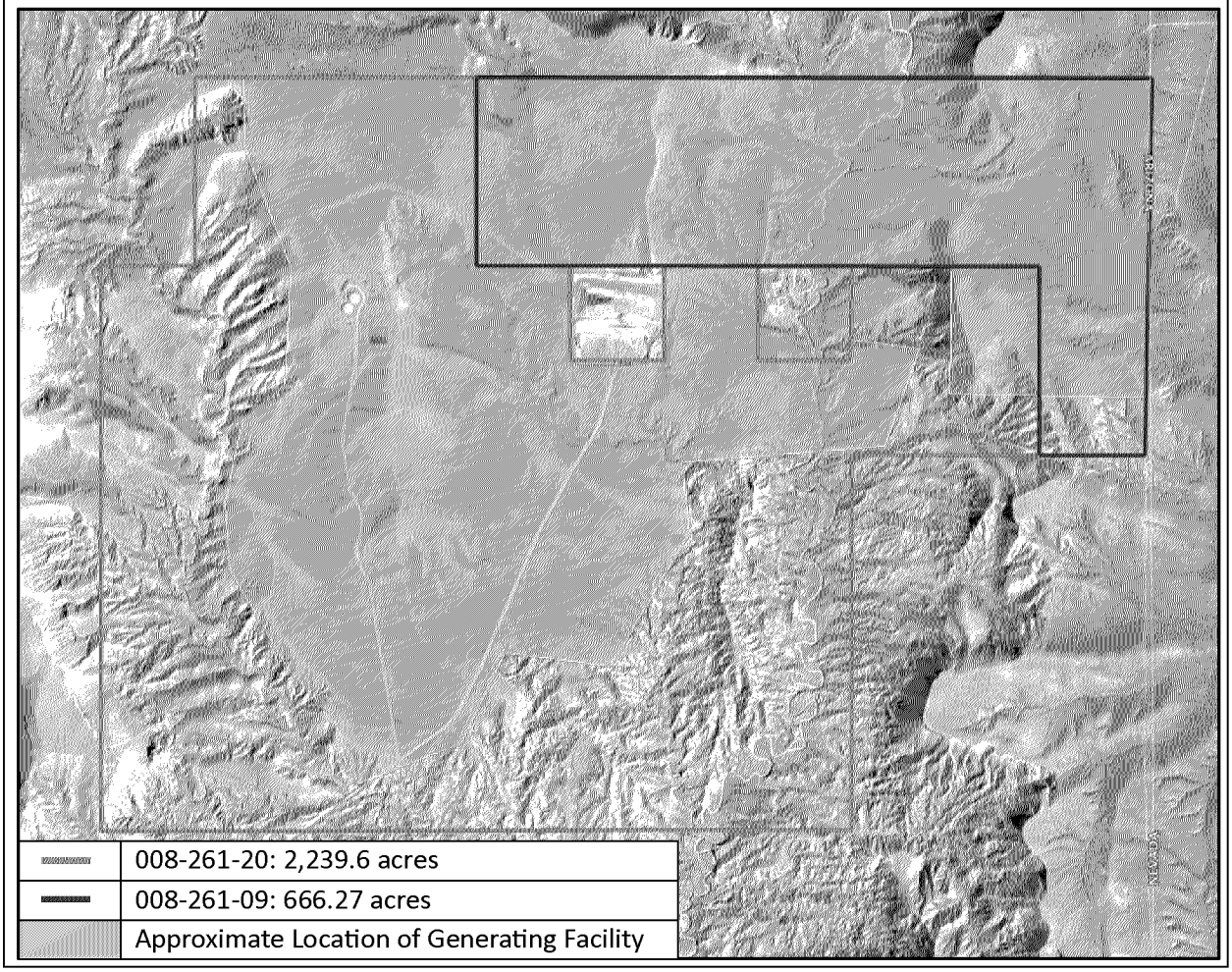
Land Status Map



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Project Gen-Tie Map

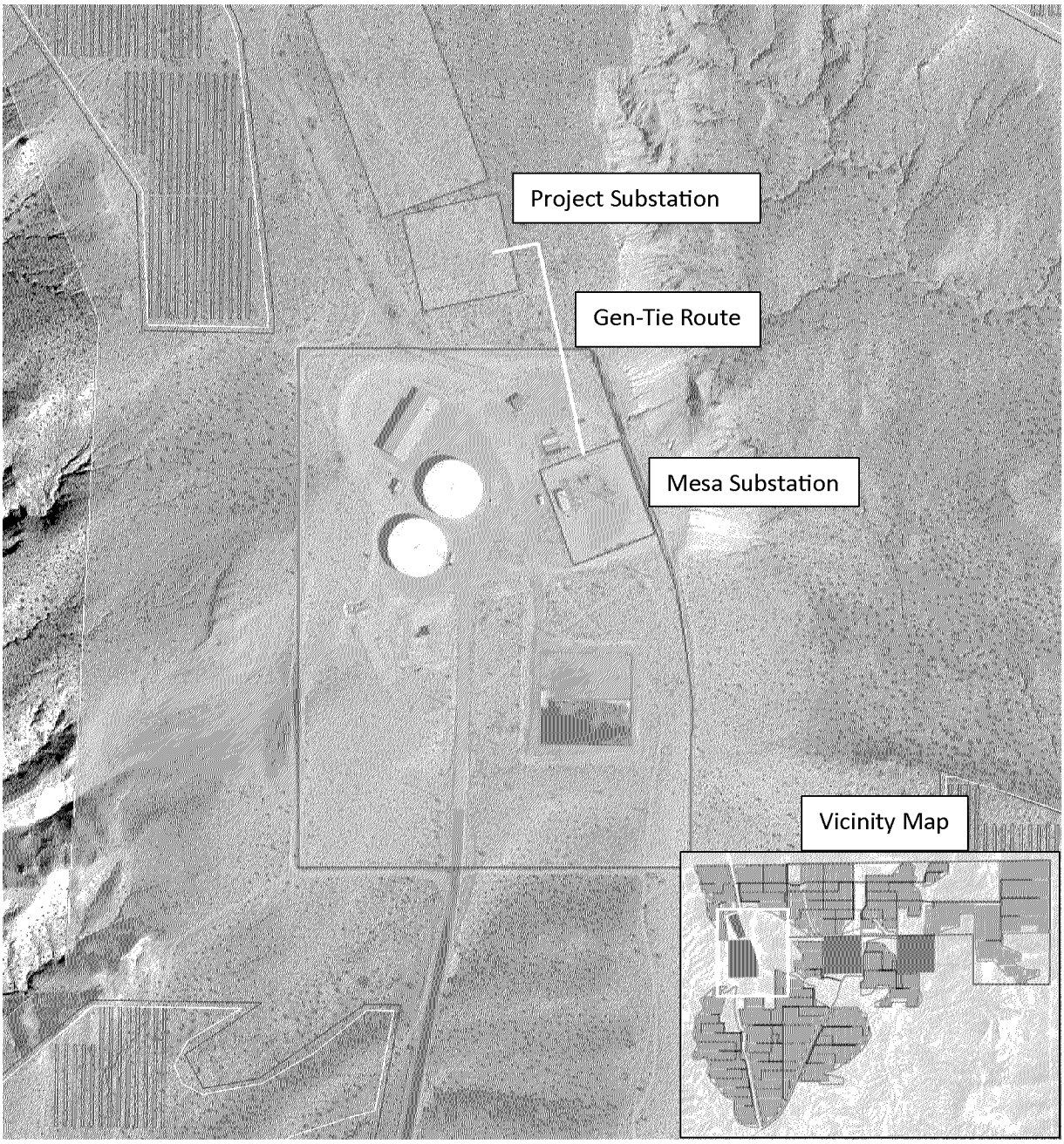

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EXHIBIT E

Layout Diagrams

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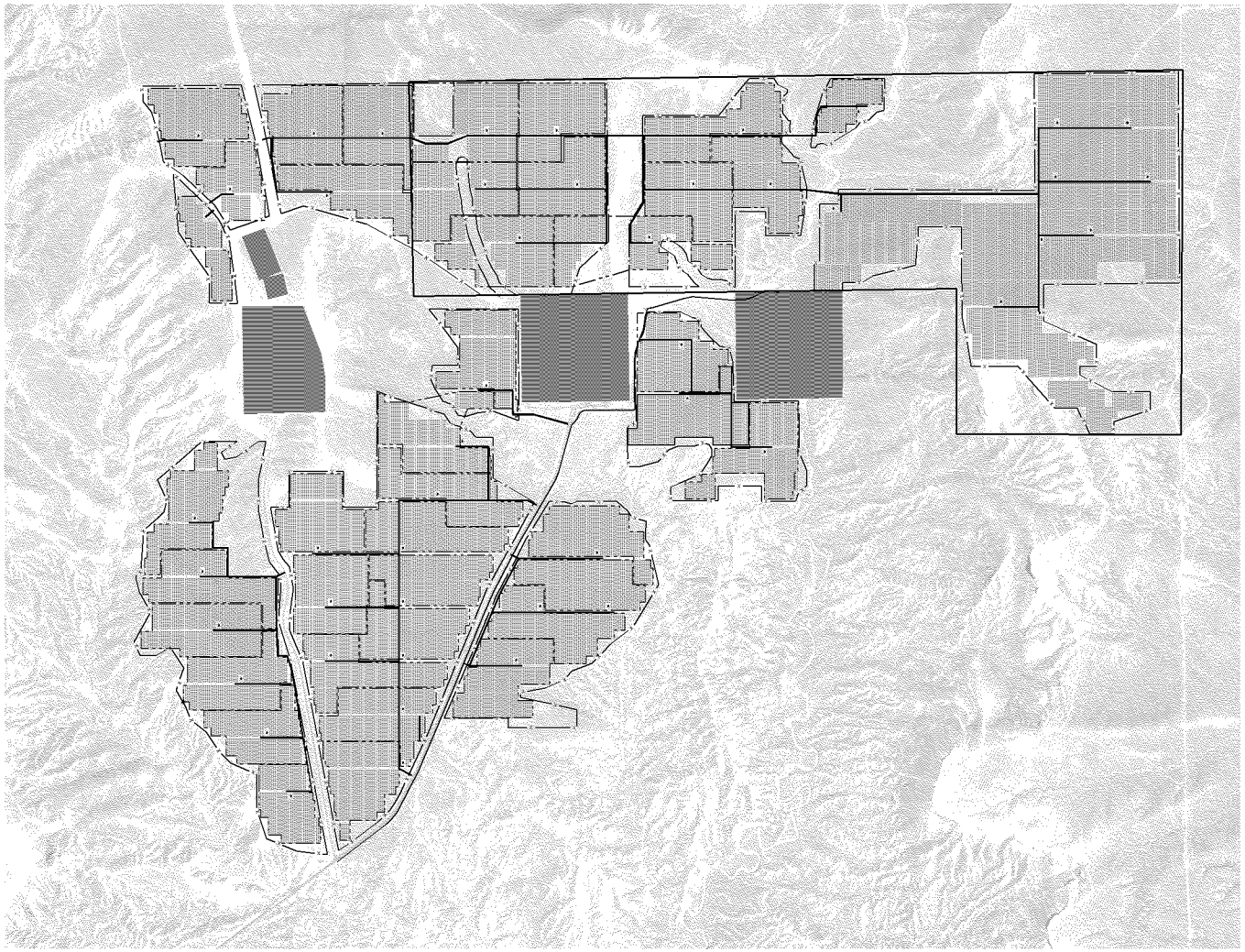

LEGEND

- PROJECT BOUNDARY
- RIGHT-OF-WAY LINES
- PROPOSED SECURITY FENCE
- PROJECT BESS YARD
- EXCEL EASEMENT
- PROPOSED SOLAR ARRAY
- INVERTER BLOCK BOUNDARY
- PROPOSED INVERTER
- PROPOSED ACCESS ROAD

0' 700' 1400' 2100'

1 Overall Site Plan
1" = 700'

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Overall Site Plan

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REV: A

EXHIBIT F

Scaled Diagrams of Utility Structures

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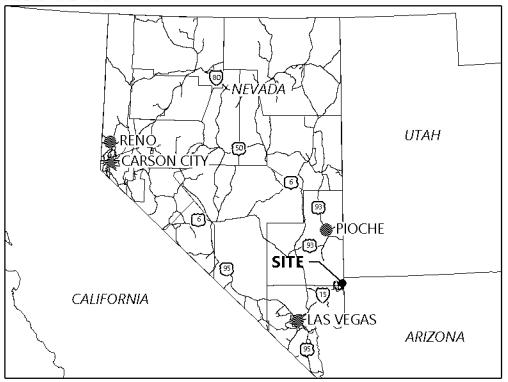
811 Know what's below. Call before you dig.

Escape Solar Project

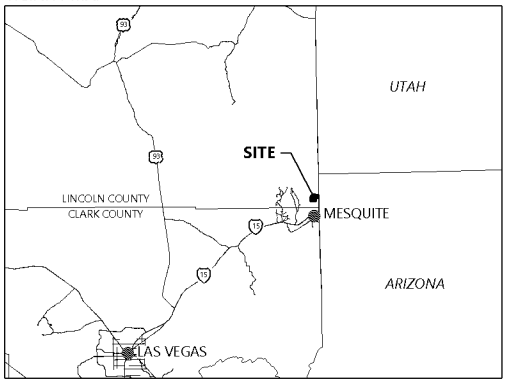
Clark County, Nevada

Electrical Exhibit

REGIONAL MAP



VICINITY MAP



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Electrical Cover Sheet

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SHEET: PV.E0000 REV: A

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PV.E0300	Overall Site Plan	A
PV.E2110	Typical Inverter Site Plan	A
BE.E7000	Overall Bess Layout	A
PV.E7010	Tracker Details	A
PV.E9000	Transmission & Distribution - Dead-End	A
PV.E9001	Transmission & Distribution - Tangent	A

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Escape Solar Project

Lincoln County, Nevada

Sheet Index

ISSUED FOR EXHIBIT

DATE: 07/27/2023

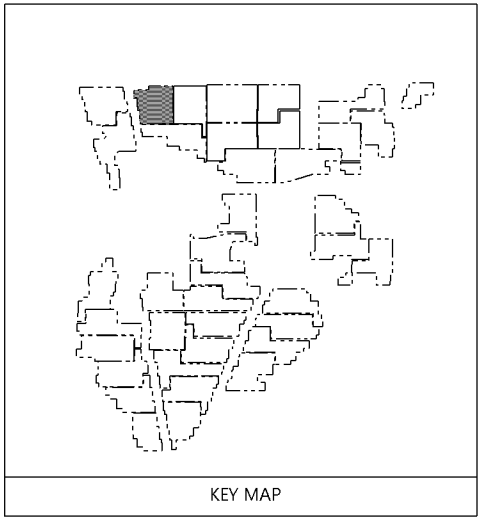
SHEET: PV.E0001

REV: A

1 Typical Inverter Block
1" = 80'

LEGEND

- PROPOSED SOLAR ARRAY
- INVERTER BLOCK BOUNDARY
- PROPOSED INVERTER
- PROPOSED ACCESS ROAD



KEY MAP

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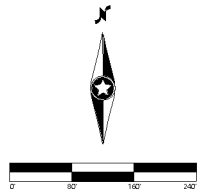

Escape Solar Project

Lincoln County, Nevada

Typical Inverter Site Plan

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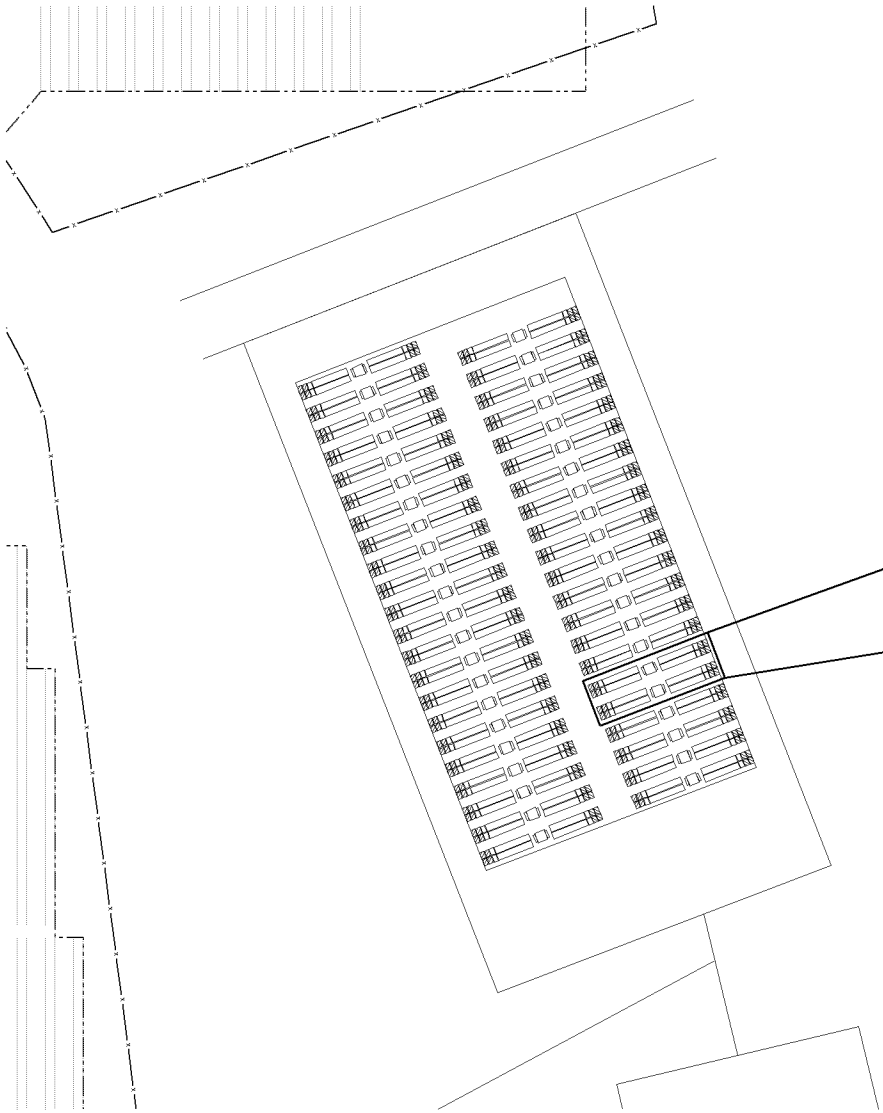
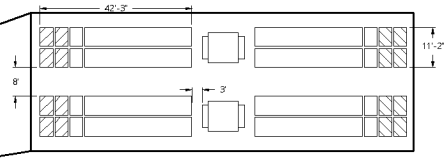


1 BESS Layout
1" = 50'



2 Battery Enclosure Configuration
NTS

LEGEND

- PROPOSED SECURITY FENCE
- PROPOSED SOLAR ARRAY
- INVERTER BLOCK BOUNDARY
- PROPOSED INVERTER
- PROPOSED ACCESS ROAD
- PROPOSED BATTERY ENCLOSURE
- PROPOSED AUX TRANSFORMER

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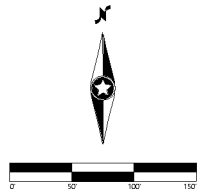

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Lincoln County, Nevada

Overall Bess Layout

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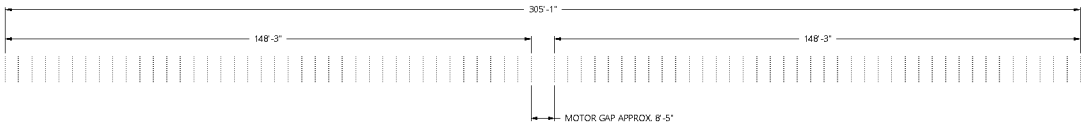
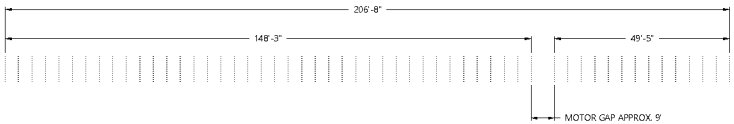
REV: A



1 3-String Tracker Plan View
N.T.S.



2 2-String Tracker Plan View
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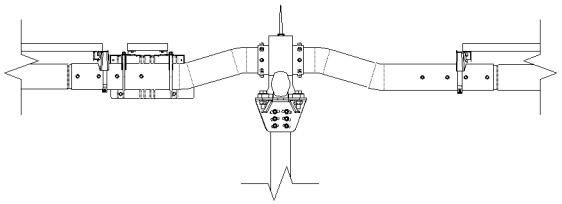

3 Tracker Controller
N.T.S.

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Lincoln County, Nevada

Tracker Details

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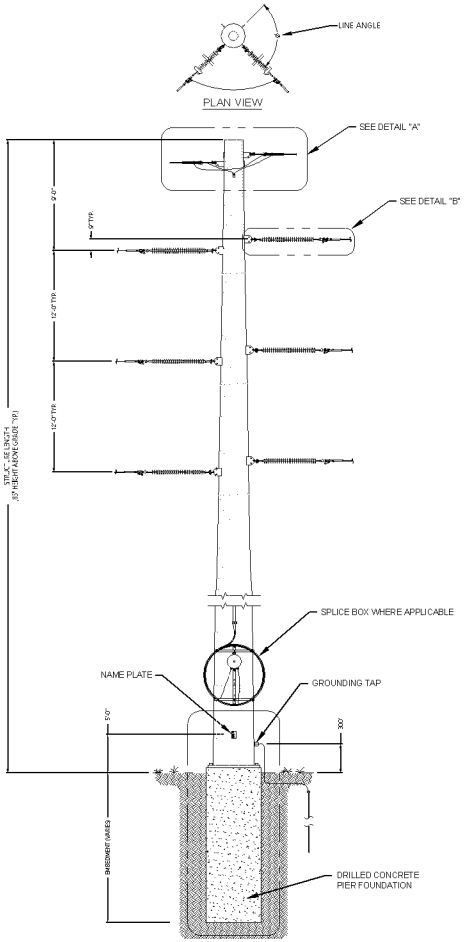
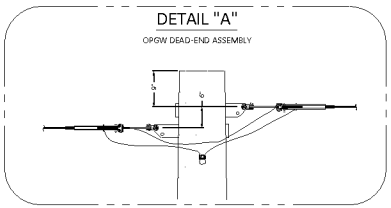
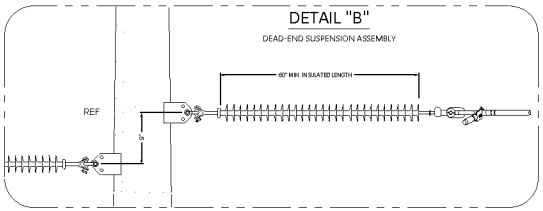
NOTES

1. **THIS STRUCTURE IS A TYPICAL REPRESENTATION OF WHAT IS EXPECTED. ACTUAL DESIGN DIMENSIONS AND DETAILS MAY VARY.**







1 Transmission & Distribution - Typical Dead-End

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Lincoln County, Nevada

Transmission & Distribution - Dead-End

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NOTES

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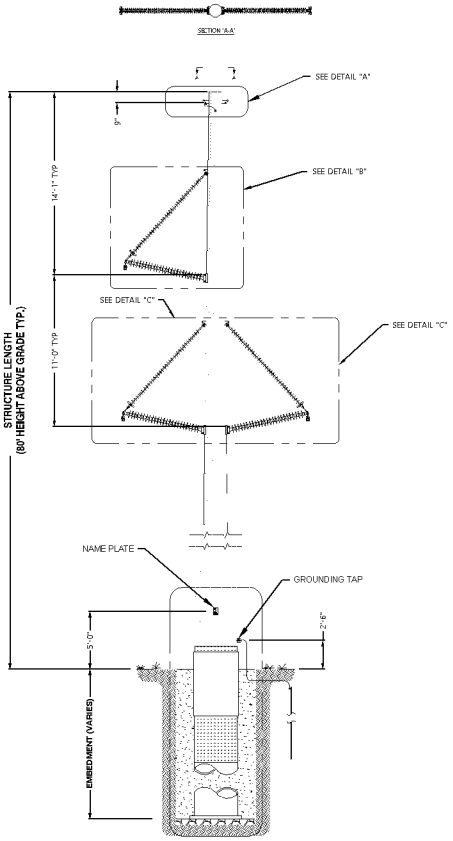

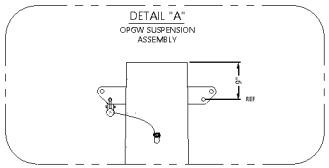

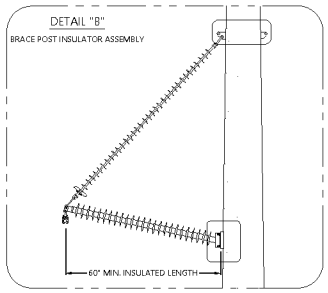

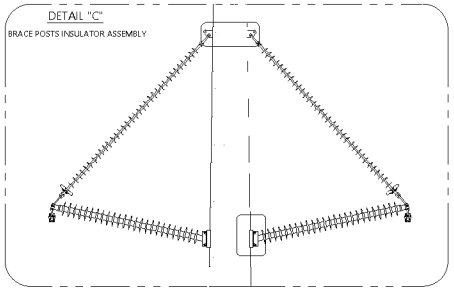

1 Transmission & Distribution - Typical Tangent

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Lincoln County, Nevada

Transmission & Distribution - Tangent

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EXHIBIT G[1]

Environmental Statement

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5441 KIETZKE LANE, SECOND FLOOR
RENO, NV 89511

[1] Exhibits have been omitted due to size but can be provided upon request.

FES 10-01

FINAL

Volume I

Environmental Impact Statement

JANUARY 2010

SOUTHEASTERN LINCOLN COUNTY

HABITAT CONSERVATION PLAN

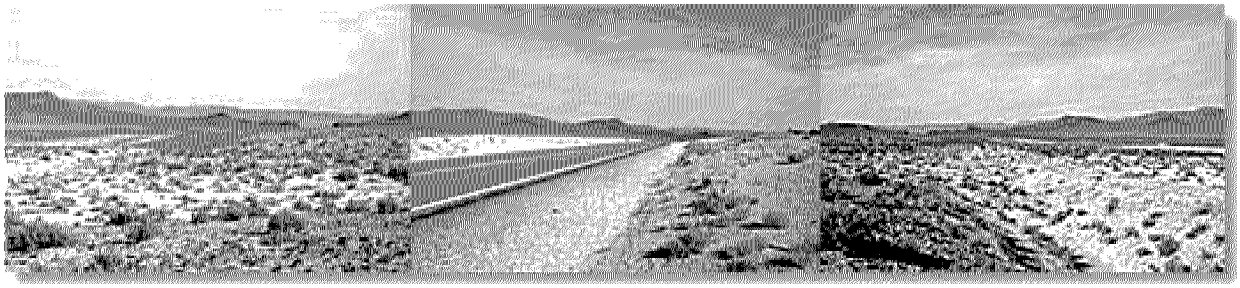
SOUTHEASTERN LINCOLN COUNTY

Environmental Impact Statement

VOLUME I

FINAL

JANUARY 2010



prepared by

ENTRIX, Inc.
2300 Clayton Road, Suite 200
Concord, CA 94520

prepared for

U.S. Fish and Wildlife Service
Reno, NV

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ACRONYMS

$\mu g/m^3$	micrograms per cubic meter
ACEC(s)	Areas of Critical Environmental Concern(s)
ADP	Alamo Power District
ADT	average daily traffic
AFB	Air Force Base
afa	acre feet per annum
afy	acre-feet per year
AGL	above ground level
AMP	Adaptive Management Program
APD	Alamo Power District No. 3
ASWGID	Alamo Sewer and Water General Improvement District
ATCAA	Air Traffic Control Assigned Airspace
BAPC	Bureau of Air Pollution Control's
BARCASS	Basin and Range Carbonate Aquifer System Studies
BLCC	Board of Lincoln County Commissioners
BLM	Bureau of Land Management
BMPs	best management practices
C2S2	Conservation Centers for Species Survival
CC&Rs	covenants, conditions, and restrictions
CEQ	Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
CO	Carbon Monoxide
CO_2	carbon dioxide
CSI	Coyote Springs Investment
CWA	Clean Water Act
DA(s)	development agreement(s)
dB	decibels
dBA	A-weighting sound level
DCNR	Department of Conservation and Natural Resources
DEIS	Draft or draft EIS
DNWR	Desert National Wildlife Range
DOD	Department of Defense
DPS	Distinct Population Segment
DTCC	Desert Tortoise Conservation Center
DTRO	Desert Tortoise Recovery Office

DTRPAC	Desert Tortoise Recovery Plan Assessment Committee
DWMAs	Desert Wildlife Management Areas
EA	environmental assessment
EDA	Economic Development Administration
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FLPMA	Federal Land Policy Management Act
FY	Fiscal Year
GIDs	General Improvement Districts
gpd	gallons per day
GPS	global positioning system
HCP	habitat conservation plan
HMMP	Hydrology Monitoring and Mitigation Plan
Hz	Hertz
IA	Implementing Agreement
IMACS	Intermountain Antiquities Computer System
IMC	Implementation and Monitoring Committee
IPCC	Intergovernmental Panel on Climate Change
LCCD	Lincoln County Conservation District
LCCRDA	Lincoln County Conservation, Recreation, and Development Act of 2004
LCIMC	Lincoln County Implementation and Monitoring Committee
LCLA	Lincoln County Land Act of 2000
LCSD	Lincoln County School District
LCWD	Lincoln County Water District
LS Power	LS Power Electrical Transmission
LVVWD	Las Vegas Valley Water District
MBTA	Migratory Bird Treaty Act
MDM	Mt. Diablo Meridian
MFP	Management Framework Plan Amendment
Mg	million gallons
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding

mph	miles per hour
MSHCP	Multi-species Habitat Conservation Plan
MSL	mean sea level
MVA	megavolt ampere
MW	megawatt
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
NAGPRA	Native American Grave Protection and Repatriation Act
NASS	National Agricultural Statistical Service
NBAQP	Nevada Bureau of Air Quality Planning
NBMG	Nevada Bureau of Mining
NDEP	Nevada Division of Environmental Protection
NDF	Nevada Division of Forestry
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NDSL	Nevada Division of State Lands
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO	nitric oxide
NO_2	Nitrogen Dioxide
NO_x	nitrogen oxides
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statutes
NSE	Nevada State Engineer
NWR	National Wildlife Refuge
O_3	Ozone
OHV	off-highway vehicles
OMB	Office of Management and Budget
PA	Programmatic Agreement
PEP	potassium excretion potential
PILT	payments in lieu of taxes
PM	Particulate Matter
PM_{10}	particulate matter less than 10 microns
PUD	Planned Unit Development
RMP	Resource Management Plan

RMP/EIS	Resource Management Plan and EIS
ROC	reactive organic compounds
RPW	relatively permanent water body
SAD	Surface Area Disturbance
SHPO	State Historic Preservation Office
SLCHCP	Southeastern Lincoln County Habitat Conservation Plan
SNPLMA	Southern Nevada Public Land Management Act of 1988
SNWA	Southern Nevada Water Authority
SO_2	Sulfur Dioxide
SWIP	Southwestern Intertie Project
SWPPP	Storm Water Pollution Prevention Plan
TNWs	traditional navigable waters
TSC	Technical Steering Committee
UPRR	Union Pacific Railroad
URTD	upper respiratory tract disease
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USC	U.S. Code
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VRBRCA	Virgin River Basin Resource Conservation Assessment
VRHCP	Virgin River Habitat Conservation Plan
VRHCRP	Virgin River Habitat Conservation and Recovery Program
VRM	Visual Resource Management
VVWD	Virgin Valley Water District
WHIP	Wildlife Habitat Incentives Program
WMA	Wildlife Management Area
WOUS	Waters of the United States
WSAs	Wilderness Study Areas

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Executive Summary

Executive Summary

This Environmental Impact Statement (EIS) evaluates the impacts of implementing the Southeastern Lincoln County Habitat Conservation Plan (SLCHCP) and issuance of three Endangered Species Act (ESA) Section 10(a)(1)(B) incidental take permits (ITP) by the U.S. Fish and Wildlife Service (USFWS) based upon this plan. The three applicants seeking incidental take coverage under the SLCHCP are Lincoln County, City of Caliente, and Union Pacific Railroad (UPRR). Developers of residential, commercial, and industrial property would be covered under Lincoln County's permit upon the payment of a disturbance fee assessed by Lincoln County, and payable at the time they obtain a building or grading permit. Private landowners along the Meadow Valley Wash and Clover Creek that wish to participate in the SLCHCP would "opt in" by signing a participation agreement provided by Lincoln County. Private landowners that "opt in" would be covered under the permit issued to Lincoln County.

Under the Preferred Alternative, USFWS would issue an incidental take permit, in accordance with the SLCHCP. The Preferred Alternative would allow the applicants to develop and/or maintain a portion of private lands in southeastern Lincoln County, Nevada, to address a need for housing, economic opportunity, and the general welfare of the residents of Lincoln County. Components of the proposed action include: 1) planned land development and maintenance, 2) utility and infrastructure development and maintenance, 3) flood control, 4) County roadway maintenance, 5) UPRR activities, and 6) land conversion activities (e.g. previously undisturbed agricultural land to urban use or grazing land to irrigated and/or cultivated agricultural land.

Under the Preferred Alternative, the proposed action would affect habitat for the threatened desert tortoise (*Gopherus agassizii*) and endangered southwestern willow flycatcher (*Empidonax traillii extimus*) and may affect habitat for other species that are listed as threatened or endangered under the ESA. To comply with Section 10(a)(1)(B) of the ESA and to obtain a permit for incidental take of listed species because of the proposed Covered Activities, the applicants have prepared the SLCHCP. The SLCHCP's goal is to achieve a balance between 1) long-term conservation and recovery of native species of plants and animals present on southeastern Lincoln County lands; and 2) the orderly and beneficial use of private land in order to promote the economy, health, and well-being of the future population within Lincoln County.

PURPOSE AND NEED FOR FEDERAL ACTIONS

The applicants propose to develop and/or maintain a portion of private lands in southeastern Lincoln County, Nevada. The need for the USFWS actions is based on the potential that these activities proposed by the applicants could result in the take of the Covered Species (desert tortoise and southwestern willow flycatcher), thus, creating the need for incidental take permits. Issuance by the USFWS of ESA Section 10(a)(1)(B) incidental take permits are federal actions that trigger review under NEPA (42 U.S.C 4321-4347).

The USFWS is the lead agency for this EIS and the BLM is a cooperating agency. This EIS has been developed for the following purposes: 1) evaluate the impacts of implementing the SLCHCP by USFWS, the applicants, and BLM; 2) address the issuance of ESA Section 10(a)(1)(B) incidental take permits by the USFWS based upon this plan; 3) protect and conserve the Covered Species and their habitat for the continuing benefit of the people of the United States; and 4) ensure compliance with the ESA, NEPA, and other applicable federal laws and regulations. The agencies will determine whether the Preferred Alternative or another action alternative should be permitted to proceed.

PUBLIC SCOPING

Public involvement related to the development of the SLCHCP began in October 2000, when a Technical Steering Committee (TSC) was convened to obtain input from stakeholders. Since the first meeting, over a dozen TSC meetings were held to define the framework of the SLCHCP. These meetings were open to the public and conducted pursuant to the Nevada Open Meeting Law. The framework for the SLCHCP was developed in consultation with the USFWS, the Nevada Department of Wildlife (NDOW), BLM, the Nevada

Division of Forestry (NDF), the Nevada Division of State Lands (NDSL), the Lincoln County Farm Bureau, the Lincoln County Public Land Commission, The Nature Conservancy, the Toiyabe Chapter of the Sierra Club, the Red Rock Chapter of the Audubon Society, and non-Federal land owners.

A Notice of Intent to prepare the DEIS was published in the Federal Register on July 5, 2001, and public workshops were held at the Alamo Annex on June 25, 2001 and at the Caliente City Hall on June 26, 2001. Notices for the workshops and TSC meetings were posted at public locations pursuant to the Nevada Open Meeting Law. The public workshops were advertised in the Lincoln County Record, the Desert Valley Times, and the Valley Times. Comments were accepted until September 4, 2001.

On July 5 and 6, 2006, public workshops were held in Caliente, Alamo and Mesquite, Nevada to receive additional input from the public and to update members of the public on the status of the SLCHCP. Public input from the workshops and the TSC meetings was integral to the planning process and development of the draft SLCHCP and DEIS. Throughout the development of the draft SLCHCP, written and oral public comments were received and addressed in the draft as appropriate. See Section 2.5 for further discussion of scoping comments.

On December 5, 2008, the USFWS published the Draft EIS, Draft SLCHCP, and Draft Implementation Agreement. The 75-day public comment period closed on February 18, 2009. Responses to public comments can be found in Volume III: Appendix G; and have been incorporated into the FEIS, SLCHCP, and Implementation Agreement, as appropriate.

ALTERNATIVES

No Action Alternative

Under the No Action Alternative, the USFWS would not issue incidental take permits under Section 10(a)(1)(B) of the ESA, "take" of the Covered Species would not be authorized, and the SLCHCP would not be implemented. Under this scenario, private land development or other activities on non-Federal land would avoid take of federally-listed species or would require individual Section 10(a)(1)(B) permits for incidental take. If take of federally-listed species could not be avoided, each individual landowner would be required to develop a separate habitat conservation plan, leading to piecemeal development and uncoordinated conservation planning. Oversight, coordination, and administration of funding for landscape-level conservation projects would not be available.

Species and habitat conservation projects would be driven by the activities and priorities of local resource management agencies. The federally-administered lands in Lincoln County would continue to be managed in accordance with the BLM's current land use plan. Conservation projects for the tortoise and flycatcher would be implemented as funding and staffing levels allowed. Voluntary conservation actions would continue to be initiated by Lincoln County, private individuals, and organizations.

Preferred Alternative

The Proposed Action (issuance of incidental take permits for the SLCHCP) is the Preferred Alternative. The USFWS proposes to approve the SLCHCP and issue three permits, one each to Lincoln County, the City of Caliente, and UPRR, that would authorize incidental take of the Covered Species on non-Federal lands within the Covered Area associated with land development and maintenance activities, utility and infrastructure development and maintenance activities, flood control activities, County roadway maintenance, railroad construction and maintenance, and the conversion of an existing land use to another land use (e.g. previously undisturbed agricultural land to urban use or grazing land to irrigated and/or cultivated agricultural land).

The SLCHCP addresses effects to Covered Species that are related to actions on non-federal lands within the Covered Area by Lincoln County government, private landowners, the City of Caliente, and UPRR. The SLCHCP does not address effects to Covered Species that are related to actions on federal lands even if those actions are related to actions on private land. For instance, placement of new water wells and waterlines or new roads across lands managed by the BLM to serve development on the LCLA lands are subject to consultation under Section 7 of the ESA and are not included in the SLCHCP.

COVERED ACTIVITIES

The proposed Covered Activities occur on approximately 30,673.5 acres of private, state and local government-held property in Lincoln County. It is the intent of the SLCHCP to include all new non-federal lands within the Covered Area if the lands leave federal ownership through public land disposal or other means during the 30 year permit term of the Section 10 permits. The Covered Activities, include existing and proposed land use activities and practices by individuals, organizations, companies, and State of Nevada divisions (excluding State Parks), as well as city, county, and local governments, are as follows:

- Proposed Land Development (including utility and infrastructure development and maintenance activities)
  - LCLA Land
  - Meadow Valley Industrial Park
  - Alamo Industrial Park and Community Expansion Area
  - BLM Lands (identified for disposal around Alamo)
  - Section 36 Disposal Parcel
- Flood Control Activities within the City of Caliente
- County Roads and Rights-of-Way
- UPRR Lands and Rights-of-Way
- Other Privately-owned Lands Subject to Land Conversion Activities (e.g. previously undisturbed agricultural land to urban use or grazing land to irrigated and/or cultivated agricultural land)

CONSERVATION MEASURES

The overall goal of the SLCHCP is to provide a mechanism to allow orderly growth and development in southeastern Lincoln County while providing conservation for the Covered Species to ensure that permitted incidental take resulting from the Covered Activities does not jeopardize the continued existence of the Covered Species or adversely modify designated critical habitat.

DESERT TORTOISE CONSERVATION COMMITMENTS

Conservation measures to benefit desert tortoise include the following:

- Desert tortoise clearance surveys, process and transport
- Construction and maintenance best management practices
- Temporary fencing and permanent desert tortoise barriers
- LCLA development agreements
- Worker Education
- Timing of maintenance and construction activities
- Collection of mitigation fees to fund the implementation of the following conservation efforts:
  - Head Start and translocation programs
  - Desert tortoise research efforts
  - Habitat restoration
  - Public education and outreach
  - LCLA Road, Fence, and Trail Plan
  - Predator monitoring control

SOUTHWESTERN WILLOW FLYCATCHER COMMITMENTS

Conservation measures to benefit southwestern willow flycatcher include the following:

- Pre-disturbance surveys and/or maintenance and construction timing
- Roadway design and construction
- Worker education
- Contribution of funds to cover costs of flycatcher habitat restoration
- Develop and implement the riparian restoration and management strategy for the Meadow Valley Wash
- In-kind Habitat Replacement: The objective of the program is to provide funds that will allow the creation of habitat at a 2:1 replacement ratio for loss of native suitable flycatcher habitat and 1:1 replacement ratio for loss of non-native suitable habitat

Under the Preferred Alternative, an adaptive management plan (AMP) would be implemented for the length of the 30-year incidental take permit. The AMP would monitor the effectiveness of conservation actions and management prescriptions in meeting established biological goals, recommend alternative actions to pursue in the event that the goals are not being met, and incorporate any other information that has bearing on how best to meet the biological goals of the Covered Species.

Alternative A

This alternative would involve USFWS issuing an incidental take permit for development and associated activities on up to 44,135 acres of private lands within the Covered Area (Figure 3-9). This acreage includes all BLM acreage proposed for disposal in Lincoln County under the Proposed Action of the Draft Ely District Resource Management Plan and EIS (BLM 2005), as well as all other private land within the Covered Area including the approximately 1,372 acres of private property around the Carp area, 1,172 acres of private property around Elgin, the 7,456 acres of combined BLM disposal lands and private property from Alamo north to Hiko, the 640-acre Section 36 disposal parcel, and other private lands. The LCLA lands, Meadow Valley Industrial Park, and the Alamo Industrial Park and Community Expansion Area would be developed in the same manner described for the Preferred Alternative.

Covered Species would be the same as the Southeastern Lincoln County HCP alternative. Covered Activities permitted under the incidental take permit would be similar to those described for the Preferred Alternative. Activities that would occur on private lands in Lincoln County, Nevada, would include:

- Land development and maintenance activities (including future BLM disposal lands);
- Utility and infrastructure development and maintenance;
- Flood control activities;
- County roadway maintenance activities;
- Union Pacific Railroad construction and maintenance activities; and
- Land conversion activities (e.g. previously undisturbed agricultural land to urban use or grazing land to irrigated and/or cultivated agricultural land).

Conservation measures would be the same as described for the Preferred Alternative, except they would occur across more land under this alternative. If the Covered Activities would potentially affect federally-listed species other than the proposed Covered Species under the Proposed Action, either the applicants would be required to include the additional species in the HCP and permit, or individual landowners would be required to develop HCPs and apply for permits prior to initiation of an activity that may result in take of a federally-listed species or consultation under Section 7 of the ESA would be required for those activities with a Federal nexus.

The Adaptive Management Program would be the same as described for the Preferred Alternative.

Table ES-1 Summary of Effects for the Southeastern Lincoln County Habitat Conservation Plan Draft EIS

Impact Topic	No Action Alternative	Preferred Alternative	Alternative A
Biological Resources			
Vegetation	No effects to vegetation would occur under the No Action Alternative. If private lands were sold to individual landowners for development, then up to 26,573 acres of vegetation could be permanently lost or altered due to construction activities. However, given the lack of infrastructure in the area, it would be unlikely that all the private lands would be developed.	Development of the private lands and the other proposed covered activities would result in the loss of native vegetation on up to 30,674 acres in southwestern Lincoln County. Overall, potential vegetation lost because of development and ongoing maintenance activities in the Covered Area would be a small portion of total vegetation available within Lincoln County.	Direct effects would be similar to those described for the Preferred Alternative, except the loss of vegetation would occur on up to 44,135 acres of private lands.
Wildlife	No effects to wildlife would occur under the No Action Alternative. If private lands were sold to individual landowners for development, then up to 26,573 acres of wildlife habitat could be permanently lost or altered due to construction activities. However, given the lack of infrastructure in the area, it would be unlikely that all the private lands would be developed, which would also limit increases in traffic and resulting wildlife mortality.	Development of the private lands and the other proposed covered activities would result in the direct loss of up to 30,674 acres of habitat. The applicants would avoid all known nests and nesting colonies of migratory birds to prevent any negative direct effects to migratory birds from construction.	Wildlife habitat may be displaced or lost within the 44,135 acres of private land proposed for development under Alternative A, greater than what would occur under the Preferred Alternative.
Special Status Species	No effects to special status species would occur under the No Action Alternative. If private lands were sold to individual landowners for development, then desert tortoise and southwestern willow flycatcher habitat could be permanently lost or altered due to construction activities. However, given the lack of infrastructure in the area, it would be unlikely that the entire private lands would be developed. Section 10 permits would be required for any activities that occurred and would result in mitigation to compensate for any effects to federally listed species, such as the desert tortoise.	Development of the private lands and the other proposed covered activities would eliminate up to approximately 19,840 acres of designated desert tortoise habitat and 84.3 acres of southwestern willow flycatcher habitat in the Covered Area. This loss would be the result of conversion of land from desert scrub to human residential, commercial, recreational, and light industrial use and areas of habitat restoration. No critical habitat within the Mormon Mesa CHU would be disturbed. Clearance surveys, translocation, and fencing conservation measures would avoid and minimize incidental take of desert tortoise to the maximum extent possible. Mitigation fees would offset effects to desert tortoise habitat. Adverse effects could also occur to other listed and candidate species and species of concern, but these effects would be offset by the avoidance, minimization, and mitigation measures prescribed for the Covered Species.	Direct effects to the desert tortoise and southwestern willow flycatcher would be similar to those described for the Preferred Alternative, although the magnitude of habitat loss and other effects would be larger, given that the effects from Covered Activities would occur on up to 44,135 acres of private land. Mitigation fees would offset effects to desert tortoise and southwestern willow flycatcher habitat. Adverse effects to other listed and candidate species and species of concern (especially the Pahranagat Valley and Meadow Valley Wash species) would be greater than under the Preferred Alternative.
Hydrology and Water Quality	No effects to hydrology and water quality would occur under the No Action Alternative. If private lands were sold to individual landowners for development, Section 404 permits would be required for any alterations of surface water hydrology, which would mitigate any adverse effects. Groundwater could be affected if individual residences were established and domestic wells were installed. The amount removed for each residence would be of a smaller amount of water. Effects to groundwater, if individual residences were to be developed and use domestic wells, would be expected to be minimal. However, if a large number of individual residences were developed, which would be unlikely given a lack of infrastructure, a potentially significant amount of water could be removed from the alluvial aquifer.	Under the Preferred Alternative, potential effects to surface water and groundwater hydrology could occur as a result of land development activities (i.e., 13,520-acre LCLA lands, Alamo Industrial Park, future BLM lands identified for disposal, and other identified private lands proposed for development within the Covered Area) and flood control activities in the city of Caliente. None of these activities would result in increased peak flows; rather, flood protection measures associated with each activity would ensure that flood levels would not increase. Therefore, the Preferred Alternative would result in slight positive direct effects to the hydrology of the Meadow Valley Wash within the Covered Area by controlling flooding in the human environment. In addition, under the Preferred Alternative, development of the LCLA lands would require up to 23,820 afa of water at buildout, which would be obtained from the Tule Desert and Clover Valley hydrographic basins. These basins are not currently considered designated basins, but the increased demand for groundwater from the LCLA project could potentially result in removing groundwater at a greater rate than it can be recharged. Ground disturbance, alteration of WOUS, and increased impervious surfaces could potentially affect water quality through sedimentation and pollution. Implementation of a Stormwater Management Plan associated with each ground disturbance activity and other mitigation measures would minimize these potential adverse effects.	Potential effects to stream flow, sediment transport, and water quality would be greater than under the Preferred Alternative due to a greater extent of land disturbed and developed. However, a Stormwater Management Plan and other mitigation measures would minimize these potential adverse effects.
Waters of the United States	No effects to WOUS would occur under the No Action Alternative. If private lands were sold to individual landowners for development, this could potentially result in development affecting WOUS associated with the Meadow Valley Wash. Section 404 permit(s) would be required and mitigation would offset any adverse effects to WOUS.	Under the Preferred Alternative, up to 84.3 acres of riparian vegetation would be disturbed by the Covered Activities along the Meadow Valley Wash. These activities could result in adverse effects to floodplains, wetlands, or WOUS; however, the implementation of the avoidance, minimization, and mitigation measures as part of the SLCHCP would reduce these potential direct effects.	Activities under Alternative A would result in greater potential effects to floodplains, wetlands, and other WOUS than under the Preferred Alternative, because the additional lands considered occur in the Pahranagat Wash floodplain containing wetlands and jurisdictional WOUS. If the development of additional private lands along the Pahranagat Wash between Alamo and Hiko were to occur, then the Pahranagat Wash's floodplains and associated wetlands could be potentially affected.
Cultural Resources	No effects to cultural resources would occur under the No Action Alternative. However, if private lands were sold to individual landowners for development and the lands had not been surveyed for the presence of cultural resources, then the unsurveyed lands would be subject to Section 106 Consultation under NHPA should development occur on these properties.	Under the Preferred Alternative, if the BLM disposal lands were to be developed in the future had not been surveyed for the presence of cultural resources, then any potential effects to cultural resources would be mitigated through Section 106 consultation with the Nevada SHPO.	The potential for adverse effects to cultural resources would be greater under Alternative A than the Preferred Alternative, because ground disturbance would occur across a greater area (up to 44,135 acres). However, any potential effects to cultural resources would be mitigated through Section 106 consultation with the Nevada SHPO.
Soils and Geologic Resources	No effects to soils and geologic resources would occur under the No Action Alternative. If private lands were sold to individual landowners for development, direct effects to soils on up to 26,573 acres could occur. Ongoing road and railway maintenance activities could result in soil loss and disturbance. It would be unlikely that all of these lands would be disturbed, due to a lack of infrastructure. Soil disturbances and loss would be minimized by mitigation measures required by individual permits. Thus, no effects to geological resources would occur.	Although soils would be superficially disturbed over a large area (up to approximately 30,674 acres) than under the No Action Alternative, mitigation measures would minimize soil loss and disturbance. Long-term adverse effects would result from the development of impervious surfaces on top of soils. Geological resources would not be affected.	Direct effects to soils and geological resources would be similar to the Preferred Alternative, although the magnitude (i.e., soil loss through wind erosion) would be greater as development would occur across a greater area (up to 44,135 acres).
Ecologically Critical Areas	No direct effects to ecologically critical areas would occur under the No Action Alternative. If private lands were sold to individual landowners for development, indirect effects would occur to Ecologically Critical Areas, as residents of the newly developed areas would likely use the nearby BLM lands (including the ACECs) for recreation purposes. This could introduce the potential for increased social trails, increased use of OHVs, and other effects of recreation on these ecologically critical areas. However, it is assumed that future incidental take permits would include provisions to minimize these adverse effects on adjacent ACECs.	The habitat restoration activities proposed as part of implementing the SLCHCP would have direct beneficial effects on the desert tortoise ACECs and proposed Lower Meadow Valley Wash ACEC. Conservation and mitigation measures to be implemented as part of the SLCHCP would minimize increases in the use of social trails and adverse effects to desert tortoise and other wildlife. Existing BLM regulations for ACECs would also address the expected increased uses of OHVs.	Direct and indirect effects to ecologically critical areas would be similar to those described for the Preferred Alternative, although further recreational demand on ACECs, Wildlife Areas, and Wildlife Management Areas could occur from even greater numbers of residents in the area. Development of up to 44,135 acres of private land (increased human population) within the Covered Area under this Alternative could include increased recreational use, dumping, collection of tortoises, introduction of non-native species, and increased fire risk on the adjacent public lands.
Visual Resources	No effects to visual resources would occur under the No Action Alternative. If private lands were sold to individual landowners for development, development on individual landowners' lands could affect the local viewshed. However, local and Lincoln County regulations and ordinances would ensure that no substantial adverse effects to visual resources would occur.	Under the Preferred Alternative, development would be limited to up to 30,674 acres throughout southeastern Lincoln County. Changes would all occur in compliance with local and Lincoln County regulations and ordinances.	Increased community development would result in greater alterations to visual resources than under the Preferred Alternative. This would result in a greater effect to the area's viewshed, as the development would be more noticeable from passersby on U.S. Highway 93. However, all development would occur in compliance with local and Lincoln County regulations and ordinances.
Air Quality	No effects to air quality would occur under the No Action Alternative. If private lands were sold to individual landowners for development, individual landowners would be responsible for obtaining project development permits that would contain BMPs to minimize construction emissions. Because mitigation measures would reduce effects, any increases in particulate matter and hydrocarbon-based contaminants from construction activities would be temporary in nature and unlikely to exceed air quality criteria.	Temporary effects to air quality from particulate matter and hydrocarbon emissions from construction activities would be likely to occur. However, construction emissions alone would not violate any air quality standard or contribute substantially to an existing air quality standard violation (i.e., PM_{10}). Thus, there would be no significant air quality impact from construction. Indirect effects from local vehicle traffic, commuter traffic, and OHV use would be minor.	Under Alternative A, large areas of soil would be exposed during construction than under the Preferred Alternative. While this would result in greater effects than under the Preferred Alternative due to the greater amount of acres cleared and developed over the 30-year permit term, mitigation measures would reduce the potential for particulate matter to be released into the air. Indirect effects from local vehicle traffic, commuter traffic, and OHV use would be minor. These effects would be slightly greater than under the Preferred Alternative due to a larger population in the area.

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Table ES-1 Summary of Effects for the Southeastern Lincoln County Habitat Conservation Plan Draft EIS (continued)

Impact Topic	No Action Alternative	Preferred Alternative	Alternative A
Agriculture Resources	Under the No Action Alternative, no activities would occur that would affect agricultural resources. The farm and ranchlands of Lincoln County would remain essentially unchanged.	Under the Preferred Alternative, up to 586 acres of existing private agricultural or grazing lands along the Meadow Valley Wash could be disturbed. Additionally, the conservation measures to be implemented as part of the proposed action (i.e., restoring riparian or Mojave scrub habitat through a habitat bank or conservation easement on private land) could have direct, negative effects on agricultural production within this region. However, these activities would not substantially reduce farm acreage in Lincoln County, nor interfere with the viability of farm and ranchlands in Lincoln County.	The additional development of up to 7,456 acres from Alamo to Hiko under this Alternative could occur on a portion of existing farms and ranchlands. However, because economic opportunities are limited in Lincoln County, it is unlikely that large-scale development would occur on private lands where farms and ranches occur. Therefore, it is unlikely that farm acreage and/or size would be affected as a result.
Transportation and Circulation	No effects to transportation and circulation would occur under the No Action Alternative. If private lands were sold to individual landowners for development, then new roads would have to be constructed by individual landowners. A lack of coordination could result in localized adverse effects on circulation within Lincoln County.	If additional development were to occur as a result of increased demand from economic growth in the Covered Area under the Preferred Alternative, then temporary and long term increases in traffic would be likely to occur along major roads within the Covered Area. However, any large developments would require development agreements with Lincoln County, which would address long term traffic management.	Under Alternative A, direct and indirect effects would be greater than those described for the Preferred Alternative, as additional development between Hiko and Alamo could increase localized traffic, including along stretches of U.S. Highway 93. However, this increase in development would require development agreements with Lincoln County, which would address long-term traffic management.
Noise	No effects to noise would occur under the No Action Alternative. If private lands were sold to individual landowners for development, short-term and long-term noise levels would increase because of construction activities and human residence in the area. These noise levels would likely be similar to, but of a smaller intensity, than noise effects described in more detail under the Preferred Alternative, as it would be likely that less development would occur due to a lack of infrastructure.	Development of private lands in southeastern Lincoln County would result in long-term increased noise levels in these areas equivalent to quiet residential areas. Short-term increases in noise levels would result from the use of heavy equipment in construction efforts on the private lands. No noise regulations are included in the Lincoln County Code for Lincoln County, Nevada. Workers employed for construction activities associated with the proposed development or maintenance activities would be exposed to increased noise levels during construction; however, the exposure would be short-term and temporary.	Direct effects of Alternative A would be expected to be similar to those of the Preferred Alternative, as the same types of activities would occur. However, the short-term potential for noise creation could be greater if construction activities would occur across a greater area. In addition, long-term noise levels would be higher from increased residents.
Land Use, Planning, and Zoning	No effects would occur to land use, planning and zoning because of this alternative.	Under the Preferred Alternative, development of the 3,461 acres of BLM disposal lands around Alamo would alter the existing land use within areas proposed for development. Land use changes would be notable as the rural, vacant lands would be modified to developed parcels characterized by industrial, commercial, and residential uses. However, these proposed land uses are keeping within local and Lincoln County plans and are consistent with development of land parcels.	Similar to the Preferred Alternative, direct and indirect effects to land use, planning, or zoning would result from implementation of this Alternative. Development of the additional disposal lands prescribed under this alternative would require alteration of Lincoln County zoning for those areas in consultation with BLM prior to commencement of activities.
Recreation Resources	No effects to recreation resources would occur under the No Action Alternative. If private lands were sold to individual landowners for development, future development of individual parcels may or may not add recreational parks and facilities to the area. If recreational parks and facilities were developed, this could result in direct beneficial effects on recreational resources, through adding recreational opportunities. If such facilities were not developed, adverse indirect effects of increased demand on outlying BLM lands could occur, although such facilities would be less than for the other alternatives, due to the expected lower level of development and residents.	New recreational resources would provide for the varied interests of the future residents of the LCLA lands and private lands around Alamo, resulting in long-term benefits. Off-site impacts to adjacent ACECs and Wilderness Areas could be expected to increase due to recreation use by the increased population from the development on these public lands and resources.	Under Alternative A, off-site impacts could be expected to increase due to recreation use by the increased population from the development on adjacent public lands and resources (i.e., Wilderness Areas and Wilderness Management Areas). This effect may be more pronounced compared to the effects expected from implementation of the Preferred Alternative due to a larger population in the area.
Public Services and Utilities	No effects to public services and utilities would occur under the No Action Alternative. If private lands were sold to individual landowners for development, this may result in the lack of adequate public services provided in the area.	Buildings and utilities would be constructed in compliance with all regulations and would not burden any existing public service or utility; therefore, no adverse effects would occur.	The public services and utilities that would occur under Alternate A would be constructed in compliance with all regulations and would not burden any existing public service or utility; therefore, no adverse effects would occur.
Socioeconomics	No effects to socioeconomics would occur under the No Action Alternative. If private lands were sold to individual landowners for development, the effects on population, socioeconomic conditions, and economic activity are unknown, as the size and timing of the development is unknown. It is unlikely though that the development would proceed as quickly and on as large a scale as the Preferred Alternative, so it is not expected that the region would experience as high a rate of growth in terms of population and economic activity as under the action alternatives.	Due to the distance of existing communities from the proposed community development within the Covered Area, no direct effects to communities and social groups would be expected from implementing the Preferred Alternative.	Due to the distance of existing communities from the proposed community development within the Covered Area, no direct effects to communities and social groups would be expected from implementing the Preferred Alternative.
Hazardous Materials	No effects to hazardous materials would occur under the No Action Alternative. If private lands were sold to individual landowners for development, then compliance with hazardous materials regulations would be required. As a result, no adverse effects from the use of hazardous materials would be expected.	Compliance with state and federal regulations would be required to control the release of hazardous materials, hazardous waste and regulated substance into WOUS. As a result, no adverse effects from the use of hazardous materials would be expected.	Compliance with state and federal regulations would be required to control the release of hazardous materials, hazardous waste and regulated substance into WOUS. As a result, no adverse effects from the use of hazardous materials would be expected.

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SECTION 1

Introduction

Section 1: Introduction

The Southeastern Lincoln County Habitat Conservation Plan (SLCHCP) has been developed as part of the application package for three incidental take permits (ITP or permit) under Section 10(a)(1)(B) of the Endangered Species Act (ESA). The applicants are Lincoln County (permittee), City of Caliente (permittee), and Union Pacific Railroad (permittee). The permits would authorize the take of desert tortoise (*Gopherus agassizii*) and southwestern willow flycatcher (*Empidonax traillii extimus*) (Covered Species) by each of the above permittees. Developers of residential, commercial, and industrial property would be covered under Lincoln County's permit upon the payment of a disturbance fee assessed by Lincoln County, and payable at the time they obtain a building or grading permit. Private landowners along the Meadow Valley Wash and Clover Creek that wish to participate in the SLCHCP would "opt in" by signing a participation agreement provided by Lincoln County. Private landowners that "opt in" would be covered under the permit issued to Lincoln County.

The permits would authorize the take of the Covered Species as a result of activities associated with urban development, infrastructure construction, road maintenance, railroad activities, and the conversion of an existing land use to another land use (e.g. previously undisturbed agricultural land to urban use or grazing land to irrigated and/or cultivated agricultural land). The proposed length of the permits is 30 years. The SLCHCP has been developed to demonstrate that the effects of the taking of listed species authorized by the permits will be minimized and mitigated to the maximum extent practicable, and that the incidental take of desert tortoise and southwestern willow flycatcher will not appreciably reduce the likelihood of the survival and recovery of the species in the wild.

The purpose of the SLCHCP is to achieve a balance between 1) long-term conservation and recovery of the diversity of natural habitats and native species of plants and animals present in the southeastern portion of the county; and 2) the orderly and beneficial use of land in order to promote the economy, health, and well-being of the future population of Lincoln County, Nevada. The USFWS is proposing to issue permits to the applicants for the unavoidable take of the Covered Species that may occur during the normal course of their activities. The purpose of preparing an Environmental Impact Statement (EIS) is to analyze the impacts that may occur to the human and natural environment as a result of issuing the permits and implementing the SLCHCP, and to describe the measures that will be implemented to minimize and mitigate unavoidable impacts identified during the analysis.

Under the National Environmental Policy Act (NEPA), any Federal action, including granting a Federal permit, approval or permitting of an action occurring on Federal lands, or an action involving Federal funding, must analyze the environmental effects occurring as a result of implementing the action. Issuance of a Section 10(a)(1)(B) permit under the ESA by the USFWS is considered a Federal action and requires compliance under NEPA. This final EIS (FEIS) is intended to serve as the NEPA compliance document for USFWS in the analysis of the effects of implementing the Proposed Action (Preferred Alternative) and two additional alternatives. The FEIS discloses the direct, indirect, and cumulative environmental impacts that would result from the Preferred Alternative and the other alternatives, and describes measures to minimize and mitigate unavoidable impacts. The FEIS also describes compliance with other applicable Federal laws and regulations, including Section 106 of the National Historic Preservation Act (NHPA), the ESA, and the Clean Water Act (CWA). Refer to the section "Related Federal Laws and Regulations" for further details on these laws and regulations.

Table 1-1 presents federally-listed and candidate species that are not proposed for coverage under the SLCHCP and permits, but occur within or adjacent to the Covered Area. Potential impacts to these species from the Proposed Action and alternatives are addressed in subsequent sections of the FEIS.

Table 1-1 Federally-listed and Candidate Species that May Occur Within or Adjacent to the Covered Area.

Common Name	Scientific Name	Level of Protection
Yellow-billed cuckoo	*Coccyzus americanus*	Candidate
White River springfish	*Crenichthys baileyi baileyi*	Endangered
Hiko White River springfish	*Crenichthys baileyi grandis*	Endangered
Pahranagat roundtail chub	*Gila robusta jordani*	Endangered
Virgin River chub	*Gila seminuda*	Endangered
Woundfin	*Plagopterus argentissimus*	Endangered
Yuma clapper rail	*Rallus longirostris yumanensis*	Endangered

1.1 BACKGROUND

1.1.1 Description of the Covered Area

The Covered Area includes 1,780,140 acres within the southeastern portion of Lincoln County, Nevada (Figure 1-1). The Covered Area includes the non-federal lands on which incidental take of the Covered Species may occur, as well as the surrounding federal lands administered by the BLM on which many of the Conservation Measures may be implemented. The non-federal lands on which incidental take is anticipated to occur include lands listed on page 1-5 of this document, as well as non-federal lands adjacent to Clover Creek, Meadow Valley Wash, and their tributaries.

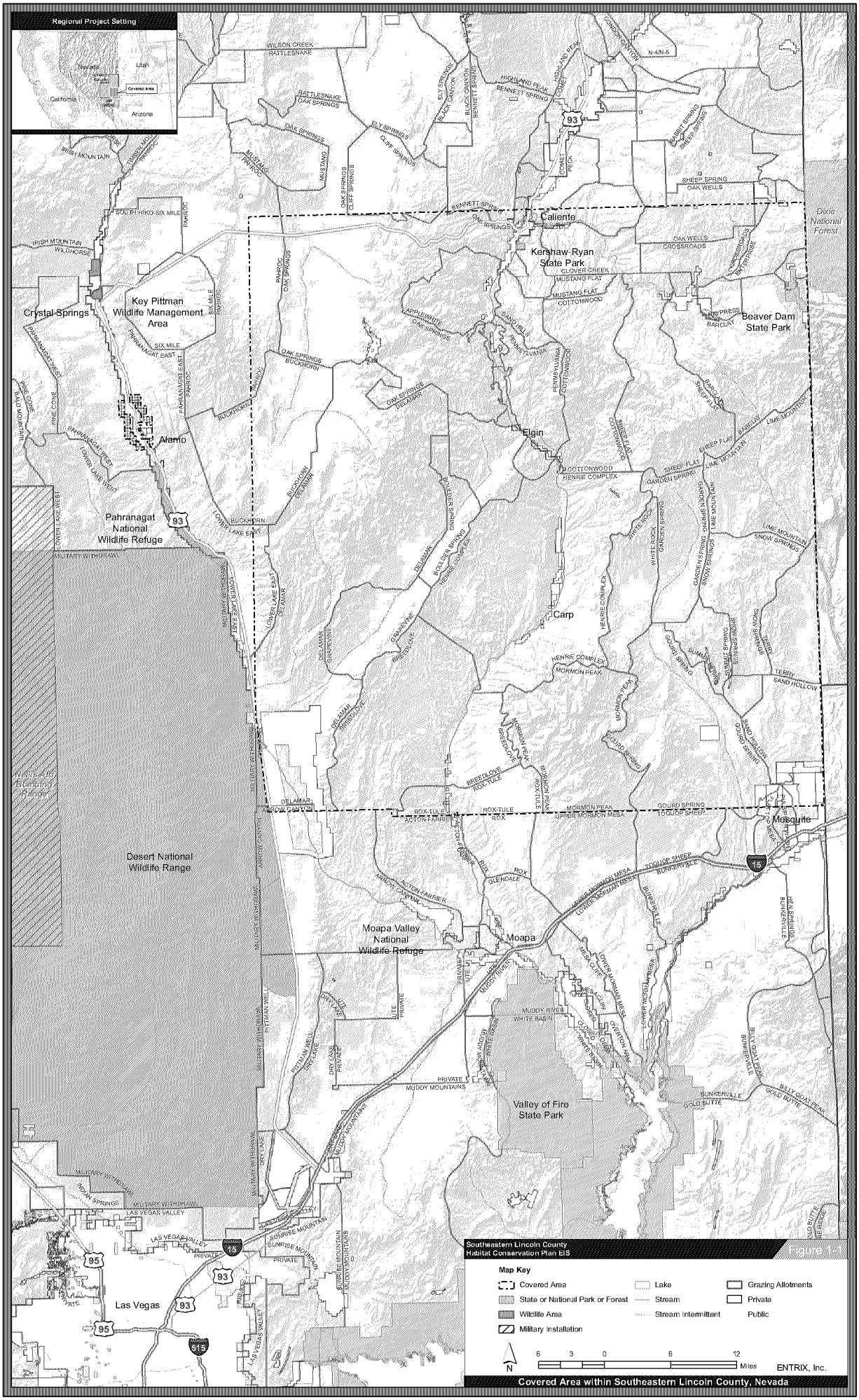
1.1.2 Context

Lincoln County is the third largest county in Nevada with a land area of 10,650 square miles or 6,816,000 acres (Lincoln County Master Plan 2006). The Federal government manages 98 percent of the total land within Lincoln County (Figure 1-1). According to the Lincoln County Assessors Office, approximately 148,000 acres are held in private ownership. The majority of public land in Lincoln County is managed by the BLM; however, the U.S. Forest Service [USFS] (Humboldt-Toiyabe National Forest) manages approximately 10,000 acres in the northwest portion of the County, and the USFWS (Desert National Wildlife Refuge Complex) manages approximately 780,000 acres in the southwest corner of the County.

Congress recently enacted two public laws (Lincoln County Land Act of 2000 [LCLA] and the Lincoln County Conservation, Recreation, and Development Act of 2004 [LCCRDA]) that directed the auction of public lands in order to provide for economic development in Lincoln County. Subsequently, the Board of Lincoln County Commissioners (BLCC) authorized the development of the SLCHCP to support an application for an incidental take permit for federally-listed species under Section 10 of the ESA, so that non-Federal lands are available to accommodate projected growth in the area without being vulnerable to potential violations associated with take of species protected under the ESA.

The population in adjacent Clark County was predicted to grow at a rate of 4.1 percent in 2004 with the growth rate falling to 1.6 percent by 2024. In the following years, growth is predicted to taper off as the Clark County economy matures and fewer new casino hotels are added than in the past (Center for Business and Economic Research at University of Nevada, Las Vegas 2006). Lincoln County anticipates that as land in Clark County is built-out, populations will spread into adjacent Lincoln County. This is highly probable for the LCLA lands adjacent to the City of Mesquite. During the past five years, Mesquite, which borders Lincoln County to the south, has grown by 3 to 14 percent annually. According to the Nevada State Demographer's Office, the 2006 population estimate for all of Lincoln County is 4,738—a 13.8% net change in population from April 1, 2000, to July 1, 2006 (source accessed on May 17, 2001: http://www.fedstats.gov/qf/states/32/32017.html).

As such, the BLCC approved Resolution 2000–2006 to initiate the development of a habitat conservation plan in April 2000. The resolution was approved for the Covered Area illustrated in Figure 1-1 in order to facilitate development and economic prosperity in southeastern Lincoln County while conserving rare and sensitive species of concern.



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Approximately 9,700 acres of critical habitat for the desert tortoise was designated on private land in Lincoln County, of which 215 acres occur within the Covered Area. However, there are no known plans for changing the current land use (agriculture/grazing lands) within these parcels under the SLCHCP. While no critical habitat for the southwestern willow flycatcher is designated in Lincoln County, suitable habitat exists and breeding is known to occur along the Meadow Valley Wash (Bio-West 2005a). Fifteen percent of the private land in southeastern Lincoln County supports suitable or potential habitat for the southwestern willow flycatcher.

Development activities in the LCLA lands and the Alamo Industrial Park and Community Expansion Area may potentially affect listed and candidate species not included in the SLCHCP (Table 1-1) that occur along the Virgin River and in the Pahranagat Valley. These species do not occupy habitat within the two development areas, but may be indirectly affected by activities within the development areas that result in alteration of habitat outside or downstream from these developments. The Virgin River flows through Clark County south of the LCLA lands, and development on the LCLA lands may alter drainages that flow from the development area to the river. The Pahranagat Creek occurs west of the Alamo Industrial Park and Community Expansion Area, and authorization of new water rights, or changes in existing water rights to support development in the Alamo area may potentially affect flows in the Pahranagat Creek and on the Pahranagat National Wildlife Refuge. This FEIS describes the likelihood of impacts occurring to these species from such activities in Section 5: Environmental Consequences and discusses other mechanisms for ensuring that the species are not adversely affected by implementation of the Preferred Alternative.

Lands within the Covered Area that have foreseeable future development activities with the potential to affect the Covered Species include:

- LCLA land
- Meadow Valley Industrial Park site
- Alamo Industrial Park site and Community Expansion area
- BLM lands identified for disposal within the Covered Area (includes the 640-acre Section 36 diposal parcel and lands in the vicinity of the town of Alamo)
- Lincoln County roads and rights-of-way
- Union Pacific Railroad (UPRR) property and rights-of-way
- City of Caliente property
- Conversion of previously undisturbed agricultural and grazing land to developable land
- Conversion of grazing land to irrigated and/or cultivated agricultural land

In April 2003, the BLM issued a Record of Decisions on the Final EIS for the Toquop Energy Project to include construction and operation of a 1,100-megawatt natural-gas-fired electric-power-generation plant and associated facilities in Lincoln County proposed by Toquop Energy, Inc. Since 2003, the price of natural gas has increased substantially and natural-gas prices are projected to remain unstable due to increasing demand coupled with higher exploration and development costs. This, together with the fact that newer technology has improved the efficiency and environmental performance of modern coal-fired plants, has caused Toquop Energy Company, LLC to reconsider its original proposal by using coal instead of natural gas. BLM has prepared an EIS that analyzed the effects of the construction, operation, and maintenance of the proposed coal-fired power plant on the desert tortoise and its habitat. This document defers the impacts analysis for the coal-fired power plant to the Draft EIS (BLM 2007). The construction, operation, and maintenance of a coal-fired power plant is not a Covered Activity in the SLCHCP.

1.1.3 Planning Process and Scoping

Lincoln County Commission Resolution 2000-06 outlines the need for the SLCHCP, the funding mechanism, and the process to develop the SLCHCP. A Technical Steering Committee (TSC) was established as directed in the resolution and convened for its first meeting in November 2000. Since the first meeting, over a dozen TSC meetings were held to define the framework of the SLCHCP. These meetings were open to the public and

conducted pursuant to the Nevada Open Meeting Law. The framework for the SLCHCP was developed in consultation with the USFWS, the Nevada Department of Wildlife (NDOW), BLM, the Nevada Division of Forestry (NDF), the Nevada Division of State Lands (NDSL), the Lincoln County Farm Bureau, the Lincoln County Public Land Commission, The Nature Conservancy, the Toiyabe Chapter of the Sierra Club, the Red Rock Chapter of the Audubon Society, and non-Federal land owners.

A Notice of Intent to prepare the DEIS was published in the Federal Register on July 5, 2001, and public workshops were held at the Alamo Annex on June 25, 2001, and at the Caliente City Hall on June 26, 2001. Notices for the workshops and TSC meetings were posted at public locations pursuant to the Nevada Open Meeting Law. The public workshops were advertised in the Lincoln County Record, the Desert Valley Times, and the Valley Times. Comments were accepted until September 4, 2001.

On July 5 and 6, 2006, public workshops were held in Caliente, Alamo and Mesquite, Nevada to receive additional input from the public and to update members of the public on the status of the SLCHCP. Public input from the workshops and the TSC meetings was integral to the planning process and development of the draft SLCHCP and DEIS. Throughout the development of the draft SLCHCP, written and oral public comments were received and addressed in the draft as appropriate. See Section 2.5 for further discussion of scoping comments.

1.2 ISSUES

A number of issues related to the issuance of an incidental take permit pursuant to Section 10 of ESA and related implementation of the SLCHCP were identified through member participation in the TSC meetings and from comments received at the public workshops and scoping meetings. These issues are listed below, followed by issues that were not analyzed in the FEIS and associated rationale for why there was no further analysis.

1.2.1 Issues Retained for Further Analysis

Based on input from the public, government agencies, and the TSC during scoping, several environmental issues were identified for further analysis:

- **Biological Resources.** Incidental take of the Covered Species would result from Covered Activities described in the proposed SLCHCP. The Covered Species, as well as other species not covered under the SLCHCP, are described in Section 4.2.4, and potential effects to the Covered Species and other species not covered under the SLCHCP are discussed in Section 5: Environmental Consequences.
- **Hydrology and Water Quality.** The Covered Activities could result in impacts on water quality and quantity (hydrology) from large-scale groundwater withdrawals, channel dredging, and watercourse re-alignments. Water resource impact assessments will address natural or depletable resource requirements and resource potential (43 FR 55994 section 1502.16).
- **Floodplains, Wetlands, and Waters of the United States.** The alternatives analyzed in this FEIS could impact floodplains, wetlands, and Waters of the United States (WOUS).
- **Cultural and Paleontological Resources.** Paleontological and cultural resources are known to occur on the LCLA lands as well as elsewhere in Lincoln County. Components of the alternatives analyzed in this document could impact these resources.
- **Soils and Geological Resources.** Impacts to soils and geological resources could occur as a result of the alternatives analyzed in this FEIS.
- **Ecologically Critical Areas.** Impacts to adjacent Areas of Critical Environmental Concern (ACECs) could occur as a result of the Covered Activities.
- **Visual Resources.** Effects to visual resources could be affected by the alternatives analyzed in this FEIS.
- **Air Quality.** Effects to air quality could be affected by the alternatives analyzed in this FEIS.

- **Transportation and Circulation.** Development activities included in the action alternatives could impact transportation and circulation.
- **Noise.** Changes in noise levels could occur under the alternatives analyzed in this FEIS.
- **Agricultural Resources.** Development activities included in the action alternatives could impact agriculture and ranching practices in Lincoln County.
- **Recreational Resources.** Components of the alternatives, such as development activities, could affect recreational resources in Lincoln County.
- **Socioeconomics, including Population and Housing.** The alternatives could have economic impacts on Lincoln County. Components of the alternatives, including residential development, could affect population and housing in and near Lincoln County, Nevada. Design of the built environment (section 1502.16) will be included in the analysis of socioeconomics, including population and housing.
- **Hazardous Materials.** As required by 43 FR 55994 section 1508.27, alternatives must be compared as to their effects on human health and safety.
- **Other issues.** The alternatives analyzed in this FEIS may also result in environmental impacts related to:
  - Type of growth (i.e., focus on planned growth, in fill),
  - Energy requirements and conservation potential (as required by 43 FR 55994 section 1502.16),
  - Ability of proposed conservation measures to maintain or enhance ecosystem functions,
  - Feasibility of proposed mitigation measures,
  - Long-term implications of mitigating impacts of take through increased funding and coordination for conservation measures primarily on existing lands, and
  - Cumulative impacts of Covered Activities on Covered Species.

These issues are addressed by the alternatives and the analyses of the environmental issues described above.

1.2.2 Issues Dismissed from Further Analysis

Wild and Scenic Rivers, or other Unique Natural Resources. The alternatives being considered would not affect any designated wild and scenic rivers or other unique natural resources, as referenced in the Wild and Scenic Rivers Act, 40 CFR 1508.27, or the 62 criteria for national natural landmarks. No wild and scenic rivers occur within the Covered Area considered in this FEIS.

Indian Trust Resources. Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by Department of Interior agencies be explicitly addressed in environmental documents. The Federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of Federal law with respect to Native American and Alaska Native tribes. No Indian trust resources occur within the Covered Area considered in this FEIS (BLM 2005).

Prime and Unique Farmland. Prime and unique farmland is a required element for analysis in environmental impact statements (43 FR 55994 sect. 1508.27). No prime and unique farmland would be removed from agricultural production under the action alternatives of this FEIS. No prime and unique farmland occurs on lands proposed for development under the Preferred Alternative. Under the action alternatives, conservation measures for agricultural resources would be proposed. These would not alter the functions of prime and unique farmland. Therefore, no prime and unique farmland would be altered or removed from agricultural production as a result of the Preferred Alternative. For these reasons, prime and unique farmland was not retained for further analysis.

Environmental Justice. On February 11, 1994, President William Clinton issued Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. This Executive Order was designed to focus the attention of Federal agencies on the human health and environmental conditions in minority communities and low-income communities. In an accompanying

Presidential memorandum, the President emphasized that existing laws, including NEPA, provide opportunities for Federal agencies to address environmental hazards in minority and low-income communities. In April of 1995, the Environmental Protection Agency (EPA) released the document titled Environmental Justice Strategy, Executive Order 12898. The document established EPA-wide goals and defined the approaches by which the EPA would ensure that disproportionately high and adverse human health or environmental effects on minority communities and low-income communities are identified and addressed.

According to the U.S. Census Bureau 2004 statistics, the American Indian and Hispanic populations constitute approximately 1.9 and 6.2 percent, respectively, of the total population of Lincoln County. Black, Asian, and Pacific Islanders comprise 2.0, 0.4, and 0.0 percent, respectively, of Lincoln County's population (U.S. Census Bureau 2006a). For Nevada as a whole, American Indian and Hispanic persons made up 1.4 and 22.8 percent, respectively, of the population in 2004. Black, Asian, and Pacific Islanders constituted 7.5, 5.5, and 0.5 percent of the population, respectively (U.S. Census Bureau 2006a).

In accordance with the EPA's Environmental Justice Guidelines (EPA 1998), these minority populations should be identified when either:

- The minority population of the affected area exceeds 50 percent; or
- The minority population of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

No population of American Indians, Hispanics, Blacks, Asians, or Pacific Islanders exceeds 50 percent of the population for Lincoln County. Although the American Indian population constitutes a higher percentage of the total population within Lincoln County than the minority population in the State of Nevada, the areas considered for development within the Covered Area are located on lands previously administered by the BLM, which are undeveloped and unpopulated.

The median household income in Lincoln County and for the State of Nevada in 2004 was $36,032 and $45,249, respectively (U.S. Census Bureau 2006a). According to the Census Bureau's Small Area Income and Poverty Estimates for Nevada Counties in 2003, the percentage of individuals below the poverty level in Lincoln County was 13.5 percent and 11 percent for the entire State of Nevada (U.S. Census Bureau 2006a). Median incomes were lower in Lincoln County than for the state as a whole in 2004 and the poverty rate was slightly higher in 2003. However, no low income populations are present where development aspects of the proposed project would occur.

Effects of the proposed project, such as increases in traffic, would be mitigated and would affect all residents of Alamo and Caliente equally. Other components of the alternatives, such as species conservation measures, would not result in adverse environmental or socioeconomic effects. Therefore, there would be no impacts from the Preferred Alternative relative to Environmental Justice concerns and no further analysis of this critical element is included in this document.

1.3 RELATED LEGISLATION, PROJECTS, AND PLANNING EFFORTS

Previously enacted legislative actions, and ongoing projects and planning efforts at the Federal, state, and local levels on other issues may affect or guide decisions for how to implement the components of the alternatives described in this document. Efforts were taken to maintain consistency between the alternatives of this FEIS and other ongoing planning and resource management efforts. Plans and projects that were considered in the preparation of this FEIS are summarized below.

1.3.1 Related Planning Efforts for Lands Included in Covered Area

1.3.1.1 Lincoln County Land Act (2000)

Congress passed the LCLA on October 13, 2000 in order to allow some of the rapid growth in neighboring Mesquite (Clark County) to benefit Lincoln County and help alleviate the disparity between Federal and non-Federal land. Lincoln County is predominantly federally-administered and under the LCLA, approximately 13,500 acres of federally-administered lands would be available for disposal by the BLM by October 1, 2005.

Phase I of the LCLA instructs the Secretary of the Interior to dispose of 4,817 acres no later than one year after implementation, and the remaining 8,683 acres no later than five years after implementation of the LCLA. During Phase I, BLM has elected to include the sale of 6,478 acres of federally-administered land for non-Federal ownership by competitive sale within one year. The lands in question are located in southeastern Lincoln County, just north of Mesquite. Phase I will be broken into three parcels of 4,357 acres, 2,009 acres, and 112 acres, respectively. These parcels may or may not remain the same size as sales occur. The lands are currently undeveloped.

The LCLA was amended by the LCCRDA, further described below. The LCCRDA directed the BLM to sell the LCLA lands within 75 days after the date of enactment of the LCCRDA (November 30, 2004; Public Law No: 108-424). The lands sold on February 9, 2005, for roughly $47 million dollars. The revenue generated from the sale of the lands may be used for the following:

- 5 percent for the State of Nevada for use in the general education program of the State;
- 10 percent for Lincoln County to use as determined through normal County budgeting procedures;
- The remainder to be deposited in a special account available as follows:
  - Inventory, evaluation, protection, and management of unique archaeological resources;
  - Development of a habitat conservation plan in Lincoln County;
  - Reimbursement of costs incurred by the BLM in preparing sales under the LCCRDA;
  - Processing public land use authorizations; and
  - Acquisition of environmentally sensitive land.

Under the LCLA, the Secretary of Interior must cooperate with Lincoln County and the City of Mesquite and must adhere to Federal Land Policy Management Act (FLPMA) and other applicable laws in the disposal of these lands by a competitive bidding process for fair market value at least. Lincoln County's Public Land Policy Plan of 1996 which arose under FLPMA serves as the County's policy on a variety of public land management matters.

Development of the disposed lands will be conducted in accordance with a development agreement (DA) between the developer(s) and Lincoln County. In addition, the developer(s) are required to prepare and obtain County approval of a land use map identifying a general concept for master planning and development of the property.

All purchasers were required to indicate their intent to comply with Lincoln County zoning ordinances and any master plan for the area developed and approved by Lincoln County.

1.3.1.1.1 USFWS Biological Opinion for the LCLA Lands

The USFWS issued its BO regarding disposal of LCLA lands on September 7, 2001. It addresses the transfer of the approximately 13,500 acres of LCLA lands to non-Federal ownership, and the effects the proposed transfer may have on the desert tortoise, woundfin, Virgin River chub, southwestern willow flycatcher, and the Yuma clapper rail. The BO describes direct and indirect effects that the land transfer and subsequent development may have on the species, identifies reasonable and prudent measures to minimize take of the species, and terms and conditions for implementing the sale of the lands.

The BO includes conservation measures the BLM intends to follow to minimize effects from the sale of the lands in the face of urban development. The most significant conservation measures pertinent to the desert tortoise described in the BO are listed below:

- Participate in the development of the SLCHCP and serve as a cooperator to Lincoln County following issuance of a Section 10 permit.
- Participate in developing and implementing the Mormon Mesa Conservation Management Plan (completed by the USFWS and The Nature Conservancy in 2002) and participate in the development of a conservation management plan for the Beaver Dam Slope ACEC.

- Provide annual compliance documentation to the USFWS.

1.3.1.2 Lincoln County Conservation, Recreation, and Development Act (2004)

The Lincoln County Conservation, Recreation, and Development Act (LCCRDA) authorizes the sale of Federal land in Lincoln County. The bill further designates 770,000 acres of Federal land in Nevada as wilderness. The Act also sets forth a specified corridor for utilities in Lincoln and Clark counties and grants rights-of-way to the Southern Nevada Water Authority (SNWA) and Lincoln County Water District for roads, wells, well fields, pipes, pipelines, pump stations, storage facilities, and other facilities and systems necessary for the construction and operation of a water conveyance system.

Other provisions in the LCCRDA are as follows:

TITLE I: FEDERAL LAND SALES

The LCCRDA directs BLM to conduct the sale of the 13,520 acres of LCLA lands within 75 days of enactment and authorizes the sale of up to 90,000 acres of Federal land in areas adjacent to existing private property in Lincoln County, as the land becomes available for disposal.

Proceeds of the LCCRDA land auctions are to be distributed as follows:

- 5 percent to the State of Nevada Education Fund.
- 10 percent to Lincoln County for fire protection, law enforcement, public safety, housing, planning and social services, and transportation.
- 85 percent to a special account available for use by the Secretary of Interior for:
  - Reimbursement of costs incurred by the BLM for preparing for the sale of land,
  - Inventory, evaluation, protection, and management of archeological resources,
  - Development and implementation of a multi-species habitat conservation plan for Lincoln County,
  - Processing public land use authorizations and rights-of-ways related to the LCCRDA,
  - Processing the Silver State Off-Highway Vehicle Trail and implementing the required management plan, and
  - Processing wilderness designation and enforcement.

TITLE II: WILDERNESS ISSUES

The LCCRDA designates wilderness areas and releases areas from wilderness study consideration. Some of these wilderness areas are within the Covered Area of the SLCHCP. The land use analysis in this document regarding wilderness has adjusted to accommodate this recent change in land status.

TITLE III: UTILITY CORRIDORS

The LCCRDA establishes utility corridors for the SNWA and the Lincoln County Water District. The lands for the utility corridors are not a part of the SLCHCP because they are federally managed and will require Section 7 consultation.

TITLE IV: SILVER STATE OFF-HIGHWAY VEHICLE TRAIL

The LCCRDA establishes the Silver State Off-Highway Vehicle Trail and calls for the creation of a Silver State Trail Management Plan in central Lincoln County. The land for the trail is not within desert tortoise or southwestern willow flycatcher habitat in the Covered Area and is not a part of the SLCHCP.

TITLE V: OPEN SPACE PARKS

The LCCRDA provides for conveyance of BLM land to the State and County for use as parks and open space. Nevada State Lands are not a part of the SLCHCP. Lincoln County lands conveyed by the LCCRDA are not within desert tortoise or southwestern willow flycatcher habitat.

TITLE VI: JURISDICTION TRANSFERS

This land is adjacent to or within the Coyote Springs Valley and is not within the Covered Area and does not affect the SLCHCP.

The LCCRDA also modified the process for dispersal of the proceeds from the sale of public land in Clark County, thus allowing Lincoln County to access the Southern Nevada Public Land Management Act of 1988 (SNPLMA) funds with the concurrence of the BLM and the USFWS.

1.3.1.3 Meadow Valley Industrial Park Land Disposal Environmental Assessment

The Economic Development Administration (EDA) developed an environmental assessment (EA) for disposing of land for the Meadow Valley Industrial Park. ESA Section 7 consultation was completed for this land sale and the land has been sold to the City of Caliente.

1.3.1.4 Alamo Industrial Park Land Disposal and Community Expansion Area Environmental Assessment (Alamo Land Sale EA, BLM 2007)

The Ely Field Office of BLM completed an EA for disposing of the land for Alamo Industrial Park and Community Expansion Area and Section 7 consultation was completed.

1.3.1.5 BLM's 2007 Draft Environmental Impact Statement for the Toquop Energy Project

As previously mentioned in Section 1.1.2 herein, the BLM issued a Record of Decision on the Final EIS for the Toquop Energy Project in April 2003 to include construction and operation of a 1,100-megawatt natural-gas-fired electric-power-generation plant and associated facilities on a 640-acre parcel identified for disposal by BLM ("Section 36 disposal parcel") in Lincoln County. Since 2003, the price of natural gas has increased substantially and natural-gas prices are projected to remain unstable due to increasing demand coupled with higher exploration and development costs. This, together with the fact that newer technology has improved the efficiency and environmental performance of modern coal-fired plants, has caused Toquop Energy Company, LLC to reconsider its original proposal by using coal instead of natural gas. In response to the proposed coal-fired power plant, BLM has prepared a Draft EIS that analyzes the effects of the construction, operation, and maintenance of the proposed project on the desert tortoise and its habitat and identifies specific conservation measures.

1.3.1.6 LCLA Groundwater and Utility Rights-of-Way Development Project

An EIS is currently being developed to assess the potential effects associated with granting a right-of-way for construction, operation, and maintenance of groundwater wells, pipelines, electric lines, natural gas pipelines, access roads, and terminal water storage in Lincoln County. Public scoping meetings were held in April 2006.

The Lincoln County Water District (LCWD) submitted a right-of-way application to the BLM for construction and operation of a groundwater development project. The right-of-way would authorize LCWD to construct infrastructure required to pump and convey groundwater resources in the Tule Desert and Clover Valley to help meet future municipal water needs in newly urbanizing areas; specifically the LCLA development area, north of Mesquite. The proposed project consists of a 47-mile main transmission pipeline and 54 miles of collection/lateral pipelines, up to 30 production wells, water storage tanks, booster stations, access roads, 138kV, 22.8kV, and 4.16kV transmission lines, a power substation, a natural gas pipeline, underground telephone lines and a telemetry system utilizing a fiber optic line.

Associated ancillary facilities would include overhead distribution power lines, buried fiber optic lines for telemetry, telephone lines, natural gas lines, access roads, and temporary storage areas. Additionally, a wastewater return pipeline would be constructed to enable use of reclaimed water produced within the LCLA development area by the Toquop Energy power plant. Construction would begin upon acquisition of necessary permits, approvals, and grants.

1.3.1.7 Southern Nevada Public Land Management Act

The SNPLMA became law in October of 1998. It allows the BLM to sell public land within a specific boundary around Las Vegas, Nevada. The revenue derived from land sales is split between the State of Nevada General Education Fund (5 percent), SNWA (10 percent), and a special account available to the Secretary of the Interior for:

- Acquiring environmentally sensitive land in the State of Nevada.
- Implementing capital improvements at the Lake Mead National Recreation Area, the Desert National Wildlife Refuge, the Red Rock Canyon National Conservation Area, the Great Basin National Park, and other areas administered by the BLM and the Forest Service in Clark, Lincoln, and White Pine Counties, and the Spring Mountains National Recreation Area.
- Development and implementation of a multi-species habitat conservation plan in Clark County.
- Funding the development of parks, trails, and natural areas in Clark, Lincoln, and White Pine counties and Washoe County, Nevada, pursuant to a cooperative agreement with a unit of local government.
- Implementing Conservation Initiatives on Federal land in Clark, Lincoln, and White Pine Counties, Nevada, administered by the Department of the Interior or the Department of Agriculture.

Other provisions in the SNPLMA direct certain land sale and acquisition procedures, direct the BLM to convey title to land in the McCarran Airport noise zone to Clark County, and provide for the sale of land for affordable housing.

In 2004, LCCRDA amended SNPLMA to allow funding from the special account to be expended for projects on federal and non-federal lands in Lincoln County. The availability of funding will provide additional opportunities to design and implement measures to complement the conservation actions discussed in Section 6: Conservation Methods of the SLCHCP.

1.3.2 Other Related Planning Efforts

1.3.2.1 Desert Tortoise (Mojave Population) Recovery Plan (USFWS 1994)

The Desert Tortoise (Mojave Population) Recovery Plan (USFWS 1994) delineates reasonable actions believed to be required to recover and/or protect the desert tortoise. In 1998, the BLM Las Vegas Field Office Resource Management Plan (RMP) was approved, incorporating management recommendations set forth in the Desert Tortoise Recovery Plan. The RMP established four ACECs, affording protection to designated critical tortoise habitat within the Nevada Recovery Units. Criteria for future downlisting, recovery units, and proposed Desert Wildlife Management Areas (DWMAs) were also identified. A review of the Recovery Plan is in progress, and a revised version is expected to be available by early 2008.

1.3.2.2 Designation of Critical Habitat for the Mojave Population of Desert Tortoise

On February 8, 1994, the USFWS designated approximately 6.4 million acres of critical habitat for the Mojave population of the desert tortoise, which became effective on March 10, 1994, (59 FR 5820). The proposed actions analyzed in this FEIS would occur within the Northeastern Mojave Desert Tortoise Recovery Unit, which encompasses approximately 1.8 million acres of designated desert tortoise critical habitat.

1.3.2.3 Southwestern Willow Flycatcher Recovery Plan

This document provides information on the species life history, distribution, and known threats, and identifies future steps towards recovering the species' population. The plan describes criteria that must be met to 1) downlist the species to threatened status, and 2) remove the species from the list of threatened and endangered species. The plan identified six recovery units, which were defined based on large watershed and hydrologic units. Flycatcher habitat in the Covered Area occurs within the Lower Colorado River Recovery Unit. The overall recovery objective for the flycatcher is to attain a population level and an amount and distribution of habitat sufficient to provide for the long-term persistence of metapopulations, even in the face of local losses (USFWS 2002).

1.3.2.4 BLM Ely District Resource Management Plan and EIS

The Ely District of the BLM has recently updated their RMP. The Final Resource Management Plan / Environmental Impact Statement for the Ely District provides direction and guidance for the management of approximately 11 million acres of BLM administered land in Lincoln, Nye, and White Pine counties (BLM 2008).

1.3.2.5 Final Meadow Valley/Clover Creek Watershed Management Plan (Phase 1) (Meadow Valley/Clover Creek Technical review Team 2000)

The plan addresses impacts and proposed solutions to the periodic high water and sediment flows to the City of Caliente, Nevada and the Meadow Valley Wash. Goals of the plan include reducing the impact of a high water table on the City of Caliente, assuring no net loss of long term potential or suitable habitat for the southwestern willow flycatcher, reducing impacts from flooding to main transportation routes along Meadow Valley Wash and Clover Creek, reducing sediment transport from tributary canyons to Clover Creek, improving or maintaining riparian habitat on public lands to proper functioning condition, maintaining minimum base flow in Clover Creek to support sport and sensitive fish species, and seeking to reclassify the Meadow Valley Wash as a Category I Watershed on the Clean Water Act 303D list. This plan is currently under revision.

1.3.2.6 Site Conservation Plan for Mormon Mesa Desert Wildlife Management Area (The Nature Conservancy 2002)

This site conservation plan uses The Nature Conservancy's site conservation planning framework which involves assessing focal conservation target systems, stressors to these systems, and sources of those stresses. This framework results in the development of conservation strategies and measures of conservation success. Invasive species, development of habitat, and increased use of off-highway vehicles were identified as the main threats. Management recommendations focus on road management and enforcement, rights-of-way management, road maintenance management, public outreach, mineral and material entry withdrawals, organized OHV regulation, and animal and plant collection.

1.4 REGULATORY FRAMEWORK

1.4.1 National Environmental Policy Act

The issuance of a Section 10 permit by USFWS is considered a Federal action requiring compliance with the NEPA. This FEIS was prepared to meet the requirements of NEPA (42 United States Code [USC] 4321-4347), the basic charter of the U.S. for protection of the environment. The purpose of NEPA is two-fold: to ensure that Federal agencies examine the environmental impacts of their actions (in this case, whether to issue a Section 10 permit) and to utilize public participation to inform agency decision-making. NEPA serves as an analytical tool on direct, indirect, and cumulative impacts of the proposed project and alternatives to help the USFWS decide whether to issue a Section 10 permit. The NEPA process must be completed by the USFWS for the SLCHCP as part of the Section 10 permit application process.

1.4.2 Endangered Species Act of 1973, as Amended

The ESA (16 U.S.C. 1531 et seq.) was passed by Congress in 1973 and amended multiple times between 1976 and 2004. The stated purpose of the ESA is "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and to act on specified relevant treaties and conventions"((16 U.S.C. 1531 (b)).

USFWS, acting on behalf of the Secretary of Interior, oversees administration of the ESA. With several exceptions, Section 9 of the ESA (16 U.S.C. 1538(a)(1)(B)) prohibits the take of any endangered species and defines take as follows: "[t]he term 'take' means to harass, harm, pursue, hunt, shoot, kill, trap, capture, collect, or to attempt to engage in any such conduct" (16 U.S.C. 1532(19)). USFWS has further defined "harm" to mean "an act which actually kills or injures wildlife. Such acts may include significant habitat

modification or degradation, where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering" (50 CFR 17.3). The term "harm" is defined to include "significant habitat modification or degradation where it actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding or sheltering" (64 FR 215).

1.4.2.1 Section 10 and Habitat Conservation Plans

Amendments to Section 10 of the ESA in 1982 allowed non-Federal parties that engage in otherwise lawful activities that are likely to result in the "take" of federally-listed species to obtain incidental take permits under Section 10(a)(1)(B) of the ESA. This would be necessary if their actions are not otherwise covered by an incidental take statement under Section 7 of the ESA. Under Section 10(a)(2)(A) of the ESA, applicants for a Section 10 permit are required to develop and submit a habitat conservation plan (HCP). HCPs are developed by project applicants and/or state and local government entities with advice and guidance from USFWS. The HCP defines the activities to be addressed, characterizes the extent to which activities may affect federally-listed species and their habitat, and then specifies measures to minimize and mitigate for impacts to the federally-listed species.

In 1982, Congress amended the ESA to allow for take of federally-listed species "if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity" (16 U.S.C. 1539(a)(1)(B)). In approving the 1982 amendments to the ESA, created under Section 10, Congress also expressed that HCPs be long-term, multi-species plans that cover not only federally-listed species, but also unlisted species, as long as those species are treated as if they were federally-listed (H.R. Rep. No. 835, 97th Cong., 2d Sess. 29 (1982)). Congress also recognized that HCPs should provide non-Federal property owners seeking Section 10 permits under Section 10, economic and regulatory certainty regarding the overall cost of species mitigation over the life of the permit, but that HCPs should also make provisions for circumstances and information that could change over time and that might require revisions to an HCP (H.R. Rep. No. 835, 97th Cong., 2d Sess. 29 (1982)). This regulatory certainty has often been referred to as 'no surprises'.

An HCP submitted in support of a Section 10 permit application must include the following information:

- Impacts likely to result from the proposed taking of the species for which the permit coverage is requested;
- Measures the applicant will undertake to monitor, minimize, and mitigate such impacts, the funding that will be made available to undertake such measures, and the procedures to deal with unforeseen circumstances;
- Alternative actions the applicant considered that would not result in take, and the reasons why such alternatives are not being utilized; and
- Additional measures USFWS may require necessary or appropriate for purposes of the plan.

On June 1, 2000, the USFWS and National Marine Fisheries Service (NMFS) finalized what is known as the "Five Point Policy," which provides clarifying guidance to these agencies on conducting the incidental take permit program and to applicants who are pursuing an application for an incidental take permit under Section 10(a)(1)(B) of the ESA. The purpose of the policy is to further enhance the effectiveness of the HCP process in general by emphasizing five concepts:

- HCPs will clearly and consistently define the expected outcome, i.e., biological goals;
- Adaptive management will be used to address uncertainty in the conservation of a species covered by an HCP;
- A monitoring program that provides the information necessary to assess compliance and project impacts, and verifies progress toward the biological goals and objectives must be incorporated into all HCPs;
- Certain factors must be considered when determining incidental take permit duration; and
- The public must be given adequate time to review and comment on HCPs.

In summary, an HCP is a plan authorized under Section 10 of the ESA (16 U.S.C. 1539) to conserve federally-listed species and the habitat they depend on, as well as unlisted species also covered by the plan. Section 10 authorizes a non-Federal applicant to negotiate a conservation plan with USFWS to minimize and mitigate any

impact to threatened and endangered species, while conducting otherwise lawful activities for the general welfare of the public. Section 10 authorizes incidental take of individuals of species' populations covered by a Section 10 permit, including those caused by disturbance of the habitat of such species, provided that a Section 10 permit has been issued. Through recent rulings and guidance, the Services have stated that an HCP is intended not only to provide regulatory certainty to applicants, but also to include provisions that will work in the manner intended and meet the conservation goals of the plan through incorporation of clear goals, monitoring, and adaptive management strategies.

The primary documentation and processing requirements for HCPs are as follows:

> *"(1) an HCP; (2) an application form and fee (unless exempt from payment of fees); (3) an Implementing Agreement (optional, depending on Regional Director discretion); (4) the NEPA analysis, which may be a Categorical Exclusion, Environmental Assessment, or EIS; (5) publication in the Federal Register of a Notice of Receipt of a Permit Application and Notice(s) of Availability of the associated documents; (6) Solicitor's Office review of the application package; (7) formal Section 7 consultation; and (8) a Set of Findings, which evaluates a Section 10 permit application in the context of permit issuance criteria found at Section 10(a)(2)(B) of the ESA and 50 CFR Part 17."*

1.4.2.2 Section 7 Consultation

As noted above, Section 7 consultation on issuance of a Section 10 permit is required. The Section 7 consultation process determines whether the Proposed Action (issuance of the incidental take permit(s) and implementation of the HCP) is likely to jeopardize the continued existence of all affected listed species or is likely to destroy or adversely modify designated critical habitat. The Section 7 consultation on the issuance of a Section 10 permit considers both the direct and indirect effects of the Proposed Action on listed species and critical habitat.

Certain Covered Activities may require additional Federal authorization if a Federal nexus exists, such as issuance of a permit under Section 404 of the CWA by the U.S. Army Corps of Engineers for actions that may affect WOUS or issuance of rights-of-way from the BLM. Issuance of these permits, as well as any other Federal action or authorization that may be required to make a Covered Activity an otherwise legal action, will be subject to the requirements of Section 7(a)(2) of the ESA, and take of the tortoise or the flycatcher resulting from Covered Activities requiring such additional Section 7 consultation would not be valid under the Section 10 permit issued to the applicants for the SLCHCP until that subsequent consultation is completed. However, the Section 7 consultation process for Covered Activities with another Federal nexus will be streamlined because most, if not all, of the Section 7(a)(2) analysis can be incorporated by reference from the BO addressing the Service's issuance of the SLCHCP ESA Section 10 permits. It should be noted, however, that the minimization and mitigation measures provided in the SLCHCP may not completely satisfy the requirements for authorizations under other Federal laws (e.g. the CWA), and additional measures may be required by the authorizing Federal agency that fall outside the scope of the HCP.

1.4.3 Clean Water Act

The principal law governing pollution of the nation's surface waters is the Federal Water Pollution Control Act. Originally enacted in 1948, it was totally revised by amendments in 1972 that gave the CWA its current shape. The 1972 legislation spelled out ambitious programs for water quality improvement that have since been expanded and are still being implemented by industries and municipalities. As amended in 1977, this law became commonly known as the Clean Water Act. The CWA established the basic structure for regulating discharges of pollutants into WOUS. It gave EPA the authority to implement pollution control programs such as setting wastewater standards for industry. The CWA also continued requirements to set water quality standards for all contaminants in surface waters. The CWA made it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions. It also funded the construction of sewage treatment plants under the construction grants program and recognized the need for planning to address the critical problems posed by nonpoint source pollution (EPA 2007).

1.4.3.1 Section 404

The CWA established the basic structure for regulating discharges of pollutants into the WOUS. Section 404 of the CWA is the principal Federal program that regulates activities that affect the integrity of the nation's wetlands. Section 404 prohibits the discharge of dredged or fill material into jurisdictional WOUS, unless permitted by U.S. Army Corps of Engineers (USACE) or if the discharge is exempted from regulation.

Federal jurisdictional authority over WOUS is derived from Section 404 of the CWA, 1972, as amended in 1979 ("waters of the United States" is defined in 33 CFR Part 328). The goal of the CWA is to restore and maintain the chemical, physical and biological integrity of the Nation's waters. These waters include navigable waters and other waters as defined in 33 CFR Part 328 of the United States and are the waters where permits are required for the discharge of dredged or fill material pursuant to Section 404 of the CWA. Under Section 404 of the CWA, the USACE was established as the Federal agency responsible for permitting, with oversight by the EPA. The USFWS serves in an advisory role to the USACE with respect to potential wildlife or threatened and endangered species issues as authorized in the Fish and Wildlife Coordination Act 1934, as amended.

The Section 404(b)(1) Guidelines were developed by the Administrator of the EPA in conjunction with the Secretary of the Army acting through the Chief of Engineers under Section 404(b)(1) of the CWA (33 U.S.C. 1344), which provide specifications for disposal sites for discharges of dredged or fill material into WOUS. Sites may be specified through the USACE's regulatory program under sections 404(a) and (e) of the Act (33 CFR Parts 320, 323 and 325).

In 2006, the Supreme Court re- addressed the jurisdictional scope of Section 404 of the CWA, specifically the term "the waters of the U.S.," in Rapanos v. U.S. and in Carabell v. U.S. (hereafter referred to as Rapanos). The Justices issued five opinions with no single opinion commanding a majority of the Court. A plurality of the Court vacated the original Court of Appeals judgments and remanded both cases to the lower courts for re-evaluation. The decision provides two new analytical standards for determining whether water bodies that are not traditional navigable waters (TNWs), including wetlands adjacent to those non-TNWs, are subject to CWA jurisdiction as follows: 1) if the water body is relatively permanent, or if the water body is a wetland that directly abuts (e.g. the wetland is not separated from the tributary by uplands, a berm, dike, or similar feature) a relatively permanent water body (RPW), or 2) if a water body, in combination with all wetlands adjacent to that water body, has a significant nexus with TNWs. CWA jurisdiction over TNWs and their adjacent wetlands was not in question in this case, and, therefore, was not affected by the Rapanos decision. In addition, at least five of the Justices in Rapanos agreed that CWA jurisdiction exists over all TNWs and over all wetlands adjacent to TNWs.

As a consequence of the U.S. Supreme Court decision in Rapanos, the EPA and the USACE, in coordination with the Office of Management and Budget (OMB) and the President's Council on Environmental Quality (CEQ), developed the Memorandum Regarding CWA Jurisdiction Following Rapanos v. United States. This guidance requires the agencies to assert jurisdiction over the following categories of water bodies: TNWs; all wetlands adjacent to TNWs; non-navigable tributaries of TNWs that are relatively permanent (i.e., tributaries that typically flow year-round or have continuous flow at least seasonally); and wetlands that directly abut such tributaries.

In addition, the agencies will assert jurisdiction over every water body that is not a RPW if that water body is determined (on the basis of a fact-specific analysis) to have a significant nexus with a TNW. The classes of water body that are subject to CWA jurisdiction only if such a significant nexus is demonstrated are: non-navigable tributaries that do not typically flow year-round or have continuous flow at least seasonally; wetlands adjacent to such tributaries; and wetlands adjacent to but that do not directly abut a relatively permanent, non-navigable tributary. A significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, and/or biological, integrity of a TNW. Principal considerations when evaluating significant nexus include the volume, duration, and frequency of the flow of water in the tributary and the proximity of the tributary to a TNW, plus the hydrologic, ecologic, and other functions performed by the tributary and all of its adjacent wetlands.

1.4.3.2 Section 401

As indicated above, prior to the USACE issuing permit authorization (under Section 404 of the CWA) for the unavoidable placement of project-related fill material into WOUS (desert dry wash habitat) the USACE is required under Section 7 of the ESA to consult with the USFWS. In addition, the USACE must receive evidence of state 401 water quality certification from the Nevada Division of Environmental Protection (NDEP) and Section 106 concurrence from the State Historic Preservation Officer prior to permit authorization.

1.4.4 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 701-711) was enacted in 1918 between the United States and Great Britain (representing Canada as well), and Mexico in 1936, Japan in 1972 and the area previously known as the Union of Soviet Socialist Republics in 1976. The definition of migratory birds includes virtually all birds found in the United States with the exception of the domestic pigeon, the European starling, the house sparrow and various species of upland game birds. The MBTA established provisions regulating take, possession, transport and import of migratory birds, including nests and eggs. The MBTA prohibits the take of migratory birds (i.e., southwestern willow flycatcher), and does not include provisions for incidental take. To relieve the permittees from liability under the MBTA for Covered Species, the permits may also serve as a "Special Purpose Permit" authorized under MBTA regulations for the take of migratory birds. Any species to be covered by this type of "Special Purpose Permit" must be listed under the ESA, and the incidental take of such species must be authorized, subject to applicable terms and conditions, under Section 10(a)(1)(B) of the ESA.

The MBTA prohibits taking of migratory birds, their parts, nests, eggs, and nestlings. Executive Order 13186, signed January 10, 2001, directs Federal agencies to protect migratory birds by integrating bird conservation principles, measures, and practices. Additionally, the Memorandum of Understanding (MOU) between the BLM and the USFWS signed on January 17, 2001, further strengthens migratory bird conservation through enhanced collaboration between the BLM and USFWS, in coordination with state, tribal, and local governments. The MOU identifies management practices that impact populations of high priority migratory bird species, including nesting, migration, or over-wintering habitats on public lands, and develops management objectives or recommendations that avoid or minimize these impacts.

1.4.5 National Historic Preservation Act of 1996, as Amended

All Federal agencies are required to examine the cultural impacts of their actions (e.g. issuance of a Section 10 permit). This act outlines the National Historic Preservation Plan and establishes the National Register of Historic Places, Advisory Council on Historic Preservation and State Historic Preservation Office. It requires Federal agencies to locate, document and evaluate, under the National Register, all cultural resources within its jurisdiction. Section 106 requires that, prior to an undertaking, Federal agencies identify eligible properties and assess the effects of the undertaking in consultation with the State Historic Preservation Office (SHPO) and Advisory Council on Historic Preservation.

Most of the land within the Covered Area on which the proposed Covered Activities will occur was previously administered by the BLM. Prior to the sale of these lands, the BLM was required to comply with the National Historic Preservation Act (NHPA). For those public lands within the Covered Area that have not been surveyed, BLM is authorized to use LCRDA and/or other funds to conduct the necessary cultural resources surveys. As for the private lands, if surveys are needed to satisfy NHPA requirements, then the monies for these surveys would come from the mitigation fees paid by the applicants pursuant to the terms and conditions of the SLCHCP.

1.4.6 Other Cultural Resource Protection Laws

Additional laws and regulations provide protection for cultural resources. The Antiquities Act of 1906 and Archaeological Resource Protection Act of 1979 make damage or removal of objects of antiquity located on Federal property illegal unless permitted. The Historic Sites Act established the Historic American Buildings Survey, Historic American Engineering Record and National Survey of Historic Sites and Buildings and

authorized the designation of National Landmarks. The American Indian Religious Freedom Act of 1978 and Native American Graves and Repatriation Act of 1990 mandates Federal agencies be aware of and sensitive to Indian religious freedoms, identify culturally affiliated Native American groups, prepare summaries as to the disposition of Native American skeletal materials, funerary, and ceremonial objects that may be subject to repatriation and consult with Native Americans as to activities that may disturb sites.

1.4.7 Clean Air Act

In 1993, the EPA adopted regulations implementing Section 176 of the Clean Air Act as amended. Section 176 requires that Federal actions conform to state implementation plans for achieving and maintaining the national standards. Federal actions must not cause or contribute to new violations of any standards, increase the frequency or severity of any existing violation, interfere with timely attainment or maintenance of any standard, delay emission reduction milestones or contradict state implementation plan requirements. Federal actions that are subject to the general conformity regulations are required to mitigate or fully offset the emissions caused by the action, including both direct and indirect emissions that the Federal agency has some control over.

1.4.8 Executive Order 11990, Protection of Wetlands

Executive Order (EO) 11990 (1977), Protection of Wetlands, requires Federal agencies to avoid, where possible, adversely impacting wetlands.

1.4.9 Executive Order 12898, Floodplain Management

EO 11988, Floodplain Management (1977), requires all Federal agencies to avoid construction within the 100-year floodplain unless no other practicable alternative exists.

1.4.10 Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

EO-12898 (1994), Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all Federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high and/or adverse human health or environmental effects of their programs and policies on minorities and low- income populations and communities. According to the EPA, environmental justice is the:

> *"...fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, local, and tribal programs and policies."*

The goal of "fair treatment" is not to shift risks among populations, but to identify potentially disproportionately high and adverse effects and identify alternatives that may mitigate these impacts.

1.4.11 State of Nevada Legislation and Regulations

1.4.11.1 Tule Desert Hydrographic Area - Ruling #5181

The Nevada State Engineer (NSE) has addressed issues pertaining to groundwater withdrawals from the Tule Desert Hydrographic Area and to date has granted an appropriation of 2,100 acre-feet per year (afy) to the LCWD in 2002 (Ruling #5181). The NSE considered testimony and evidence supplied by multiple parties and concluded that:

> *"The recharge in the Tule Desert Hydrographic Area has previously been established as 2,100 acre-feet annually, with a perennial yield established as 1,000 acre-feet annually. The perennial yield of a groundwater reservoir may be defined as the maximum amount of groundwater that can be salvaged*

each year over the long term without depleting the groundwater reservoir. Perennial yield is ultimately limited to the maximum amount of natural recharge that can be salvaged for beneficial use. If the perennial yield is continually exceeded groundwater levels will decline. Withdrawals of groundwater in excess of the perennial yield contribute to adverse conditions such as water quality degradation, storage depletion, diminishing yield of wells, increased economic pumping lifts, land subsidence and possible reversal of groundwater gradients which could result in significant changes in the recharge-discharge relationship.

The testimony and evidence presented in this case raises the issue of when does the State Engineer accept evidence by a witness qualified as an expert as to the recharge of a groundwater basin, over the peer reviewed, decades accepted, independent evidence of recharge to a groundwater basin published by the United States Geological Survey (USGS) in conjunction with the Nevada Department of Conservation and Natural Resources (DCNR), Division of Water Resources. The State Engineer is very hesitant to accept the testimony of witnesses who come into testify on evidence as to recharge values that has not been peer reviewed and accepted by the independent third party analysis historically relied on by the State Engineer, particularly in an region with so little rainfall and the potential for such great and lasting impacts."

Thus, application for an additional 7,240 afy is being held in abeyance until further data is collected and submitted to the NSE. Therefore, the exact amount of groundwater granted to the LCWD will be determined through the process established by the NSE in the future.

1.4.11.2 Nevada Revised Statutes

The Nevada State Legislature approved Assembly Bill 641 (Preservation of Endangered And Threatened Wildlife in Certain Rural Counties, Chapter 349, Statutes of Nevada 1999) in 1999 to authorize the Board of County Commissioners for Esmeralda, Lincoln, and Nye counties to create an area or zone for the preservation of species or subspecies of wildlife that are threatened with extinction and to impose and collect a fee for that purpose, as in a land development fee, of not more than $550/acre.

The Nevada Revised Statutes (NRS) were amended, most recently in 1991, to expand the State's requirement to classify wildlife (NRS 501.110). The classification of species occurs through administrative regulation by the Nevada Board of Wildlife Commissioners (NRS 501.105 and 501.181) and is codified in the Nevada Administrative Code (NAC).

NDOW is the entity vested with statutory authority through NRS to protect and manage resident wildlife in the State. NDOW's mission is to protect, preserve, manage and restore wildlife and its habitat for their aesthetic, scientific, educational, recreational and economic benefits to citizens of Nevada and the United States. Through the Nevada Board of Wildlife Commissioners, NDOW establishes policy and regulation for the protection, propagation, transplanting, introduction, and management of wildlife (NRS 501.105, 501.181, 501.331, 501.337). NRS Section 503.597 specifically states that it is unlawful to transport a desert tortoise within the state or across state lines, without the written consent of NDOW. Nevada does not have any laws that regulate the degradation of tortoise habitat.

The Nevada Division of Forestry (NDF), a division of DCNR, holds the statutory authority to protect plant species listed as critically endangered under NRS 527.272 and 527.050. Plant species occurring within the Covered Area of the Proposed Project that are listed as critically endangered by the State of Nevada are threecorner milkvetch (*Astragalus geyeri* var. *triquetrus*) and sticky wild buckwheat (*Eriogonum viscidulum*). As such, "no member of its kind may be removed or destroyed at any time by means except under special permit issued by the state forester" (NRS 527). The NDF also regulates the collection of cactus and yucca through permit requirements under NRS 527.070.

NRS Chapter 278 gives Lincoln County authority to carry out a plan for infrastructure financing through the negotiation of development agreements.

1.4.11.3 Storm Water Management

The Nevada Division of Environmental Protection (NDEP) has adopted the General Permit for Storm Water Discharges Associated with Construction Activity (NVR100000), which supersedes the now expired General Permit GNV0022241. This permit is administered and enforced by NDEP, with cooperation from local municipalities that have their own ordinances controlling discharges to the drainage system. The General Permit for Construction Activity establishes a number of storm water management requirements for construction site owners and operators.

1.4.12 Lincoln County Requirements

1.4.12.1 Lincoln County Master Plan

The Lincoln County Master Plan describes land uses throughout the County, provides for regional services and facilities, and governs development within unincorporated areas (Lincoln County 2006). The purpose of the plan is to guide the county's growth, management of natural resources, provision of public services and facilities, and the protection of the public's health, safety, and welfare. Goals and policies are established for growth, the plan's relationship with zoning ordinances, identifying lands for development, public services and facilities, parks and facilities, suitable housing, agriculture, transportation, and the county's economy. Land use guidance has been prepared specifically for the Toquop Township Planning Area (the LCLA lands). The master plan is updated every five years. The most recent plan was released for the public on December 4, 2006.

1.4.12.2 Lincoln County Code Title 12, Flood Damage Protection

The purpose of Title 12 of the Lincoln County Code (1983 Code § 15.08.010) is to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas. It includes methods and provisions that, among others, control the alteration of natural floodplains, stream channels, and natural protective barriers that help accommodate or channel floodwaters; control filling, grading, dredging and other development that may increase flood damage; and regulate construction of flood barriers.

1.4.12.3 Lincoln County Code Title 14, Toquop Township Planned Unit Development

Ordinance 2002-05 created Title 14, the Toquop Township Planned Unit Development (PUD) Code. The purpose of the Toquop Township PUD Code is for the regulation and maintenance of planning and zoning within the Toquop Township Planning Area as authorized under NRS Chapter 278 (Planning and Zoning) and NRS Chapter 278A (Planned Development). Title 14 of the Lincoln County Code establishes a Planned Unit Development Land Use Plan, which designates the types of land uses allowed within a given PUD in the Toquop Township Planning Area. This title specifies minimum development and design standards for all buildings, streets, open space, and infrastructure (i.e., storm drainage, natural gas, etc.). It also establishes a procedure to approve PUDs as they are developed for the area. Planned Unit Development plans would be submitted to Lincoln County for approval or denial.

1.4.12.4 Lincoln County Public Land Management and Use Plan

This plan, adopted by the Lincoln County Board of Commissioners in December 1997, guides the use of public lands and public resources in Lincoln County. The plan established a Lincoln County Public Lands Commission, which is no longer in existence. Instead, Lincoln County's Planning Commission serves in this role. This plan developed policies for each of the following resources: water resources, forestry/desert products, agriculture, cultural resources, recreation, wildlife and fisheries, endangered species, wilderness, wild horses, grazing, wetlands, and access and transportation. It is intended to enhance coordination of public land management in the county prior to actions taken by Federal agencies. Areas of concern addressed by the plan include private property rights, free market economy, local authority in land use decisions for local communities and individuals, and future viability of Lincoln County's rural communities.

1.4.12.5 Lincoln County Overall Economic Development Plan/Comprehensive Economic Development Strategy

This plan was adopted by the Lincoln County Board of Commissioners in 1991 to guide economic development activities in Lincoln County. The Board appointed the Lincoln County Overall Economic Development Program Committee, comprised of members that broadly represent the area (i.e., representation of local government, business, and other community interests), to be responsible for planning and coordination of economic development activities to stimulate new private and public investments to provide employment and growth opportunities in Lincoln County.

1.5 DOCUMENT STRUCTURE

The overall structure of the document is as follows:

- This section, **Section 1: Introduction,** provides an initial overview of the proposed Federal actions as well as background on project origins and development. It also highlights the EIS scoping process and concerns raised during scoping.
- **Section 2: Purpose of and Need for Action** further explains the purpose and need for the Federal action and Lincoln County, the City of Caliente, and UPRR's purpose for actions requiring incidental take permits.
- **Section 3: Description and Comparison of Preferred Alternative and Alternatives** describes the Preferred Alternative, the No Action Alternative, and an additional action alternative. This section also describes alternatives considered but dismissed and provides a comparison of the retained alternatives.
- **Section 4: Affected Environment** describes the affected environment for each issue retained for analysis.
- **Section 5: Environmental Consequences** analyzes the environmental effects of each of the three alternatives considered in this FEIS, and describes measures that are available to minimize and mitigate unavoidable effects. It also presents specific analyses required in an EIS by NEPA, such as unavoidable and irretrievable commitment of resources, unavoidable adverse effects, and the relationship between short-term uses of the environment and maintenance and enhancement of long-term productivity. Cumulative effects of the Preferred Alternative, together with other actions in the past, present, and foreseeable future are also described.
- **Section 6: Compliance, Consultation, and Coordination** presents public and agency involvement in the process and lists of preparers, contributors, and to whom this FEIS will be distributed.

1.6 LITERATURE CITED

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SECTION 2

Purpose and Need for Action

Section 2: Purpose of and Need for Action

2.1 NEED FOR INCIDENTAL TAKE PERMITS BY LINCOLN COUNTY, CITY OF CALIENTE AND UNION PACIFIC RAILROAD

The actions that trigger a need to apply for separate incidental take permits are the applicants' proposal to either develop land within southeastern Lincoln County that would meet local housing needs and allow for economic development or ongoing road, railway or flood control activities. The need for the proposed action in Lincoln County is driven by the economic needs of the county, which is 98 percent federally owned (Figure 1-1) and as a result suffers economically due to the lack of sufficient revenues to provide adequate housing and services for its residents. Currently, housing and services are substandard as compared to other areas within southern Nevada.

Lincoln County is the third largest county in Nevada with a land area of 10,650 square miles or 6,816,000 acres (Lincoln County Master Plan 2006). According to the Lincoln County Assessors Office, approximately 148,000 acres is held in private ownership. The majority of public land in Lincoln County is managed by the BLM; however, the USFS (Humboldt-Toiyabe National Forest) manages approximately 10,000 acres in the northwest portion of the county, and the USFWS (Desert National Wildlife Refuge Complex) manages approximately 780,000 acres in the southwest corner of the county.

The applicants (Lincoln County, through the Board of Lincoln County Commissioners [BLCC], City of Caliente, and UPRR) seek to acquire three separate Section 10 permits that would authorize the incidental take of the desert tortoise and the southwestern willow flycatcher as a result of the Covered Activities to be implemented under the SLCHCP within southeastern Lincoln County (described further in Section 4: Covered Activities of the SLCHCP).

Without a Section 10(a)(1)(B) permit from the USFWS, the Covered Activities described in the SLCHCP could not move forward without potentially violating Section 9 of the ESA. Desert tortoises are widely distributed throughout the Covered Area, including locations identified for urban development; therefore, avoiding take of tortoise is not feasible if urban development and construction and maintenance of associated infrastructure is to progress in Lincoln County. Although southwestern willow flycatcher populations are low in the Covered Area, suitable habitat occurs along the length of Meadow Valley Wash, and a portion of the habitat may need to be removed to protect the integrity of roads and railways. In order to ensure that Lincoln County, City of Caliente, and UPRR would be in compliance with the ESA over the course of 30 years, the applicants have developed and proposed the SLCHCP to support their applications for three incidental take permits.

The need for the USFWS action is based on the potential that the activities proposed by the applicants within southeastern Lincoln County could result in the take of Covered Species, thus, the need for incidental take permits. Issuance by the USFWS of a Section 10(a)(1)(B) incidental take permit is a federal action that triggers review under NEPA (42 U.S.C 4321-4347).

2.2 PURPOSE OF THE FEDERAL ACTION BY THE U.S. FISH AND WILDLIFE SERVICE

The purpose for which this FEIS is being prepared is to:

- Respond to Lincoln County, City of Caliente, and UPRR applications for incidental take permits for the proposed Covered Species related to activities that have the potential to result in take, pursuant to the ESA Section 10(a)(1)(B) and its implementing regulations and policies.

- Protect, conserve and enhance the Covered Species and their habitat for the continuing benefit of the people of the United States.
- Provide a means and take steps to conserve the ecosystems depended on by the Covered Species.
- Ensure the long-term survival of Covered Species through protection and management of the species and their habitat.
- Ensure compliance with the ESA, NEPA, and other applicable Federal laws and regulations.

We anticipate that future actions by the applicants will occur that may require a USACE 404 permit. It is the intent of the SLCHCP to provide a mechanism to streamline ESA Section 7 consultations whereby certain activities that require 404 permits and, in turn, require consultation with the USFWS pursuant to ESA Section 7, may rely on the SLCHCP's analysis of impacts on Covered Species, provided that the Covered Activities and the impacts on the Covered Species are within the scope of the SLCHCP. Incidental take coverage under the SLCHCP would only be available pursuant to this streamlined Section 7 consultation mechanism. The SLCHCP is designed to minimize and mitigate the effects of these types of activities (as described in the Covered Activities section of the Preferred Alternative) on species warranting ESA protection.

2.3 GOALS OF THE SLCHCP

The overall goal of the SLCHCP is to conserve the Covered Species while allowing for orderly growth and development to proceed in southeastern Lincoln County. The biological goals for each of the Covered Species addressed in the SLCHCP are as follows:

- Maintain or improve existing desert tortoise habitat quality and quantity and to maintain stable or increasing desert tortoise populations within southeastern Lincoln County.
- Achieve no net loss of suitable southwestern willow flycatcher habitat along the Meadow Valley Wash due to human activities within the Covered Area of the SLCHCP.

2.4 DECISIONS REQUIRED

Before issuing a 30-year incidental take permit for each of the Covered Species, the USFWS must affirmatively answer each of the following questions as required by Section 10(a) of the ESA:

- Is the proposed take incidental to an otherwise lawful activity?
- Are the impacts of the proposed take minimized and mitigated to the maximum extent practicable?
- Has the applicant ensured that adequate funding will be provided to implement the measures proposed in the SLCHCP?
- Is the proposed take such that it will not appreciably reduce the likelihood of the survival and recovery of the species in the wild?

The USFWS must also answer the following question:

- Are there any other measures that should be required as a condition of the permit?

After reviewing the SLCHCP and responding to these questions as required by ESA, the USFWS may issue the permits conditioned on implementation of the SLCHCP submitted by the applicants, issue the permits conditioned on implementation of the SLCHCP together with other measures specified by the USFWS, or deny the permit applications.

The USFWS must also conduct an internal consultation under Section 7 of the ESA to ensure that actions relative to the SLCHCP Section 10(a) permits will not jeopardize the continued existence of threatened, endangered, or Covered Species or result in destruction or adverse modification of designated critical habitat. The USFWS must also comply with NEPA, which requires Federal agencies to evaluate the effects of their Proposed Actions on the human environment. Accordingly, USFWS provided opportunities for public input,

such as public meetings, as required by NEPA and has prepared this FEIS to evaluate the potential environmental consequences of issuing the incidental take permits and implementing the SLCHCP.

2.5 SCOPING PROCESS

As stated previously in Section 1.1.3 of this document, a Notice of Intent to prepare an EIS was published in the Federal Register on July 5, 2001, and public workshops were held at the Alamo Annex on June 25, 2001, and at the Caliente City Hall on June 26, 2001. Notices for the workshops and Technical Steering Committee (TSC) meetings were posted at public locations pursuant to the Nevada Open Meeting Law. The public workshops were advertised in the Lincoln County Record, the Desert Valley Times, and the Valley Times. Comments were accepted until September 4, 2001. On July 5 and 6, 2006, public workshops were held in Caliente, Alamo and Mesquite, Nevada to receive additional input from the public and to update members of the public on the status of the SLCHCP. Public input from the workshops and the TSC meetings was integral to the planning process and development of the draft SLCHCP and DEIS. Throughout the development of the draft SLCHCP, written and oral public comments were accepted and addressed in the draft as appropriate.

Comments from public scoping meetings and workshops mainly focused on the need to conduct a thorough analysis on the direct, indirect, and cumulative effects of the alternatives; ensuring that mitigation is adequate and permanently maintained; clearly defining the habitat needed by the Covered Species; providing incentives for control of non-native vegetation; and ensuring that the SLCHCP does not impose excessive restrictions on current land uses within the Covered Area. To address these issues, the conservation strategy for the tortoise and flycatcher was designed to avoid mortality of individuals, incorporate displaced tortoises into the recovery program, implement restoration actions in locations with long-term protective status, provide incentives to replace salt cedar with native vegetation, and ensure no net loss of suitable flycatcher habitat. In addition, Lincoln County will be enlisting the services of the Natural Resources Conservation Service (NRCS) to promote, coordinate, and implement conservation actions on private land along the Meadow Valley Wash and Clover Creek for those landowners who wish to "opt in" and participate in the SLCHCP.

On December 5, 2008, the USFWS published the Draft EIS, Draft SLCHCP, and Draft Implementation Agreement. The 75-day public comment period closed on February 18, 2009. Comments were received from SNWA, NDOW, Center for Biological Diversity, EPA, and Nevada State Clearinghouse (Commission on Minerals and State Historic Preservation Office). The Nevada State Clearinghouse (Commission on Minerals and State Historic Preservation Office) was in support of the Draft EIS with no additional comments. The other agencies/organizations commented on the following aspects of the Draft EIS:

- Direct and indirect effects to special status species
- Adequacy of conservation measures for the desert tortoise and southwestern willow flycatcher
- Desert tortoise critical habitat
- Desert tortoise interim measures
- Section 404 consultation
- Effects to groundwater
- Effects to surface water flows on the Muddy and Virgin Rivers
- 2008 Nevada State Engineer water rights' rulings
- Ecologically critical areas
- Water conservation

Responses to public comments can be found in Volume III: Appendix G; and have been incorporated into the FEIS, SLCHCP, and Implementation Agreement, as appropriate.

2.6 LITERATURE CITED

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SECTION 3

Description and Comparison of Preferred Alternative and Alternatives

Section 3: Description and Comparison of Preferred Alternative and Alternatives

This section presents a summary of the Preferred Alternative, one other action alternative, and a No Action Alternative. Under the two action alternatives, different amounts of land would be developed, resulting in different levels of incidental take of federally-listed species. The No Action Alternative assumes continuation of existing conditions and species management strategies and provides a baseline against which to assess the environmental impacts of the Preferred Alternative and other action alternative.

Additional alternatives were considered during the development of the Draft SLCHCP and DEIS, but rejected because they did not meet stated goals or objectives of the applicants and the USFWS or were not considered reasonable. These are briefly described below in Section 3.4, "Alternatives Considered but Dismissed." Alternatives considered were also compared in Section 3.5, "Comparison of the Alternatives." A table indicating the effects of each alternative is included here.

3.1 ALTERNATIVES DEVELOPMENT

Pursuant to NEPA, an EIS evaluates the potential environmental impacts of the Preferred Alternative and a suite of other alternatives to the Proposed Action or Preferred Alternative that were considered during the development of the SLCHCP (40 CFR 1508.9). A range of reasonable alternatives for activities within Lincoln County that could result in increased or reduced impacts on sensitive species was evaluated with respect to feasibility and benefit gained.

This section provides a description of the process used to develop alternative approaches to mitigating impacts on species addressed in the SLCHCP and a comparison of alternatives selected. Various measures to avoid, minimize, and compensate for impacts on species addressed by the SLCHCP were evaluated. The alternatives and conservation measures were compared with the Preferred Alternative based on the evaluation criteria. Reasons for rejecting specific measures and alternatives are explained.

The criteria used to evaluate measures and alternatives are as follows and described more fully below:

- efficacy in providing mitigation for impacts to the Covered Species,
- costs, and
- other impacts on the human or natural environment.

3.1.1 Efficacy of Mitigation Measures

Estimates of the beneficial effects on the SLCHCP Covered Species (desert tortoise and southwestern willow flycatcher) that result from various conservation measures can be made only in broad and relative terms. The analysis of benefits to SLCHCP Covered Species was based on relative effects among measures and alternatives, because the absolute numbers of individuals affected cannot be determined. Measures that would not result in substantial minimization of take or enhancement of numbers of SLCHCP Covered Species do not meet project objectives for mitigating impacts and therefore were considered not effective.

3.1.2 Cost

The estimates of the costs of implementing mitigation measures include capital and operations and maintenance. Conservation measures that were unduly costly, especially if the costs did not result in substantial added benefits to species covered under the SLCHCP, were considered economically infeasible and not included.

3.1.3 Other Impacts on the Human or Natural Environment

Impacts on the human or natural environment were considered in the determination of the feasibility of mitigation measures and alternatives. Potential impacts include the effects on the local economy, to soils and water, and to other issues considered in this FEIS. If implementation of a mitigation measure or alternative would result in potentially significant and adverse direct or indirect effects on the human or natural environment, it was considered infeasible.

3.2 ALTERNATIVES CONSIDERED FOR THE EIS

3.2.1 No Action Alternative

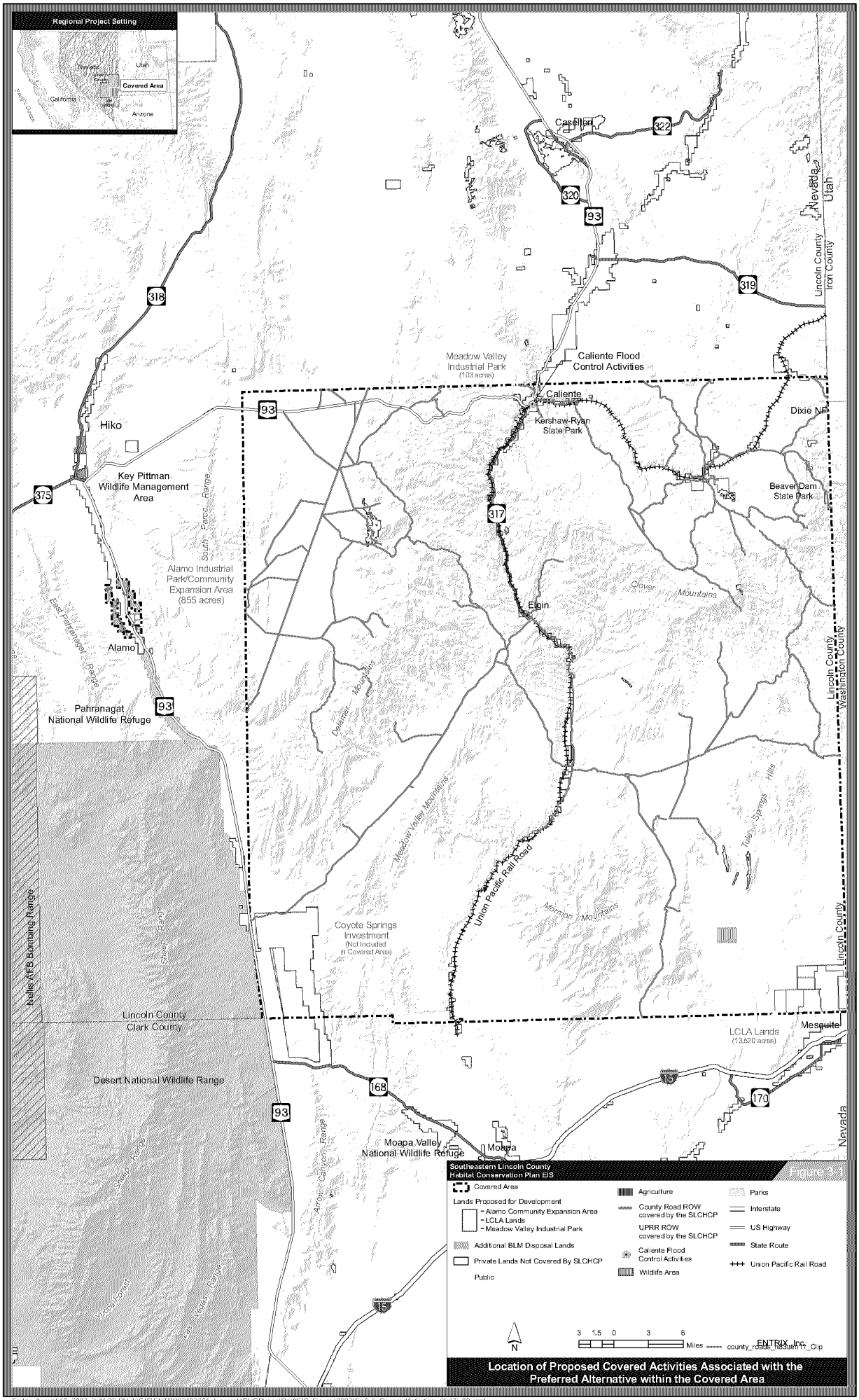
Under the No Action Alternative, the USFWS would not issue incidental take permits under Section 10(a)(1)(B) of the ESA, "take" of the Covered Species would not be authorized, and the SLCHCP would not be implemented. Under this scenario, private land development or other activities on non-Federal land would avoid take of federally-listed species or would require individual Section 10(a)(1)(B) permits for incidental take. If take of federally-listed species could not be avoided, each individual landowner would be required to develop a separate habitat conservation plan, leading to piecemeal development and uncoordinated conservation planning. Oversight, coordination, and administration of funding for landscape-level conservation projects would not be available.

Species and habitat conservation projects would be driven by the activities and priorities of local resource management agencies. The federally-administered lands in Lincoln County would continue to be managed in accordance with the BLM's current land use plan. Conservation projects for the tortoise and flycatcher would be implemented as funding and staffing levels allowed. Voluntary conservation actions would continue to be initiated by Lincoln County, private individuals, and organizations.

3.2.2 Preferred Alternative - Southeastern Lincoln County HCP Alternative

The Proposed Action (issuance of incidental take permits for the SLCHCP) is the Preferred Alternative. The USFWS proposes to approve the SLCHCP and issue three permits, one each to Lincoln County, the City of Caliente, and UPRR, that would authorize incidental take of the Covered Species on non-Federal lands within the Covered Area associated with land development and maintenance activities, utility and infrastructure development and maintenance activities, flood control activities, County roadway maintenance, railroad construction and maintenance, and the conversion of an existing land use to another land use (e.g. agriculture land to urban use or grazing land to irrigated and/or cultivated agricultural land) (Figure 3-1).

The SLCHCP addresses effects to Covered Species that are related to actions on non-Federal lands within the Covered Area by Lincoln County government, private landowners, the City of Caliente, and UPRR. The SLCHCP does not address effects to Covered Species that are related to actions on federal lands even if those actions are related to actions on private land. For instance, placement of new water wells and waterlines or new roads across lands managed by the BLM to serve development on the LCLA lands are subject to consultation under Section 7 of the ESA and are not included in the SLCHCP. The proposed Covered Activities occur on approximately 30,673.5 acres of private, state and local government-held property in Lincoln County.



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It is the intent of the SLCHCP to include all new non-Federal lands within the Covered Area if the lands leave federal ownership through public land disposal or other means during the 30 year permit term of the Section 10 permits. An estimate of this acreage is included in the total displayed in Table 3-1 and described further in the following section. Covered Activities include existing and proposed land use activities and practices by individuals, organizations, companies, and State of Nevada divisions (excluding State Parks), as well as city, county, and local governments. These activities will occur on non-Federal lands throughout the Covered Area and are summarized below in Table 3-1.

Table 3-1 Acreage of Lands within the Covered Area where Covered Activities occur and the Acreage of Lands to be Affected by the Covered Activities

Covered Activity	Estimated Total Acreage within the Covered Area (acres)	Estimated Acreage Potentially Affected by the Activities (acres)
Proposed Land Development (includes utility and infrastructure development and maintenance activities and flood control activities)	**18,579**	**18,476**
LCLA Land	13,520	13,520
Meadow Valley Industrial Park	103	--
Alamo Industrial Park and Community Expansion Area	855	855
BLM Lands identified for disposal around Alamo	3,461	3,461
Section 36 Disposal Parcel	640	640
Flood control activities within the City of Caliente	**17.5**	**8.3**
County roads and rights-of-way	**1,274**	--
UPRR lands and rights-of-way	**3,699**	**854**
Other Privately-owned Lands Subject to Land conversion activities (e.g. previously undisturbed agricultural land to urban use or grazing land to irrigated and/or cultivated agricultural land)	**7,104**	**586**
TOTAL	**30,673.5**	**19,924.3**

3.2.2.1 Covered Activities

3.2.2.2 Planned Land Development and Maintenance Activities

Congress passed two land's acts in 2001 and 2004, the LCLA and the LCCRDA, respectively to promote the expansion and diversification of the Lincoln County economy on private lands. The location of lands proposed for development coincides with proximity to existing population centers.

There are three areas within the Covered Area with planned development activities (i.e., residential, commercial, industrial, municipal, and public facilities development and maintenance): 1) LCLA lands: 2) the Alamo Industrial Park and Community Expansion Area; and 3) the Meadow Valley Industrial Park site located at the southern end of Caliente (see Figure 3-1). These planned development activities are further described below.

In addition to the non-Federal lands identified above, the alternatives set forth in the Final RMP/EIS for the Ely District (2008) provide that the BLM may sell or otherwise transfer up to 3,461 acres of currently managed lands in the Alamo area as well as the 640-acre Section 36 parcel identified by BLM for disposal and planned for industrial development purposes. For purposes of this plan, we are assuming that approximately 4,101 acres of additional public land will be sold or otherwise transferred by BLM over the next 30 years (Figure 3-1).

LINCOLN COUNTY LAND ACT LANDS

The LCLA (P.L. 106-298) was passed by Congress to accommodate population growth in an area dominated by Federal lands. Under the LCLA, 13,520 acres of public land was sold by BLM in several parcels to numerous developers for $47.5 million (Figure 3-2). Lincoln County anticipates that development of the LCLA land will occur over a 30-year period. Housing capability of the area is estimated to be about

3.3 dwellings per gross acre and totaling about 44,500 dwelling units by the end of the 30-year development period. The development will likely include a variety of residential, commercial, industrial, and public facilities.

Development of the lands disposed under the LCLA will be conducted in accordance with a development agreement (DA) between the developer(s) and Lincoln County (refer to Volume III: Appendix B). The developers are required to prepare and obtain Lincoln County approval of a land use map identifying the general concept for master planned development of the parcels of property. The permit area for the SLCHCP will include that portion of Lincoln County encompassing the LCLA land sale.

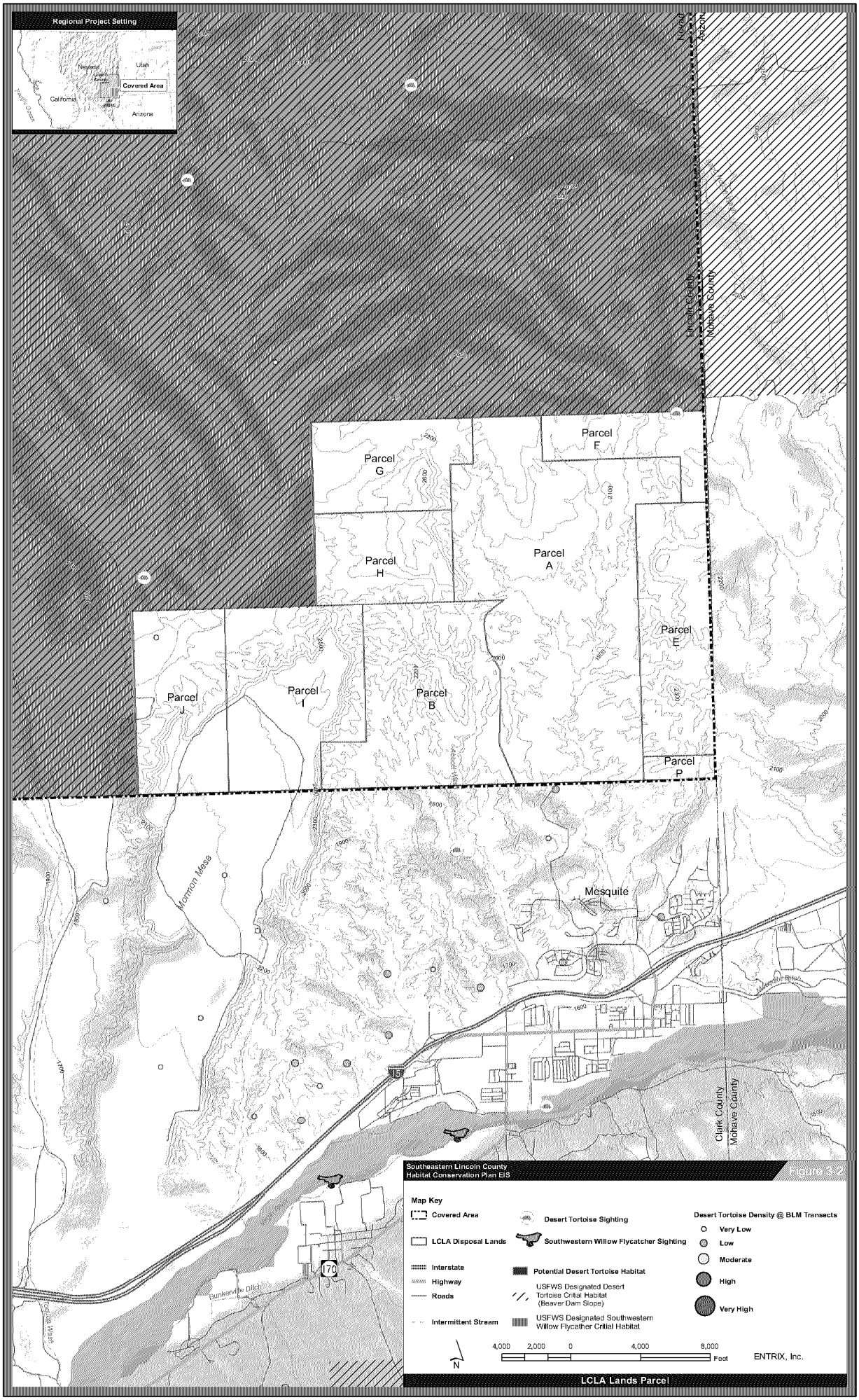
ALAMO INDUSTRIAL PARK/COMMUNITY EXPANSION AREA

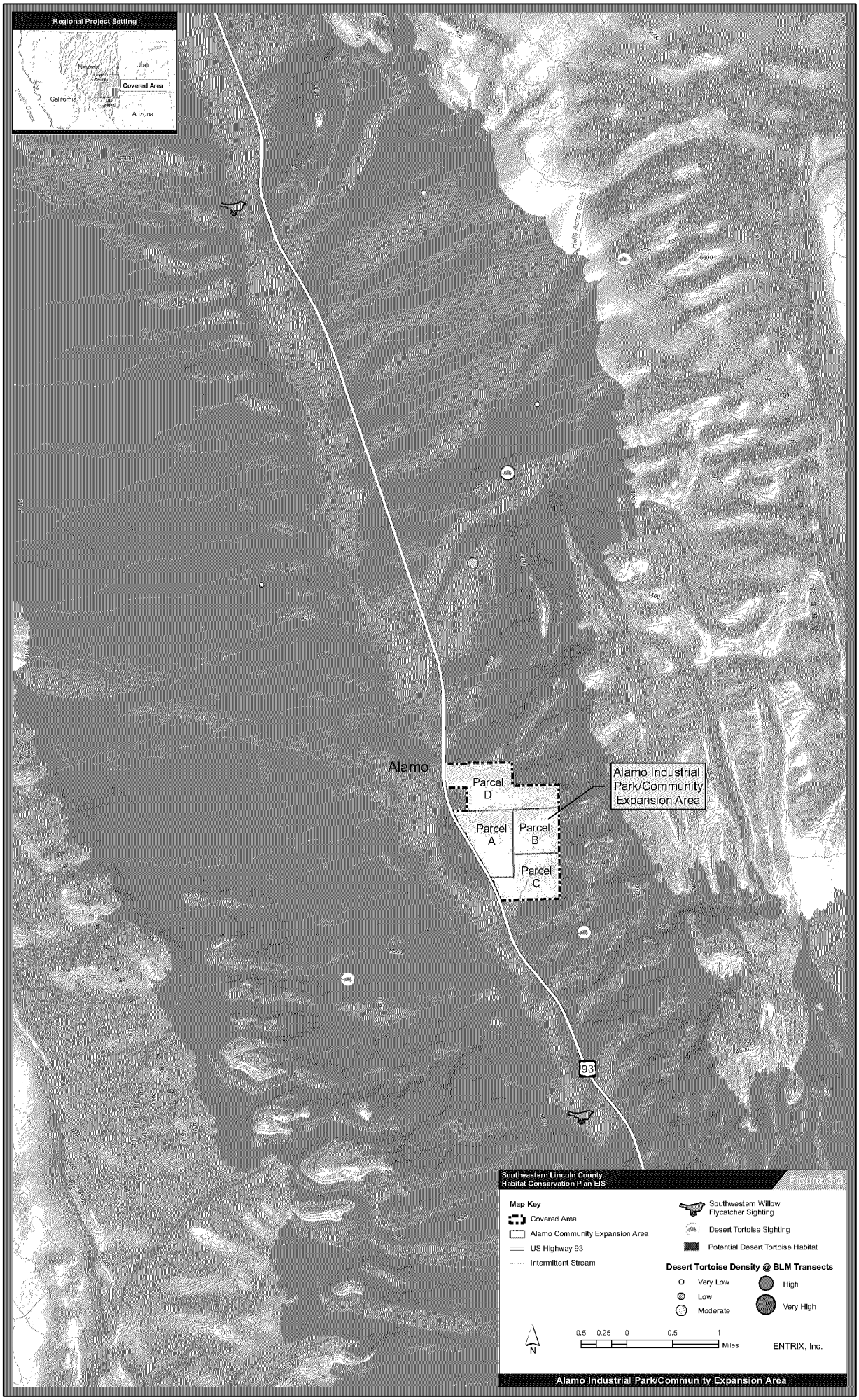
Lincoln County, under the LCCRDA, proposes the sale of certain parcels of lands administered by BLM. The public land consists of four parcels located near the town of Alamo, Nevada, along U.S. Highway 93 in Sections 4, 5, 8, and 9 of Township 7 South, Range 61 East (T7S, R61E), Mount Diablo Base and Meridian. The proposed use of lands by Lincoln County includes both light industrial and housing. Parcel A, which contains approximately 217 acres, would be obtained by noncompetitive direct sale to Lincoln County and used as the development of the Alamo Industrial Park (Figure 3-3). Parcel B (approximately 159 acres), Parcel C (approximately 194 acres), and Parcel D (approximately 285 acres) would be developed primarily for residential purposes and sold through competitive sale to the highest bidder. The proposal for public land sale is made under the authority of Section 203 of the Federal Land Policy and Management Act of 1976 (FLPMA) (43 CFR 1701, 1713, 1740).

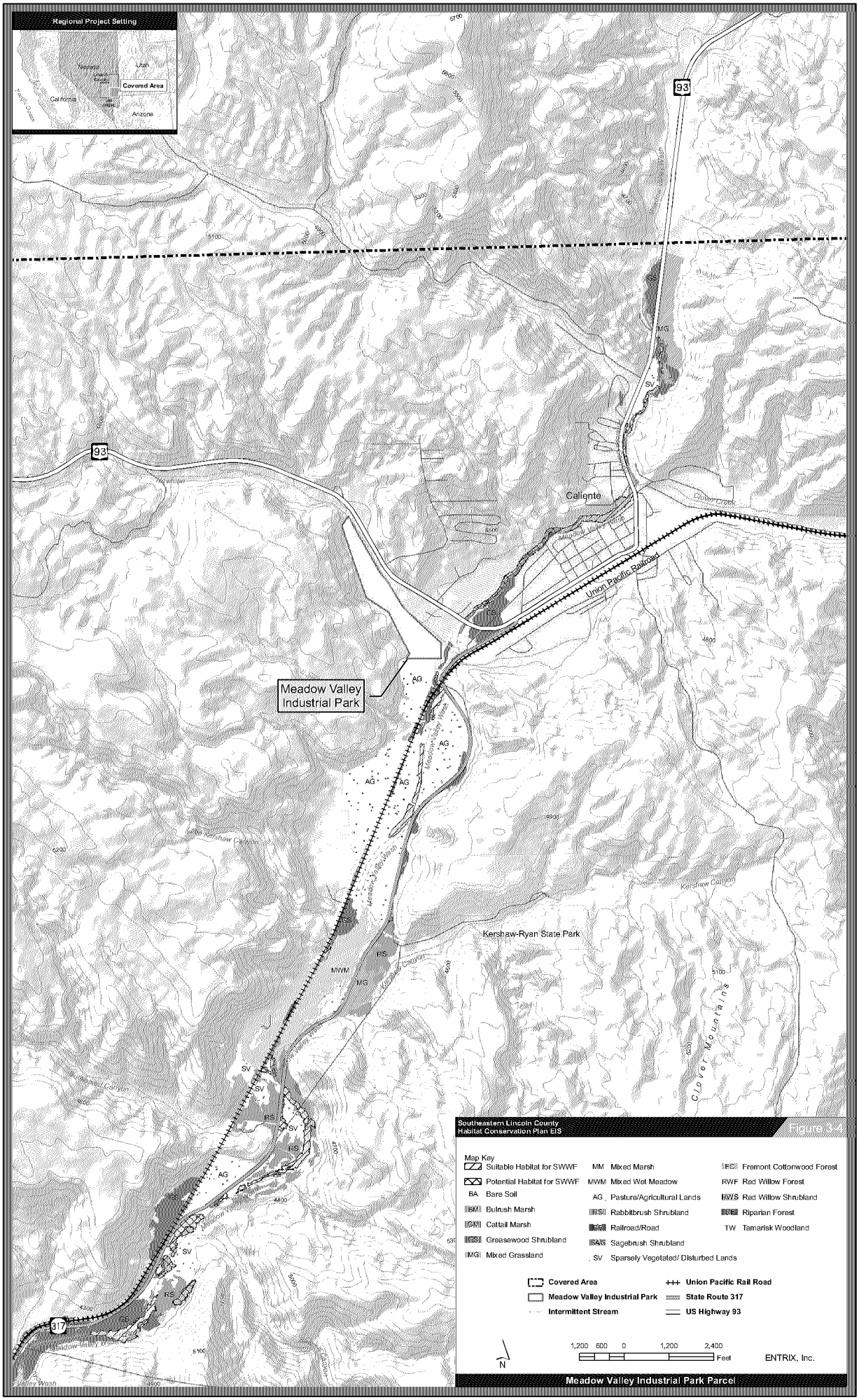
The purpose of the proposed sale is to enable community expansion and economic development pursuant to sections 101 through 103 of the LCCRDA and to meet the objectives of the Final RMP/EIS for the Ely District (BLM 2008). Following the sale, the former Federal lands would be governed in accordance with the land use policies, plans, and regulations of Lincoln County and the town of Alamo. It is assumed that the 217-acre industrial park on Parcel A would include light manufacturing, distribution, and/or service center(s). It is also assumed that the housing units would be developed on the other parcels at a rate of three units per gross acre in keeping with the rural character of the area and to provide for ample open space/common areas. Residential development on approximately 638 acres within Parcels B, C, and D would result in approximately 1,900 housing units. Approximately 25 percent of the housing units could be multi-family units. Another assumption is that the residential development would be built over a 20-year period. Construction of all infrastructure for the industrial and residential developments would also be a component of the property development.

MEADOW VALLEY INDUSTRIAL PARK

The 103-acre Meadow Valley Industrial Park (Park) is located within the City of Caliente and is situated on the south side of Newman Wash at the confluence of Newman Wash and Meadow Valley Wash (Figure 3-4). The sale of the 103 acres of land administered by BLM to the City of Caliente and the construction of the Meadow Valley Industrial Park was covered under separate Section 7 consultation between the BLM and the USFWS. The operation and maintenance of the Park, and/or future development within the 103-acre parcel boundary, will be included as a Covered Activity under the SLCHCP, although no new land will be disturbed as a result of this activity. The site is located in a previously disturbed area used for agricultural purposes and recreational activities (i.e., off-road vehicles and target shooting) and surrounded by salt desert scrub vegetation. Improvements associated with the industrial park would consist of a rail spur, access roads, and water and sewer extensions. In addition to water and sewer improvements, U.S. Highway 93 access and an interior road have also been completed at the Meadow Valley Industrial Park.


Regional Project Setting
Nevada
Utah
Covered Area
California
Arizona
Parcel G
Parcel F
Parcel H
Parcel A
Parcel E
Parcel J
Parcel I
Parcel B
Parcel P
Lincoln County
Mohave County
Clark County
Mormon Mesa
Mesquite
Bunkerville Ditch
Virgin River
Southeastern Lincoln County
Habitat Conservation Plan EIS
Figure 3-2
Map Key
Covered Area
LCLA Disposal Lands
Interstate
Highway
Roads
Intermittent Stream
Desert Tortoise Sighting
Southwestern Willow Flycatcher Sighting
Potential Desert Tortoise Habitat
USFWS Designated Desert Tortoise Critial Habitat (Beaver Dam Slope)
USFWS Designated Southwestern Willow Flycather Critial Habitat
Desert Tortoise Density @ BLM Transects
Very Low
Low
Moderate
High
Very High
4,000 2,000 0 4,000 8,000
Feet
N
ENTRIX, Inc.
LCLA Lands Parcel


Regional Project Setting
Nevada
Utah
Covered Area
California
Arizona
Alamo
Parcel D
Parcel A
Parcel B
Parcel C
Alamo Industrial Park/Community Expansion Area
93
Southeastern Lincoln County Habitat Conservation Plan EIS
Figure 3-3
Map Key
Covered Area
Alamo Community Expansion Area
US Highway 93
Intermittent Stream
Southwestern Willow Flycatcher Sighting
Desert Tortoise Sighting
Potential Desert Tortoise Habitat
Desert Tortoise Density @ BLM Transects
Very Low
Low
Moderate
High
Very High
N
0.5 0.25 0 0.5 1
Miles
ENTRIX, Inc.
Alamo Industrial Park/Community Expansion Area


Regional Project Setting
Nevada
Utah
Covered Area
California
Arizona
93
317
Caliente
Union Pacific Railroad
Meadow Valley Wash
Clover Creek
Meadow Valley Industrial Park
Kershaw Canyon
Kershaw-Ryan State Park
Clover Mountains
Willow Wash
Southeastern Lincoln County
Habitat Conservation Plan EIS
Picture 5.2
Map Key
Suitable Habitat for SWWF
Potential Habitat for SWWF
BA Bare Soil
BM Bulrush Marsh
CM Cattail Marsh
GS Greasewood Shrubland
MG Mixed Grassland
MM Mixed Marsh
MWM Mixed Wet Meadow
AG Pasture/Agricultural Lands
RS Rabbitbrush Shrubland
RR Railroad/Road
SAS Sagebrush Shrubland
SV Sparsely Vegetated/ Disturbed Lands
FC Fremont Cottonwood Forest
RW Red Willow Forest
RWS Red Willow Shrubland
RF Riparian Forest
TW Tamarisk Woodland
Covered Area
Meadow Valley Industrial Park
Intermittent Stream
Union Pacific Rail Road
State Route 317
US Highway 93
N
1,200 600 0 1,200 2,400
Feet
ENTRIX, Inc.
Meadow Valley Industrial Park Parcel

ADDITIONAL BLM DISPOSAL LANDS IDENTIFIED IN THE DRAFT ELY RESOURCE MANAGEMENT PLAN

ALAMO AREA

In addition to the 855 acres which Lincoln County has requested that BLM sell in the immediate future for development of the Alamo Industrial Park/Community Expansion Area, the BLM's Final RMP/EIS for the Ely District (BLM 2008) identifies approximately 3,461 acres between Alamo and Hiko on both sides of U.S. Highway 93 as being suitable for disposal through sale or exchange (Figure 3-5). It is anticipated that these lands would be disposed of by BLM during the 30-year life of the Section 10 permit requested by Lincoln County. While the ultimate use of these lands is uncertain, a bounded analysis assumption would have these lands developed for mixed-use residential with an average density of three dwelling units per acre. Development of water resources to serve the urbanizing area between Alamo and Hiko would likely fall to the Lincoln County Water District (LCWD), with the development and maintenance of community delivery systems the responsibility of the Alamo Sewer and Water General Improvement District (ASWGID). Expansion of the ASWGID service area would be required. Future groundwater development is not a Covered Activity under the SLCHCP.

SECTION 36 DISPOSAL PARCEL

The 640-acre site for the proposed coal-fired power plant, a project component of the Toquop Energy Project, is located in southeast Lincoln County, Nevada; Township 11 South, Range 69 East, Section 36 ("Section 36 disposal parcel"). Because it is crossed by existing electrical transmission and natural gas transmission lines and is proximate to Interstate 15, Lincoln County desires that Section 36 be disposed of by BLM and developed for industrial purposes. Currently, the parcel is being considered for use by Toquop Energy Company, LLC for use in developing an electric generating facility. As currently envisioned, the 640-acre site would be disposed of through sale to Toquop Energy Company, LLC by BLM. The purpose of the sale is to provide public land for the development of energy production facilities which are proximate to existing electrical transmission, natural gas transmission, and highway and rail infrastructure.

The Section 36 disposal parcel is included in the proposed Covered Area of the SLCHCP (Figure 3-5). Presently, Toquop Energy proposes to construct, operate and maintain a 750-MW coal-fired power plant and associated facilities within Section 36. Toquop Energy also would construct and maintain a new rail line to transport the coal to the power plant, although it is unclear at this time what entity would operate the rail line. Project facilities would include: 1) a single 750-MW generation unit and plant-cooling system; 2) a 31-mile-long rail line to transport coal to the plant; 3) coal-storage facilities; 4) a water-supply system (including a well field and a 12.5-mile-long pipeline); 5) waste-management operation facilities; and 6) a power transmission interconnection to an existing power-transmission line that passes through the southeast portion of the proposed project area. BLM is currently reviewing the development plans of the new Toquop Energy Project being proposed and is completing required NEPA compliance for the disposal of Section 36 and granting of various rights-of-way across public lands required by Toquop Energy to develop the proposed power plant. BLM has been consulting with the USFWS under Section 7 of the ESA on the potential effects of the coal-fired power plant on desert tortoise.

3.2.2.2.1 Utility and Infrastructure Development and Maintenance

Lincoln County public services, facilities and infrastructure are provided by a variety of general and special purpose districts and private corporations within Lincoln County. The County is the largest service provider, administering many services such as recreation facilities, human services, public safety, and road maintenance through or in close cooperation with town boards. The City of Caliente, located within the Covered Area, is the only incorporated municipality providing a full range of services within Lincoln County. There are also a variety of General Improvement Districts (GIDs) within the Covered Area (i.e., Alamo Power District No. 3, Alamo Sewer-Water District, Lincoln County Power District No. 1, and Toquop Planning Area) that do now, or will in the future, provide important public services such as water, sewer and fire protection at the local level. These districts act independently of both the county and town boards (Lincoln County Master Plan 2006).

Currently, in the Covered Area, services (i.e., community power, waste, sewer, and water facility construction, delivery, and maintenance) are provided in and around the principal developed areas by the City of Caliente, Alamo Power District No. 3, Lincoln County Power District No. 1, Alamo Sewer and Water GID (ASWGID). As development continues and the population expands within the Covered Area, particularly within the LCLA lands, the need for public utilities will increase. Public utilities such as water, sewer, telephone, cable TV, information systems, and gas and power services as well as stormwater and solid waste disposal will be developed or expanded to provide for the newly developed parcels. Numerous schools and parks will also be developed in the LCLA area. Under the terms of the LCLA development agreement, land for critical public utilities must be conveyed to Lincoln County. Those facilities include, but are not limited to, an administrative annex, sheriff and fire/ambulance substations, and a public works maintenance facility. However, development within the LCLA lands will not entail discharge of effluent into the Virgin River. It is anticipated that 100 percent of effluent generated on the LCLA lands will be treated and reused on site for golf course and other landscaping requirements and will not be discharged offsite.

Urban development in the Covered Area will necessarily entail establishment of solid waste disposal facilities. Expansion of existing or development of one or more new landfills will not occur in the LCLA area. The City of Mesquite landfill, currently within the LCLA area, will not be used to dispose of LCLA solid waste. Rather, solid waste generated within the LCLA area will be taken to one or more transfer stations located in the LCLA area and then transported for disposal at an existing landfill in Lincoln County at Crestline (located just outside of the northeastern portion of the SLCHCP Covered Area).

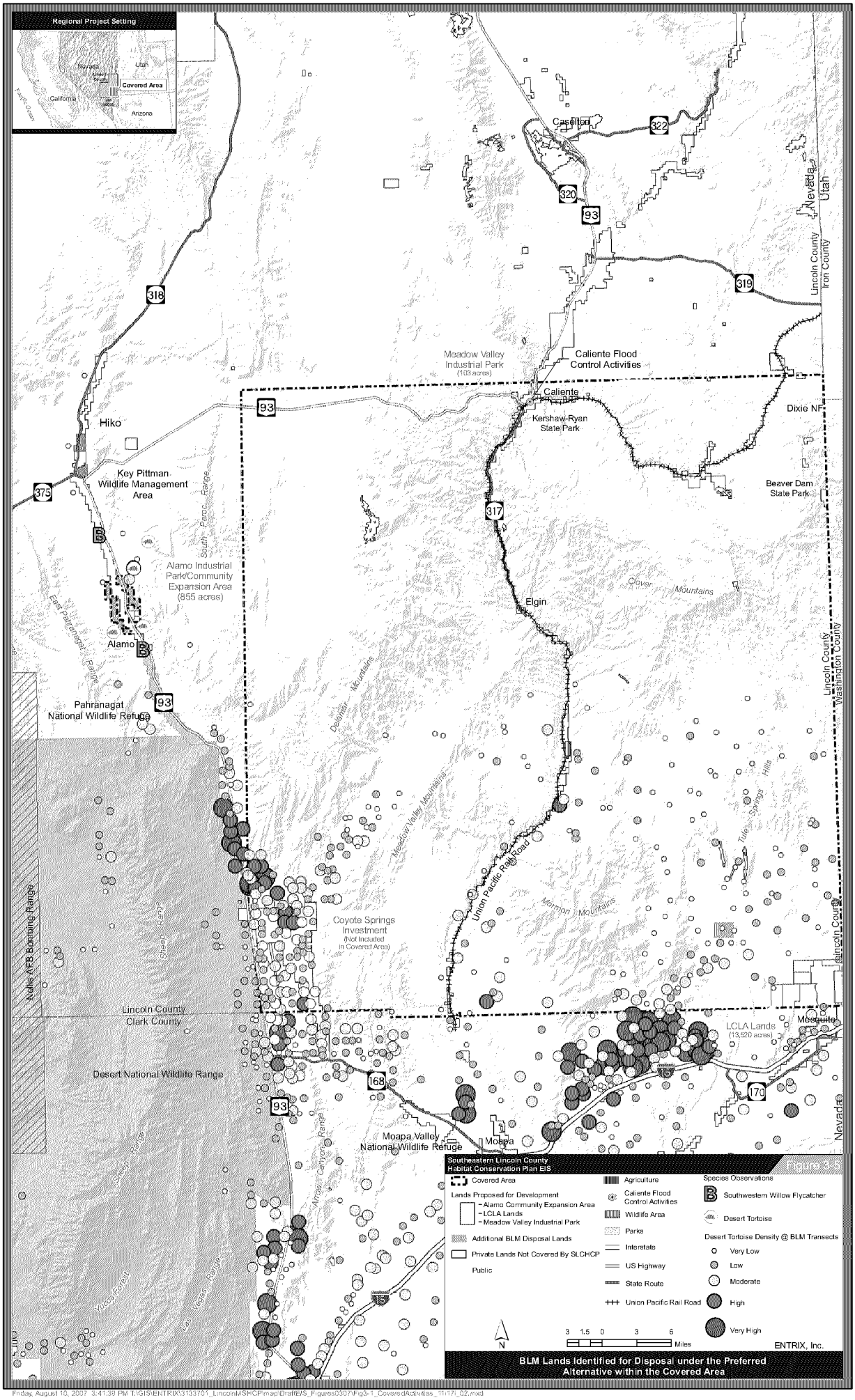
3.2.2.2.2 Flood Control Activities

Of the principal developed areas within the Covered Area, the City of Caliente has experienced several floods over the past 100 years, and while flood prevention measures such as dams have been implemented, they have created other significant problems in the area. The City of Caliente periodically clears out the bed and banks of the Meadow Valley Wash through town to allow for floodwater conveyance. These activities temporarily remove riparian habitat.

In 2000, the Meadow Valley Wash/Clover Creek Watershed Management Plan was prepared and approved by the Lincoln County Coordinated Resource Management Team to address problems and solutions that will lessen possible flood damage while, at the same time, rehabilitating and protecting valuable riparian habitat along the waterways. More recently, the Final RMP/EIS calls for the creation of the Lower Meadow Valley Wash ACEC, which will afford additional riparian habitat protection (BLM 2008).

The Meadow Valley Wash/Clover Creek Watershed Management Plan recommended that the City of Caliente expand the floodplain and construct levees. Floodplain expansion and levee construction would provide several benefits, including flood risk reduction and outdoor recreation with a much lower risk of channel destabilization. The Meadow Valley Wash/Clover Creek Watershed Management Plan recommended excavating the existing bank to build an intermediate terrace, upon which a nature trail could be constructed and flattened to the bank slope angle. The soil material generated from the excavation could then be used to construct a levee. To reduce the risk of erosion, the report also recommended placing toe rock along the edge of the existing channel and along the toe of the flattened slope. In addition, the Meadow Valley Wash/Clover Creek Watershed Management Plan recommended replacing both the downstream bridge at U.S. Highway 93 and the upstream culvert at Clover Creek to increase flow capacity.

At this time, the City of Caliente does not have any flood control plans or associated preliminary drawings for the proposed flood control work to be conducted between the two bridges in the Meadow Valley Wash (Figure 3-6). Additionally, the City of Caliente has requested funding from the SNPLMA to create a linear parkway along the Wash. This parkway would provide a recreation area for the community and may improve floodway conveyance. The City of Caliente is currently pursuing funding to replace the two culverts on the road crossing Clover Creek with a clear span bridge. Because this project will require a Section 404 permit from the USACE, it would also require separate Section 7 consultation, and therefore is not a covered activity under the SLCHCP.



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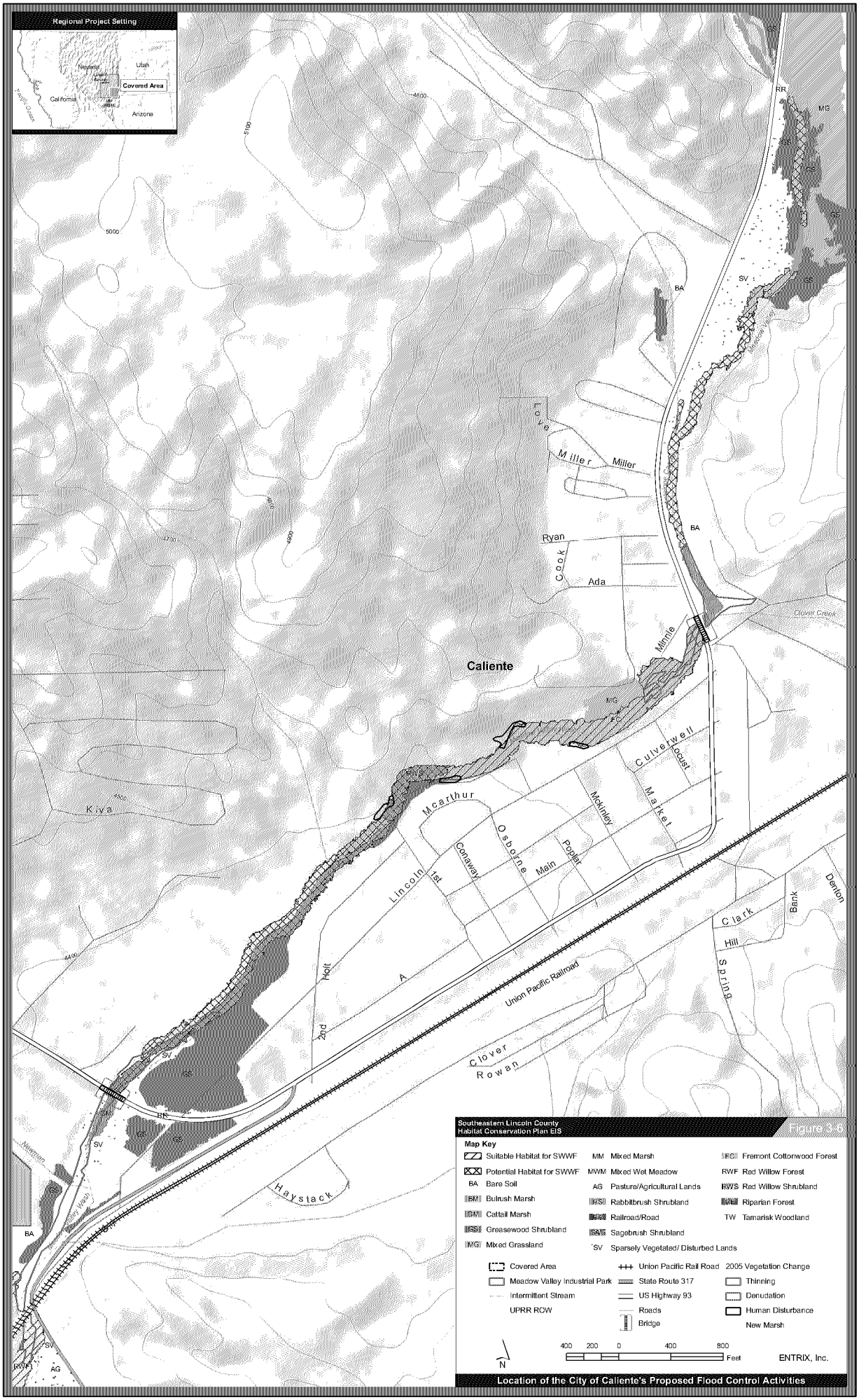

Regional Project Setting
Nevada
Utah
Covered Area
California
Arizona
Pacific Ocean
Caliente
Love
Miller
Miller
Ryan
Cook
Ada
Clover Creek
Minnie
Culverwell
Locust
Market
McKinley
Main
Poplar
Osborne
Conaway
Mcarthur
Lincoln
1st
Kiva
Holt
A
2nd
Union Pacific Railroad
Clover
Rowan
Clark
Hill
Spring
Bank
Denton
Haystack
Newman
Meadow Valley Wash
Meadow Valley
RR
MG
GS
SV
BA
AG
RWS
4500
4600
4700
4800
4900
5000
5100
Southeastern Lincoln County
Habitat Conservation Plan EIS
Figure 3-6
Map Key
Suitable Habitat for SWWF
Potential Habitat for SWWF
BA Bare Soil
BM Bulrush Marsh
CM Cattail Marsh
GS Greasewood Shrubland
MG Mixed Grassland
MM Mixed Marsh
MWM Mixed Wet Meadow
AG Pasture/Agricultural Lands
RS Rabbitbrush Shrubland
RR Railroad/Road
SA Sagebrush Shrubland
SV Sparsely Vegetated/ Disturbed Lands
FC Fremont Cottonwood Forest
RWF Red Willow Forest
RWS Red Willow Shrubland
RF Riparian Forest
TW Tamarisk Woodland
Covered Area
Meadow Valley Industrial Park
Intermittent Stream
UPRR ROW
Union Pacific Rail Road
State Route 317
US Highway 93
Roads
Bridge
2005 Vegetation Change
Thinning
Denudation
Human Disturbance
New Marsh
N
400 200 0 400 800
Feet
ENTRIX, Inc.
Location of the City of Caliente's Proposed Flood Control Activities

As of November 2004, there were approximately 8.3 acres of suitable flycatcher habitat and 9.2 acres of potential flycatcher habitat within the Meadow Valley Wash through the City of Caliente, according to the Meadow Valley Wash Baseline Ecological Assessment (Bio-West 2005a). As part of the SLCHCP, the City of Caliente would like coverage on the following activities in the Meadow Valley Wash on approximately 8.3 acres of suitable southwestern willow flycatcher habitat between the two bridges: 1) periodic clearance of debris and fill from the Wash; 2) maintenance of the linear park, including infrastructure and facility improvements, and other pedestrian access along the Wash; and 3) maintenance of the flood control structures (e.g. culverts). The City of Caliente seeks to minimize the removal or clearing of any existing trees along the banks. The City of Caliente's intent is to end up with a greenbelt running through town which will serve as a means of flood control and a community park/use area.

Other locations within the Covered Area, including the LCLA lands, will require construction of flood control structures and implementation of BMPs to minimize impacts to the drainage system. For the LCLA lands, Lincoln County is considering the applicability of the flood control requirements detailed in the Clark County Drainage Design Manual (Manual) as provided in Appendix G of the Manual or may adopt drainage control requirements currently under design by Lincoln County consultants. Implementation of such measures in the LCLA area may also require a Section 404 permit from the USACE. Although take of listed species for Covered Activities with a Federal nexus would not be covered under the incidental take permit for the SLCHCP, it is the intent of the SLCHCP to provide a mechanism to streamline the Section 7 consultation process for Covered Activities in the SLCHCP with a Federal nexus.

3.2.2.2.3 Roadway Improvements and Maintenance Activities

In general, road construction within the Covered Area has been minimal for the past 10 years. North of the CSI planned development area in Lincoln County (undergoing separate Section 10 consultation), there are no major planned improvements for Federal or state roads within the Covered Area during the life of the Section 10 permits for the SLCHCP. However, Lincoln County has discussed the potential need for future expansion of U.S. Highway 93 and construction of a new road between Caliente and Mesquite. In addition, major new road construction will be required to provide access from Interstate 15 into the LCLA land area. Construction of new roads would most likely require right-of-way authorization from the BLM and/or Federal funding, and therefore would be subject to separate Section 7 consultation under ESA. Therefore, new road construction across public land is not a Covered Activity under the SLCHCP.

LINCOLN COUNTY

Lincoln County roads are improved and maintained by the Lincoln County Road Department. The Covered Area contains approximately 1,274 acres of county-maintained roads (Lincoln County Master Plan 2006) of which a portion of those roads (400 acres) traverse previously disturbed desert tortoise habitat (refer to Figure 3-1). However, as part of the SLCHCP, no new disturbance of desert tortoise habitat is expected, as all the road improvements and upgrades would occur within the County's existing right-of-way. Typical construction and maintenance actions within County rights-of-ways include, but are not limited to, the following activities:

ROADWAY SURFACE REPAIR AND MAINTENANCE

- Planning and scheduling
- Base and surface repair
- Surface patching (hand/machine/spot seal)
- Seal coat (sand/flush/chips)
- Crack filling
- Heat recycle
- Cold recycle
- Temporary patching of portland cement concrete pavements

- Permanent patching of portland cement concrete pavements
- Paved shoulder repair
- Crack and joint sealing
- Repair of miscellaneous concrete appurtenance
- Maintenance of tunnels

CHIP SEALS

- Road grade improvements
- Channel excavation and drainage grading
- Installation of drainage structures
- Bituminous surface treatment
- Erection of new traffic signs

ROADSIDE MAINTENANCE

- Culvert cleaning
- Culvert repair and replacement
- Culvert openings and drop inlet cleaning
- Ditch dressing and shaping
- Ditch cleaning
- Fill slope repair
- Unpaved shoulder slope maintenance (blading)
- Vegetation control (mowing, flailing, burning)
- Vegetation control (hand)
- Removal of storm-deposited debris
- Removal of debris, litter, and trash
- Emptying of litter barrels
- Sweeping or flushing: traveled way, shoulders, paved
- Ditches
- Removal of roadway debris
- Urban sweeping: pick-up broom only
- Maintenance of rest stops
- Maintenance of roadside parks
- Maintenance of landscape areas with turf
- Maintenance of landscape areas without turf
- Repair of rights-of-way fences and gates
- Maintenance of cattle guards
- Inspection of rights-of-way fences and gates

TRAFFIC SAFETY SERVICE PROGRAM

- Repair and replacement of traffic signs
- Guardrail repair and replacement
- Barrier rail and guardrail painting
- Painting gore lines
- Surveying
- Pavement striping: dashed and solid
- Raised pavement markings (buttons)
- Pilot lining
- Pavement markings
- Roadway lighting operations: highway lighting, bridge, and approach lighting
- Patrolling for protection of public traffic
- Maintenance of guideposts and milepost markers
- Miscellaneous sign maintenance
- Repair or replacement of impact attenuators
- Road closure
- Snow removal: plowing, blading, application of abrasives and chemicals
- Plowing with rotary snowplow
- Patrolling for snow and ice control
- Installation or removal of snow markers

STRUCTURE MAINTENANCE PROGRAM

- Maintenance and repair of structures
- Inspection of structures (bridges and culverts)

STOCKPILES AND OTHER ACTIVITIES ON PREVIOUSLY DISTURBED AREAS

- Aggregate production
- Premix production
- Mixing sand-salt
- Hauling materials
- Purchase aggregate
- Purchase premix
- Purchase plant mix
- Site sampling/testing
- Material extraction and storage
- Purchase chips

3.2.2.2.4 Union Pacific Railroad Activities

The UPRR Caliente Subdivision within the Covered Area is a significant transportation and shipping link between some of the West Coast's busiest ports and the rest of the United States. Railroad development began near the turn of the 20th century, and the rail line through Meadow Valley Wash from Moapa to Caliente became an integral section of the railroad. The UPRR induced the development of Caliente within the Meadow Valley Wash (Averett 1995, as cited in Bio-West, Inc. 2005b; Provencher et al. 2003). The UPRR rights-of-way and privately owned lands, totaling 3,699 acres, traverse both desert tortoise and southwestern willow flycatcher habitat within the Covered Area of the SLCHCP, including approximately 60 acres of desert tortoise critical habitat within the Mormon Mesa Critical Habitat Unit (refer to Figure 4-5 herein).

UPRR and its contractors carry out a number of ground disturbing and other activities on its rights-of-way and privately owned lands that could affect the Covered Species. Many of these activities are undertaken to comply with the Federal Track Safety Standards administered by the Federal Railroad Administration, U.S. Department of Transportation. In addition, the Nevada Public Utilities Commission, Safety and Quality Assurance Division, regulates railroad safety. Under 49 C.F.R. Part 213, Union Pacific must comply with minimum safety requirements for railroad tracks, signal systems, roadbeds and adjacent areas, including, among other things:

- maintaining drainage and other water carrying facilities, keeping them free from obstruction and accommodate expected water flow, and
- controlling vegetation so that it does not pose fire risk, interfere with visibility, interfere with employees' trackside duties or interfere with track inspections.

Actions necessary to comply with these safety requirements must be undertaken without unnecessary delay when conditions that require action are identified. Additional requirements may be imposed by state and Federal inspectors.

In addition to operating subject to these Federal and state regulatory standards, UPRR operates subject to its own internal standards designed for the safe and efficient operation of the railroad, with particular emphasis on protection of railroad employees and facilities. The rail line in the Covered Area, UPRR's Caliente Subdivision, is a very important segment of the West's transportation and shipping infrastructure. It is the main rail route between Los Angeles and Salt Lake City and, therefore, is one of two primary east-west routes between Los Angeles and the Midwest. Operating and maintaining this rail line and facilities at optimal safety and efficiency is critical.

Accordingly, UPRR seeks coverage under the SLCHCP for all its activities, and the activities of UPRR's contractors, that could take individuals of the Covered Species and eliminate habitat deemed suitable for those species. Those activities, including those necessary to comply with FRA and Public Utilities Commission requirements, will take place on UPRR rights-of-way and privately owned lands. The Covered Activities include:

- **Operation and Maintenance.** These activities include regular maintenance and repairs to maintain safe working and operating conditions and protect existing facilities and structures:
  - Erosion and flood control actions, including removing eroded soils, sediment and debris from ditches, culverts and bridges;
  - Rail, tie and crossing maintenance/replacement;
  - Track undercutting and surfacing ballast;
  - Maintenance of rights-of-way roads, walkways, signals, pole lines, bridges, culverts, tributary diversions, berms, levees and fences;
  - Vegetation control (i.e., trimming or burning);
  - Fire prevention activities, including disking and plowing; and
  - Snowplowing.

These activities also include quarrying, excavation, grading, storage and placement of materials necessary for such work. They also include all activities associated with operations such as patrols, inspections, equipment storage and surveying, as well as equipment maintenance.

- **Urgent Response**. These are activities that must be conducted with a sense of urgency in response to human-caused and natural disasters or imminently threatened disasters and other discrete events, such as storms, floods, fires, derailments or releases of hazardous materials that threaten employee and public safety. These actions are taken to protect existing infrastructure such as culverts, track, rights-of-way roads and embankments, and bridges, and to repair or replace damaged facilities (such as bridge abutments or footings) to allow their continued safe use or to restore them to safe use. These include repairs of flood, fire and derailment damage, removal of debris from culverts and bridges, and repair of landslides. They also include quarrying, excavation, storage, grading, and placement of materials (such as rip rap) necessary for such response.
- **Program Work including Construction and Reconstruction**. This may include building of new roads, track, signal systems, bridges and fences, as well as installation of culverts, drainage systems and other flood control facilities, power lines, underground utilities and fiber optic lines. In addition, it includes establishing new mining and quarrying facilities to obtain materials for all these activities. Finally, it includes storage, grading and placement of materials used for this work.

Union Pacific Railroad seeks coverage under the SLCHCP for its activities, and the activities of UPRR's contractors, within UPRR's rights-of-way and private lands in the Covered Area, that may take individuals of species listed under the ESA that are Covered Species under the SLCHCP, and eliminate or disturb critical habitat and other habitat deemed suitable for those species. Some of these activities may require permits or other authorizations by a Federal agency, for example, permits issued by the USACE under Section 404 of the CWA. Such Federal actions are subject to consultation under Section 7 of the ESA. The Federal agencies and UPRR propose to utilize the SLCHCP/EIS impacts analysis and avoidance, minimization, and mitigation commitments to provide a more comprehensive, complete, and streamlined Section 7 review process for these permits and authorizations. Rather than conducting a separate consultation for each individual Federal action, USFWS would conduct a programmatic Section 7 consultation that would incorporate UPRR's conservation commitments under the SLCHCP. Once the programmatic consultation is complete, the requirements of Section 7 of the ESA would be satisfied for those UPRR activities within UPRR rights-of-way and private lands that are covered in the SLCHCP and also require other Federal permits or authorization, so long as USFWS finds UPRR's Covered Activities to be consistent with the programmatic consultation.

3.2.2.2.5 Other Privately-Owned Lands Subject to Land Conversion Activities

The particular land conversion activity to be covered under the SLCHCP would be the conversion of a portion of private land along the Meadow Valley Wash within the Covered Area from one land use to another land use (e.g. previously undisturbed agricultural land to urban use or grazing land to irrigated and/or cultivated agricultural land). There are approximately 7,104 acres of private lands within the Covered Area used for agriculture and/or grazing. These landowners are either adjacent to or in the vicinity of the Meadow Valley Wash (see Figure 3-1). Agriculture and livestock practices have gone on for close to 100 years within the Meadow Valley Wash and Clover Creek area. However, today grazing within the Covered Area is carried out almost exclusively on federally administered lands. In the event a private landowner would like to convert his/her land from agriculture to urban use or from grazing to irrigated and/or cultivated agricultural use and wish to participate in the SLCHCP, then the landowner could "opt in" by signing a "participation agreement" (refer to Appendix C) provided by Lincoln County for coverage under the permit issued to Lincoln County for the SLCHCP.

3.2.2.3 Conservation Measures

Conservation measures for the SLCHCP and this alternative are those actions that avoid, minimize and/or mitigate the potential impacts of the Covered Activities on the Covered Species. The following criteria must be met before issuance of a permit: 1) the taking will be incidental to otherwise lawful activities; 2) the applicant(s) will, to the maximum extent practicable, minimize and mitigate the impacts of such taking; 3) the

applicant(s) will ensure that adequate funding for the SLCHCP and procedures to deal with unforeseen circumstances will be provided; 4) the taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild; 5) the applicant(s) will ensure that other measures that the USFWS may require as being necessary or appropriate will be provided; and 6) the USFWS has received such other assurances as may be required that the SLCHCP will be implemented. The following Conservation Measures will be implemented in order to fulfill the statutory criteria for issuing a Section 10 permit and to meet the biological goals of the Covered Species (i.e., desert tortoise and southwestern willow flycatcher).

Cumulatively, the avoidance and minimization measures will not offset all of the potential impacts to the Covered Species from the Covered Activities. Therefore, mitigation measures have been identified to compensate for take of the Covered Species. As further described in Section 8.1.1 of the SLCHCP, an Implementation and Monitoring Committee (IMC) will be formed by the BLCC to include permittees and plan participants to help monitor, prioritize, and implement avoidance, minimization and mitigation measures. The IMC will include representatives from Lincoln County, USFWS, BLM, the City of Caliente, UPRR, and Lincoln County Conservation District (LCCD).

Most mitigation measures will occur on public land because, other than the lands listed as available for disposal in the Caliente Management Framework Plan Amendment (MFP Amendment) and Final RMP/EIS for the Ely District (BLM 2008), there are only 40,681 acres of desert tortoise habitat on private land in the Covered Area (of which 19,840 acres are subject to "take" as requested by the SLCHCP; not all of the private land occurring within the Covered Area will be subject to take under the SLCHCP), while there are roughly 728,747 acres of public land in desert tortoise habitat on public land within the Covered Area. According to Bio-West's Meadow Valley Wash Post-Flood Vegetation Assessment (2005b), there is approximately 329 acres of suitable habitat for the flycatcher on private and public land within the Covered Area, of which 84.3 acres will be subject to "take" as a result of the Covered Activities.

3.2.2.3.1 Conservation Measures for Land Development and Maintenance Activities

AVOIDANCE AND MINIMIZATION MEASURES FOR DESERT TORTOISE

The Conservation Measures required by Lincoln County to be implemented by the developers to avoid and minimize impacts of proposed development and maintenance activities to desert tortoise and/or their habitat are summarized below.

INTERIM MEASURES

DESERT TORTOISE CLEARANCE SURVEYS, PROCESSING, AND TRANSPORT

Prior to habitat disturbance, tortoises will be cleared from project areas by a USFWS authorized[1] biologist, according to the procedures outlined below, and transported to the Desert Tortoise Conservation Center (DTCC). Tortoises cleared from the project area will be processed (genotyped and marked) and screened for diseases[2] at the DTCC before the ultimate translocation back into the wild. The data collected from these surveys (i.e., location of all tortoises and tortoise signs, habitat characteristics, and physiognomy of the cleared areas) will help determine the status of the desert tortoise and its habitat within the Covered Area. The tortoises cleared from the project area(s) will be kept separate from tortoises collected from other locales. Cleared tortoises will be used in the head start and translocation programs administered by the USFWS, or other desert tortoise related studies that will contribute to the recovery of the tortoise (as described below).

1 To serve as an authorized desert tortoise biologist, a person must fill out a "Desert Tortoise Qualifications Statement" (contact the USFWS Las Vegas Nevada field office or download form at http://www.fws.gov/nevada/desert_tortoise/documents/form/DT_authorized_biologist_request_form.pdf) and submit it to the USFWS for approval. The USFWS will respond within 30 days with a letter stating whether the person is qualified to undertake the specific duties requested.

2 This examination may include an assessment of the overall condition of the animal and its shell, looking for visible signs of herpes lesions, Upper Respiratory Tract Disease (URTD) symptoms, trauma, and cutaneous dyskeratosis. Tortoises that are Enzyme Linked Immunosorbent Assay (ELISA) positive for the antibodies to Mycoplasma and tortoises that show signs of URTD will be isolated when translocation occurs. The Science Advisory Committee (SAC) for desert tortoise recovery is currently developing recommendations for this type of activity, including recommendations for revising blood testing and screening protocols.

Desert tortoise clearance surveys will be completed in accordance with existing USFWS recommendations (Desert Tortoise Council 1994) or most recent USFWS-approved desert tortoise survey and handling protocols. Specifically:

- Tortoise exclusion fence and barrier construction would be monitored by a USFWS authorized[1] biologist. If fence construction occurs during periods of higher desert tortoise activity (generally March 1 to October 31), a USFWS authorized tortoise biologist shall be onsite during construction of the tortoise-proof fence to ensure that tortoises are not harmed.
- If the fence is constructed during periods of lower desert tortoise activity (generally November 1 to the end of February), a USFWS authorized desert tortoise biologist will thoroughly examine the proposed fence line and burrows for the presence of tortoises no more than five days before construction.
- Any desert tortoises or eggs found in the fence line will be relocated by a USFWS authorized desert tortoise biologist in accordance with approved protocols. Tortoise burrows that occur immediately outside of the fence alignment that can be avoided by fence construction activities shall be clearly marked to prevent crushing.

Following fence installation (described below), pre-construction surveys within the enclosed area shall be conducted by USFWS authorized (refer to footnote 1 below for the definition of "authorized") biologists to locate and remove desert tortoises prior to grading or actions which might result in harm to desert tortoises. A USFWS authorized biologist shall oversee the survey for and removal of tortoises using techniques providing 100-percent coverage of all areas. Unless superseded by a USFWS protocol, two complete passes of 100-percent coverage will be accomplished. Additionally, tortoise burrows shall be cleared of tortoises and eggs and then collapsed. Any desert tortoises or eggs found within the fenced area during construction activities will be removed under the supervision of a qualified tortoise biologist in accordance with USFWS protocol.

TEMPORARY FENCING

Prior to commencing any land disturbance activities, a desert tortoise-proof fence will be constructed to confine tortoises to a certain area or exclude them from harmful situations. Fences should be constructed with durable materials suitable to resist desert environments, alkaline and acidic soils, wind, and erosion. Specifications for desert tortoise exclusion fencing include 1-inch horizontal by 2-inch vertical, galvanized welded wire, 36 inches in width (USFWS 2005). All desert tortoise fences shall be inspected on a regular basis by the individual landowner in coordination with Lincoln County and sufficient enough to maintain an effective barrier to tortoise movement.

Installing and maintaining the temporary fence during construction will be the responsibility of the developers or individual landowners. All temporary tortoise exclusion fencing used during construction will be located, designed, inspected, and maintained by the landowners according to recommendations of USFWS and will be based on the August 2005 or the most-recent version of Recommended Specifications for Desert Tortoise Exclusion Fencing.

The risk level for a desert tortoise encountering a breach in the fence is greatest in the spring and fall, particularly around the time of precipitation. All fence damage shall be repaired within 72 hours after discovery during periods of higher desert tortoise activity and within 10 days during periods of lower desert tortoise activity to ensure that tortoises do not travel through damaged sections (USFWS 2005).

With regard to clearance surveys and fencing, the developers, in collaboration with Lincoln County, may choose one of the following measures:

- The developer clears a determined amount of acreage, within pre-installed temporary tortoise exclusion fencing, as development occurs, eventually replacing the temporary fencing with a permanent desert tortoise proof barrier described below, surrounding the full extent of the project;

[1] To serve as an authorized desert tortoise biologist, a person must fill out a "Desert Tortoise Qualifications Statement" (contact the USFWS Las Vegas Nevada field office or download form at http://www.fws.gov/nevada/desert_tortoise/documents/form/DT_authorized_biologist_request_form.pdf) and submit it to the USFWS for approval. The USFWS will respond within 30 days with a letter stating whether the person is qualified to undertake the specific duties requested.

- The developer clears all the land proposed for development up front and constructs a permanent tortoise-proof barrier (described below under long term measures); and/or
- For projects with atypical site conditions (e.g. preexisting adjacent development, steep terrain, preexisting adjacent tortoise exclusion fencing or barriers, other non-standard site conditions), the developer will submit a site-specific fencing plan to USFWS. To facilitate agency review, the submittals will include:
  - Clear presentation of atypical site conditions where variances are believed warranted,
  - Text describing the alternative barrier plan, and
  - Exhibits supporting the alternative barrier plan.

Agency notification would be submitted at least 45 days before the onset of construction. If USFWS does not provide written objections or project-specific conditions within 30 days from the receipt of the complete submittal, the work would be authorized as proposed.

CONSTRUCTION BEST MANAGEMENT PRACTICES

Structural and non-structural industry best management practices (BMPs), such as pre-construction, design, and/or construction site BMPs, will be used for all land development and maintenance projects to avoid or minimize impacts to desert tortoise habitat summarized below.

PRE-CONSTRUCTION GENERAL SITE MEASURES

- An environmental education program, including a desert tortoise education program approved by USFWS, would be presented to all personnel who would be on the proposed development site, including surveyors, construction engineers, proponent employees, contractors, contractors' employees, supervisors, inspectors as development commences.
- USFWS authorized[1] biologists or trained personnel shall act as biological monitors and be present on-site during construction and project-related activities for the protection of desert tortoises for projects outside the LCLA boundaries or other proposed development areas to be covered under the SLCHCP that have not had desert tortoise fence installed and tortoise removals complete. The number of biological monitors will vary depending on construction activity, time of year, and amount of acres being disturbed. During initial vegetation clearance during periods of higher desert tortoise activity, there should be a minimum of one monitor for each 5 miles of road construction and each 50 acres of land clearance.
- Project personnel shall be notified that they are not authorized to handle or otherwise move federally-listed species encountered on the site. Instead, project personnel shall immediately call a pre-established number for tortoise pick up and removal. Although, in fenced areas after clearance surveys are complete, project personnel should be trained to safely remove and temporarily hold any tortoises discovered within the fenced area, so as to minimize costs associated with having an authorized biologist on-call to handle tortoises should one appear after completion of the clearance surveys.
- Project personnel for projects outside the LCLA area or other proposed development areas to be covered under the SLCHCP and those without tortoise fencing and removal should inform an on-site biological monitor whenever a desert tortoise is observed on or near the construction site, whether or not the tortoise is in the path of construction activities. The biological monitor would inform project personnel on how to proceed and/or would move the desert tortoise out of harm's way.
- All employees shall be instructed that their activities shall be confined to locations within areas previously cleared of tortoise to the maximum extent practicable.

[1] To serve as an authorized desert tortoise biologist, a person must fill out a "Desert Tortoise Qualifications Statement" (contact the USFWS Las Vegas Nevada field office or download form at http://www.fws.gov/nevada/desert_tortoise/documents/form/DT_authorized_biologist_request_form.pdf) and submit it to the USFWS for approval. The USFWS will respond within 30 days with a letter stating whether the person is qualified to undertake the specific duties requested.

- Travel routes outside fenced and cleared areas within undisturbed habitat should be established and clearly marked prior to construction. In areas not cleared of desert tortoises and enclosed with tortoise exclusion fencing, cross-country vehicular travel (including that of survey crews) shall only occur after the route has been cleared by a USFWS authorized[1] desert tortoise biologist.
- Existing routes of travel shall be used whenever possible. To the extent possible, previously disturbed sites within the project area shall be used for the stockpiling of excavated materials, storage of equipment, digging of borrow pits, parking of vehicles, and any other surface-disturbing activity. Any routes of travel on site that require construction or modification and have not been cleared of tortoise(s) shall have a USFWS authorized biologist survey the area for the species prior to modification or construction of route.
- During construction, a speed limit of 15 mph shall be maintained in areas until the tortoise exclusion fence is installed and during periods of higher desert tortoise activity. Speed limit signs and caution signs indicating the presence of desert tortoises shall be posted at the beginning of any access road within areas not cleared of tortoises and enclosed with desert tortoise exclusion fencing.
- Any time a vehicle is parked in an area not enclosed with desert tortoise exclusion fencing, whether the engine is engaged or not, the ground around and under the vehicle shall be inspected for desert tortoise. If an individual is observed, an authorized biologist shall be contacted for instructions on how to proceed.
- Project activities that may specifically harm a tortoise shall cease if a tortoise is found in harm's way. All project personnel will be trained to safely remove and temporarily hold any tortoises discovered within the fenced area, so as to minimize costs associated with having an authorized biologist on-call to handle tortoises should one appear after completion of the clearance surveys. Project personnel will also be responsible for making sure that the tortoise(s) are picked up and transported to the DTCC. Project activities in that vicinity shall resume after the tortoise has been removed or has moved to safety on its own accord.

GROUND DISTURBANCE ACTIVITIES

Before construction commences, environmental sensitivity training regarding protected habitats and sensitive species would be conducted for all individuals who would be involved in the construction, operation, and/or maintenance activities associated with the Covered Area.

For ground disturbance activities, the following BMPs would be implemented unless superseded or amended by a permit condition:

- Identify and clearly mark all vehicle access routes, equipment staging areas, and excavated material stockpile areas.
- Preserve natural vegetated buffers or construct temporary vegetated buffers, if needed.
- Practice construction site waste management, including: 1) cover trash containers; 2) frequent scheduled collections; 3) place oil and fuel products in a covered area with dikes in place to contain spills during refueling; 4) immediately clean up spills; and 5) place vehicle washing and maintenance areas in appropriate areas where untreated discharges can be captured.
- Prohibit cross-country vehicular travel (i.e., off established roads) on neighboring Federal lands and reserve lands in Lincoln County not cleared of tortoise.
- BMPs for weed management (including noxious weeds) would be employed to minimize the potential to introduce weeds into the project area. Weed control measures would include, but not be limited to, cleaning wheel wells, wheels and tires, bumpers, and undercarriage of heavy equipment with high pressure water or air to remove any weed seeds prior to moving onto the project area.
  - Vegetation management would be conducted to protect existing vegetation and would include the following components:

[1] To serve as an authorized desert tortoise biologist, a person must fill out a "Desert Tortoise Qualifications Statement" (contact the USFWS Las Vegas Nevada field office or download form at http://www.fws.gov/nevada/desert_tortoise/documents/form/DT_authorized_biologist_request_form.pdf) and submit it to the USFWS for approval. The USFWS will respond within 30 days with a letter stating whether the person is qualified to undertake the specific duties requested.

- Steam cleaning of construction equipment prior to entering the Covered Area to prevent introduction of weed species;
- Minimizing the amount of disturbance to the extent possible during maintenance and repair activities; and
- Soil stabilization measures, including a mixture of hydromulch, straw, and native seed mix.

WATER AND AIR QUALITY MEASURES

- A Storm Water Pollution Prevention Plan in accordance with Section 402 of the CWA and any State of Nevada or local requirements would be implemented during construction of the LCLA lands to minimize impacts to water quality.
- Contractors would be required to use standard erosion control best management practices, including silt fencing, sediment traps, vegetated buffers, sand filters, grassed filter strips, bio-retention structures, soil roughening on graded sites, and earthen perimeter dikes, near ephemeral washes and disturbed sites to control sediment generation and transport.
- Fugitive dust from the construction phase would be controlled by the Nevada Bureau of Air Pollution Control's (BAPC) Surface Area Disturbance Permitting Program. Permits with Dust Control Plans are required for all projects disturbing more than 20 acres.
- Vehicle tailpipe emissions are currently regulated through a variety of federal programs. Future industrial facilities would be subject to the stationary source permitting program of the BAPC. This program insures that the proposed stationary industrial sources (singly or combined) would not detrimentally affect air quality.
- The following mitigation measures would be implemented to minimize construction emissions:
  - Diesel and gasoline-powered construction equipment would be properly maintained and turned off when not in use.
  - Diesel and gasoline engines, motors, and equipment would be located as far as possible from sensitive receptors.

TRASH MANAGEMENT

Trash would be maintained at all times in covered, sanitary containers approved for such use by Lincoln County or in enclosed areas designed for such purposes. All trash would be hauled off-site to an authorized waste disposal site. No rubbish or debris of any kind would be allowed to accumulate anywhere in the Covered Area.

During construction, trash and food items shall be disposed of properly in predator-proof containers with re-sealing lids and removed regularly to reduce attractiveness to opportunistic predators such as ravens, coyotes, and feral dogs. This trash would be disposed of properly in an approved landfill. Trash includes but is not limited to, cigarettes, cigars, gum wrappers, tissue, cans, paper, and bags.

LONG-TERM MEASURES

CONSTRUCTION AND MAINTENANCE OF DESERT TORTOISE BARRIERS

Permanent tortoise-proof barriers will be constructed on the perimeter of development areas to prevent tortoises from entering the development area post-construction and to minimize vehicle-related tortoise mortality. Perimeter block walls are considered effective tortoise barriers. Other barriers to tortoise movement may include block walls, decorative walls and fences at least 24 inches high that do not have openings larger than 0.5 inch below 2 feet from ground surface. To ensure the integrity of the barrier at road entries to active development areas, gates or cattle guards that serve as tortoise barriers would be installed and maintained to ensure that any tortoise that falls underneath has a path of escape without crossing the intended barrier.

Installing and maintaining the fence during construction will be the responsibility of the developers or individual landowners. All permanent desert tortoise barriers will be located, designed, inspected, and

maintained by the landowners according to recommendations of USFWS. Revenues generated from the LCLA Lands GID (refer to Section 9.1.1.3 of the SLCHCP) will be used toward maintaining the permanent desert tortoise fence once erected.

LCLA DEVELOPMENT AGREEMENTS

Development agreements (DAs) for the LCLA lands require that the lands shall be included in and shall be part of the SLCHCP and that Lincoln County shall not authorize grading or issue a building permit on LCLA lands until either: 1) The SLCHCP has been completed and a Section 10 permit has been issued to Lincoln County by USFWS; 2) the developer(s) has prepared an individual HCP and USFWS has issued a related Section 10 permit; or 3) the developer(s) has complied with Section 7 of the ESA. A draft DA is provided in Volume III: Appendix B. A formal (final) DA will be composed and will contain covenants, conditions, and restrictions (CC&Rs) to accompany the land and zoning codes and regulations agreed to between the County and the developer.

The CC&Rs will contain conditions to minimize the effects of the development to the desert tortoise and will include: 1) community fencing requirements to prevent desert tortoise ingress and domestic animal egress; 2) appropriate control such as leash laws for domestic animals; 3) litter and trash control programs; and 4) prohibition of possession of pet tortoises (native or non-native) within the community.

CC&Rs that are required for other new residential communities within the Covered Area (e.g. the Alamo Land Sale area) will include the same four provisions as discussed above.

The BLCC has the responsibility to ensure that the DAs adhere to the terms and conditions of Lincoln County's Section 10 permit for the SLCHCP and include the responsibilities of the developers as described in the SLCHCP and Implementing Agreement. The DAs are a part of the network of mechanisms to commit developers to the terms and conditions placed on the County by the Section 10 permit(s). The Plan Facilitator will review all DAs for compliance with the SLCHCP Section 10 incidental take permits and consult with USFWS as needed.

AVOIDANCE AND MINIMIZATION MEASURES FOR SOUTHWESTERN WILLOW FLYCATCHER

Potential effects arising from increased human presence from the proposed operation and maintenance of the 103-acres Meadow Valley Industrial Park could increase traffic and noise in the Meadow Valley Wash area, which could affect southwestern willow flycatchers using nearby habitat. However, the southwestern willow flycatcher has a small home range and according to its recovery plan does not appear to be overly sensitive to low level human activity outside of its breeding patch (USFWS 2002). However, structural and non-structural BMPs will be used during operations and maintenance activities associated with the Meadow Valley Industrial Park to avoid and minimize effects from possible erosion, pollution, and sedimentation to downstream riparian habitat in the Meadow Valley Wash. Future development of this site could lead to future development pressures. If these future development pressures were to affect southwestern willow flycatcher, then either an amendment to the SLCHCP or a separate Section 10 permit would need to be obtained.

MITIGATION MEASURES

DESERT TORTOISE MITIGATION FEES

Cumulatively, the avoidance and minimization measures will not offset all of the potential impacts from land development and maintenance activities on approximately 18,476 acres of desert tortoise habitat on non-Federal property within the Covered Area (Table 3-2). As a result, land developers will pay a per-acre development fee, which will be used toward the implementation of conservation efforts (described below) to mitigate for the loss of desert tortoise habitat associated with these activities. The fee is based on a tiered rate structure associated with geographic areas within the Covered Area (Figure 3-7).

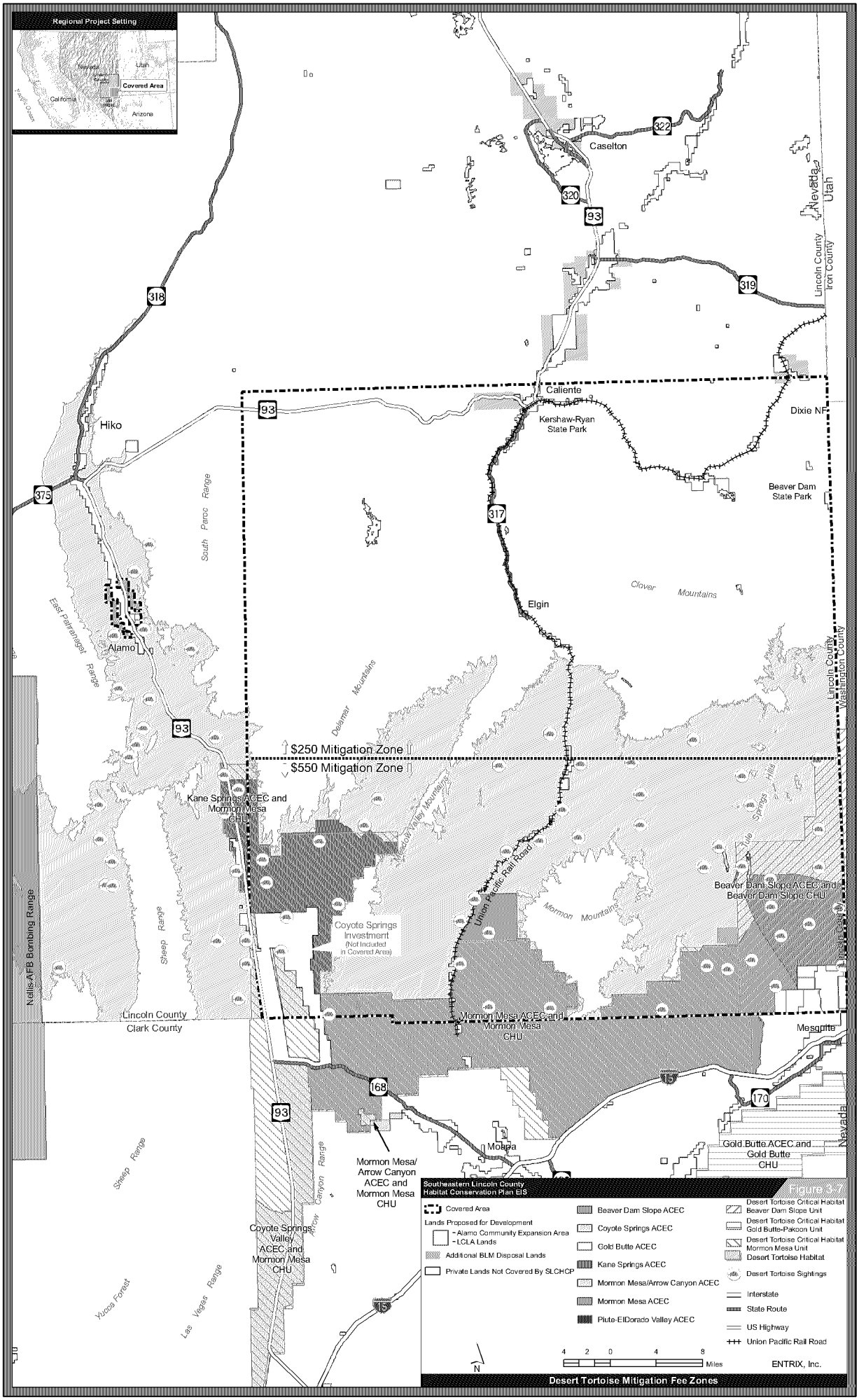
Table 3-2 Summary of Potential Effects of all Covered Activities on the Covered Species and the Estimated Acreage of Affect

Covered Activity	Covered Species	
	Desert Tortoise (Acres)	Southwestern Willow Flycatcher (Acres)
Land Development & Maintenance (including BLM lands identified for disposal within the Covered Area)	Direct and indirect effects to 18,476 acres of habitat (subtract out the 103-acre Meadow Valley Industrial Park)	No direct effects; possible minor indirect effects to habitat in the Meadow Valley Wash and downstream riparian habitat in Virgin River
Utility and Infrastructure Development & Maintenance	Direct and indirect effects accounted for in Land Development	No direct effects; possible indirect effects accounted for in Land Development
Flood Control (City of Caliente, LCLA lands, BLM lands identified for disposal within the Covered Area)	Direct and indirect effects accounted for in Land Development	Direct and indirect effects to 8.3 acres of suitable habitat by City of Caliente in the Meadow Valley Wash
County Roads and Rights-of-Way	No direct effects, possible minor indirect effects to habitat	No direct effects, possible minor indirect effects to habitat
Union Pacific Railroad	Direct and indirect effects to 800 acres of habitat	Direct and indirect effects to 54 acres of habitat
Other Privately-owned Lands Subject to Land Conversion Activities (e.g. previously undisturbed agricultural land to urban use or grazing land to irrigated and/or agricultural land)	Potential direct and indirect effects to 564 acres of habitat if private land is converted from one land use to another land use	Potential direct and indirect effects to 22 acres of habitat if private land is converted from one land use to another land use
TOTAL	**19,840 acres**	**84.3 acres**

The fee zones were established to 1) reflect the differential in potential economic returns from land uses in the southern portion of the Covered Area (closer to Interstate 15 and Las Vegas) versus land in the northern portion of the Covered Area; and 2) to base the fee on desert tortoise habitat quality. A higher fee would be assessed within areas south of the northern limit of desert tortoise critical habitat, because the land is adjacent to or in the vicinity of designated critical habitat and desert tortoise ACECs. Overall, habitat quality relative to the Covered Area may be higher in locations adjacent to designated critical habitat and ACECs. A lower fee would be assessed within areas north of the northern limit of desert tortoise critical habitat based on location in the northern periphery of the tortoise's range. Although the habitat is still important to the species, it is not in close proximity to existing designated critical habitat or desert tortoise ACECs, and tortoise numbers tend to decrease as the habitat begins to transition into a vegetation community not favored by desert tortoises in the extreme limits of their range.

A mitigation fee of $550/acre, the maximum allowable mitigation fee that Lincoln County can impose pursuant to NRS Chapter 349, will apply to development occurring south of the northern-most location of critical habitat for desert tortoise within the Covered Area of the SLCHCP (Figure 3-7). This area includes the LCLA lands and the 640-acre Section 36 disposal parcel (14,160 acres). Up to 7.8 million dollars in mitigation fees could be collected from disturbance of desert tortoise habitat in this area. Additionally, all UPRR activities conducted on up to 800 acres of desert tortoise suitable habitat within their rights-of-way will be subject to the $550/acre mitigation fee.

A mitigation fee of $250/acre will apply to development occurring north of the northern-most location of critical habitat for desert tortoise covered by the SLCHCP (Figure 3-7). This area includes Alamo Industrial Park and Community Expansion area (855 acres) and additional BLM disposal lands in the vicinity of Alamo (3,461 acres). Up to 1.1 million dollars in mitigation fees could be collected from disturbances of desert tortoise habitat in this area.


Regional Project Setting
Nevada
Utah
Covered Area
California
Arizona
Caselton
322
320
93
Nevada
Utah
Lincoln County
Iron County
319
318
Caliente
Dixie N.
Kershaw-Ryan State Park
Hiko
93
375
South Pahroc Range
Beaver Dam State Park
317
Clover Mountains
Elgin
East Pahranagat Range
Alamo
Lincoln County
Washington County
Delamar Mountains
93
$250 Mitigation Zone
$550 Mitigation Zone
Kane Springs ACEC and Mormon Mesa CHU
Coal Valley Mountains
Meadow Valley Hills
Union Pacific Rail Road
Beaver Dam Slope ACEC and Beaver Dam Slope CHU
Mormon Mountains
Coyote Springs Investment
(Not Included in Covered Area)
Nellis AFB Bombing Range
Sheep Range
Lincoln County
Clark County
Mormon Mesa ACEC and Mormon Mesa CHU
Mesquite
168
93
15
170
Nevada
Gold Butte ACEC and Gold Butte CHU
Sheep Range
Mormon Mesa/ Arrow Canyon ACEC and Mormon Mesa CHU
Moapa
Arrow Canyon Range
Coyote Springs Valley ACEC and Mormon Mesa CHU
Yucca Forest
Las Vegas Range
15
Southeastern Lincoln County Habitat Conservation Plan EIS
Figure 2-7
Covered Area
Lands Proposed for Development
- Alamo Community Expansion Area
- LCLA Lands
Additional BLM Disposal Lands
Private Lands Not Covered By SLCHCP
Beaver Dam Slope ACEC
Coyote Springs ACEC
Gold Butte ACEC
Kane Springs ACEC
Mormon Mesa/Arrow Canyon ACEC
Mormon Mesa ACEC
Plute-ElDorado Valley ACEC
Desert Tortoise Critical Habitat Beaver Dam Slope Unit
Desert Tortoise Critical Habitat Gold Butte-Pakoon Unit
Desert Tortoise Critical Habitat Mormon Mesa Unit
Desert Tortoise Habitat
Desert Tortoise Sightings
Interstate
State Route
US Highway
Union Pacific Rail Road
N
4 2 0 4 8
Miles
ENTRIX, Inc.
Desert Tortoise Mitigation Fee Zones

The mitigation fee will be paid to Lincoln County at the time of issuance of the building or grading permit to the developers, whichever occurs first. Mitigation fees will not be required for loss of previously disturbed or unsuitable habitat. Previously disturbed habitat is defined as Mojave mixed scrub that has been bladed or tilled, including for agricultural use, resulting in complete removal of the vegetation. Areas that are completely devoid of vegetation, such as roads, pavement, and dry lake beds are examples.

DESERT TORTOISE CONSERVATION EFFORTS

The fees generated will be used toward the implementation of mitigation measures described below to compensate for the effects of incidental take on the desert tortoise within the Covered Area as described in the SLCHCP:

- Head Start Program for the desert tortoise
- Translocation Program for the desert tortoise
- Fund Research of the Ecological Implications of Fire
- Other Applied Research
- Habitat Restoration
- Public Education and Outreach
- Implement the LCLA Road, Fence and Trail Plan
- Predator Monitoring Control

The development, design, timing and implementation of these actions described below will be accomplished with guidance from the USFWS Desert Tortoise Recovery Office (DTRO) (based at the Nevada Fish and Wildlife Office in Reno, Nevada) and developed as part of the mitigation plan prescribed for the SLCHCP by the Implementation and Monitoring Committee (IMC) during the first year of implementation of the SLCHCP (refer to Section 7: Expected Outcomes in the SLCHCP). Potential allocation of funds from mitigation fees collected for desert tortoise conservation measures is provided in Table 9-6 in Section 9: Funding of the SLCHCP.

Some of the funding may be used to support desert tortoise conservation, management, and recovery activities based at the Desert Tortoise Conservation Center (DTCC). The DTCC is a facility located in Clark County south of Las Vegas, Nevada, that receives desert tortoises displaced from urban development and other construction activities in southern Nevada that are authorized or permitted under Section 7 or Section 10 of the ESA. As well as providing professional care for displaced tortoises, the DTCC provides facilities for desert tortoise research and development of translocation and head starting programs, which are important for promoting the conservation and recovery of the tortoise. Additional management benefits provided by the DTCC include genetic analysis to maintain variability while ensuring that genetically distinct populations are not hybridized or diluted prior to repatriation back in to wild populations.

The DTCC is managed cooperatively under a Memorandum of Understanding by the USFWS, BLM, Nevada Department of Wildlife (NDOW), and a consortium of zoological institutions known as the Conservation Centers for Species Survival (C2S2). The C2S2 member institutions work together to provide leadership in studying and creating self-sustaining populations ex situ and in situ of some of the world's most endangered species. The Zoological Society of San Diego, a member of C2S2, is in charge of daily operations at the DTCC.

Desert tortoise conservation, management, and recovery programs are being developed at the DTCC in conjunction with specific population augmentation efforts to mitigate for loss of desert tortoise habitat associated with approved habitat conservation plans in Nevada. It is the intent of this HCP to contribute funding to support these programs at the DTCC.

Head Start Program for the Desert Tortoise. The Desert Tortoise Recovery Plan (USFWS 1994) identifies a variety of threats (e.g. poaching, mortality on roads, stress-induced immune incompetence and disease, etc.) that cause reduced population densities of tortoises. Further, the 1994 Recovery Plan

suggested a variety of actions to reduce the effect of these threats on desert tortoise populations. Many of the actions recommended in the Recovery Plan have not been implemented in a manner to produce discernable benefits to tortoise populations. Specifically, enhancement of recruitment within desert tortoise populations has not been successful (USFWS 1994). In other sensitive species of chelonians, recruitment enhancement has been used effectively as a conservation tool (conspicuous examples include various sea turtles and giant tortoises). The biggest success in recruitment enhancement has been with Galapagos Tortoises. Tortoise eggs are collected from natural nests and from captive tortoises at the headquarters of the Galapagos National Park and the Charles Darwin Research Station at Isla Santa Cruz, Galapagos, Ecuador. These eggs are hatched and the neonates nurtured until they reach a size of approximately 150-mm carapace length after which these juvenile tortoises are "head-started" in natural habitats on the many islands of Galapagos. At 150 mm, the juvenile tortoises are large enough to avoid excess mortality from exotic predators such as cats and some dogs. The benefit of a head start program has been great enough that it may have prevented extinctions, and in many ways, the challenges on Galapagos are similar to those with desert tortoises. For example, as with the Galapagos Islands, desert tortoises live in unique genetic populations separated by natural barriers to dispersal within the species' range. As has occurred on Galapagos, a head start program has been proposed for implementation for Nevada tortoise populations to increase the probability that tortoise populations will remain until other required conservation actions (e.g. abating excess mortality as suggested in the recovery plan) can be implemented. This program will also provide animals for release in management-related experiments described later.

A portion of the current DTCC will be used as a hatchery/rearing facility under this program. Pens will be made to secure tortoises from mixing so that unique genotypes can be maintained. Rearing pens will be constructed that provide food in excess so that bodily growth rates are enhanced. Proper husbandry will rear neonates to a target size of 100 mm (the size at which ravens are believed to not be effective predators) in as little as three years. Thus, rearing facilities will be large enough to house three cohorts of juveniles in equilibrium in order to have a sustained production of three-year-old tortoises. The Head Start program will be used in conjunction with the research and restoration programs to contribute to tortoise recovery. Tortoises raised in the Head Start program may be placed into burned habitat areas that are being restored as part of the SLCHCP. The DTRO will be responsible for the management of the Head Start program and will determine the best locations for translocation of tortoises propagated under the program.

Translocation Program for Desert Tortoises. When properly implemented, translocation may provide a valuable tool that can be used to minimize direct effects to desert tortoises, augment natural populations, or to repatriate otherwise suitable areas that have experienced local extirpations and assist in recovery (USFWS 2004, 2008; Nussear 2004). Translocation activities also provide a forum for collecting monitoring data to determine if desert tortoises respond in a manner predicted by resource managers, and an opportunity to conduct research that yields new data that can be used to manage the species in a proactive manner. Recent studies on translocation in Nevada and Utah indicated that translocated tortoises had similar levels of mortality compared to resident tortoises, and that translocated females produced similar number of eggs compared to resident females (Nussear 2004, Field et al. 2007). There appeared to be no adverse effects on the resident populations into which tortoises were translocated as measured by survivorship, reproductive output, and movement patterns of residents (Nussear 2004, Field et al. 2007). Thus, in the short period of three years, translocation was deemed by the researchers of these studies to be a successful solution for the disposition of displaced tortoises. However, there are still many aspects of the responses of tortoises to translocation that have not been addressed quantitatively (for example, longer-term effectiveness of translocation in concert with local threat abatement); these warrant further investigation through this program.

Translocation of tortoises will be guided by staff from the DTRO. Translocation of tortoises is considered part of the overall "Head Start and Translocation" program that will in part be funded by the permittees. Tortoises may be translocated to public lands administered by the BLM, subject to BLM review and authorization, and USFWS approval if it is determined by the DTRO that translocation should take place.

Fund Research of the Ecological Implications of Fire. Recent wildfires have caused widespread loss of desert tortoise habitat in Nevada; particularly in Lincoln County (Figure 3-8). The SLCHCP proposes to fund the study of: 1) the effects of fire on seed banks and subsequent forage plant communities; 2) the effects of depleted shade resources on tortoises during activity periods, and upon the temperatures in subterranean burrows; 3) the effects of habitat fragmentation on local populations, extirpation of local populations, and the loss of landscape linkages to metapopulation persistence; and 4) the effectiveness of different fuel reduction techniques in reducing the spread of fire in desert tortoise habitat.

Annual vegetation and herbaceous perennial plant species comprise most of the diet of desert tortoises in the Mojave Desert (Esque 1994). Mojave Desert fires can greatly reduce woody vegetation by incineration (Minnich 1986). Seed banks of annual plants in the Mojave Desert can be reduced 40 to 60 percent by a single fire, and the plant community composition may shift from dominance by native annual plant species toward alien annual plant species such as red brome (*Bromus rubens*), cheatgrass (*Bromus tectorum*), splitgrass (*Schismus* spp.), and filaree (*Erodium cicutarium*) after just one fire (Esque 2004). Although the nutrition found in alien annual grasses is comparable to native annual grasses (Nagy et al. 1998), it has been speculated that a diverse diet is likely to provide a better nutritional balance for tortoises.

Post-fire surveys have shown that the immediate effects of fire on desert tortoise populations can be severe when fires occur during the activity season (Esque et al. 2003). Desert fires can reduce the cover, structure, and species richness of plant communities in the Mojave Desert (Duck et al. 1995, Brooks 1999, Esque 2004). However, no quantitative information is available about the effects of fire and subsequent habitat change on desert tortoise populations. For resource managers to better understand how to manage landscapes that benefit desert tortoises, it would be useful to understand the ecological implications of fire. Research to understand whether or not tortoises are stressed by fire-induced habitat changes would assist in understanding the likely outcome of fires in the landscape. To understand the ecological implications of fire, managers need to know: 1) Do tortoises occupying recently burned areas alter their movements and activities in response to the loss of perennial vegetation and the change in the annual plant community? 2) How does the health and condition of tortoises living in burned areas compare with that of tortoises in similar, but unburned, habitats nearby? Do burned habitats offer opportunities to acquire food, water, and cover from environmental extremes as well as unburned habitats? 3) Do tortoises of all sizes respond to such habitat changes in a similar way? and 4) How effective are different fuel reduction techniques in reducing the spread of fire in desert tortoise habitat?

Restoration techniques have generally focused on desert perennial plant species with little attention to the annual plant community, until very recently. Studies designed to learn about desert seed bank dynamics would be useful for understanding desert restoration. Critical factors associated with restoration efforts are the relative ecological implications of the restoration of perennial vegetation and that of annual vegetation (i.e., food plants for tortoises). Ideally, tortoises require both of these resources to persist in habitat that has been burned, but the relative importance has not been investigated.

Lincoln County will provide funding for this research study, which will be developed and implemented under the guidance of the DTRO and may be implemented on public lands administered by BLM, subject to BLM review and authorization. Recently burned habitat within the Covered Area will be utilized as potential research sites. This study will also consider experimental translocation of tortoises into these areas in association with habitat restoration sites to determine responses of tortoises to burned and restored habitat. Coordination with active and future BLM efforts on reseeding and restoration will be pursued. Research studies may be implemented on public lands administered by the BLM, subject to BLM review and authorization.

Other Applied Research. Other applied research will be pursued and funded through the SLCHCP as opportunities arise and in order to complement other potentially ongoing research projects. Examples could include studying the effectiveness of a particular management action on nearby BLM land or investigating aspects of disease in resident or translocated tortoises. Development and implementation

of any research project will be coordinated with and guided by the USFWS DTRO. Determination of additional research needs will be part of the adaptive management program.

Habitat Restoration. Approximately 769,428 acres of desert tortoise habitat occurs within the Covered Area of the SLCHCP. Approximately 95% of this area (728,747 acres) is public lands administered by the BLM. Additionally, within the Covered Area, 45,000 acres of designated critical habitat were burned as a result of the wildfires in 2005 (see Figure 3-8). Restoration efforts funded under the SLCHCP will assist in improving the condition of desert tortoise habitat throughout this area. Current methods for restoration of fire-affected Mojave Desert scrub vegetation are mostly experimental; therefore, restoration efforts will be designed to provide informative data that can be used to test the effectiveness of current methods and improve techniques over time.

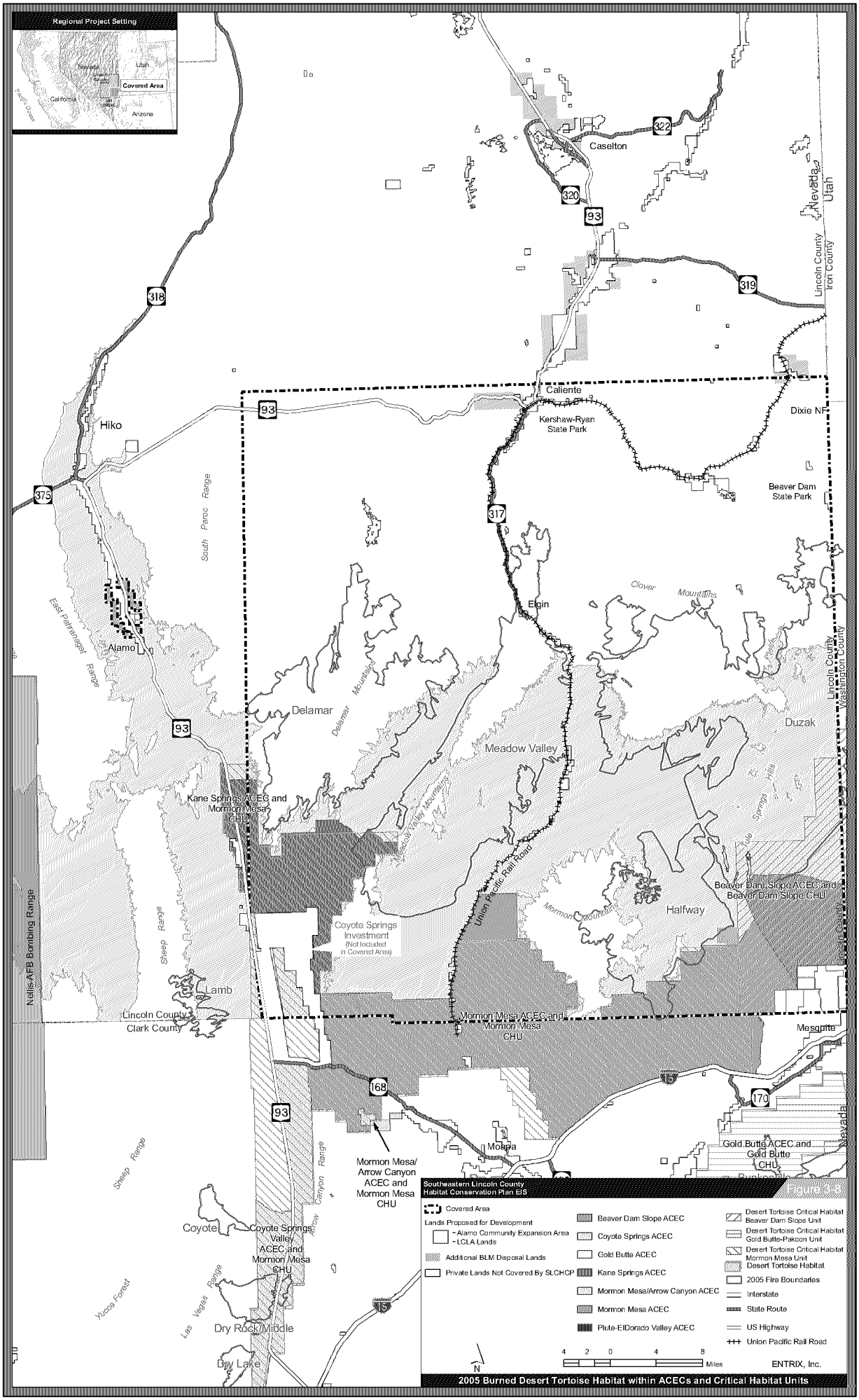
Reseeding burned areas is the currently preferred method of restoration of Mojave Desert scrublands in southern Nevada (Scoles et al. 2003). Reseeding of burned desert tortoise habitat is used in an effort to accelerate the recovery of important food and cover plants for the tortoise. Native seeds can be applied either by aerial broadcast or on the ground by hand. No published information exists on the effectiveness of seeding Mojave Desert scrublands; however, a recent study in Arizona suggests that reseeding can reduce the amount of non-native grass in burned scrublands (Scoles et al. 2003). Another study found that adding seed to burned areas can enhance the possibility for future plant establishment by the sustained and increased presence of viable seed on seeded burns (DeFalco et al. 2006, Drake et al. 2007).

Table 6-1 in the SLCHCP lists plants suitable for desert tortoise habitat restoration projects. Species include those important for cover as well as for forage. The most desirable forage plants to use in restoration projects are those with a high potassium excretion potential (PEP). The PEP value is an index that accounts for the relative amounts of nitrogen and water relative to potassium. In the absence of late spring or summer rains that permit drinking, desert tortoises must obtain sufficient water and nitrogen in food plants to excrete ingested potassium. Desert tortoises do this by selecting food plants having positive PEP values. Plants that are high in PEP typically contain high levels of tissue water, high concentrations of leaf protein, and modest levels of potassium (Oftedal 2002).

The SLCHCP will provide approximately $4,000,000 in funding either to BLM or third party contractor to purchase native seed and to enhance at least 5,120 acres of desert tortoise habitat associated with burned areas in the Covered Area. In general, priority will be given to burned areas within desert tortoise ACECs and designated critical habitat. However, the permittees will rely on guidance associated with the enhancement techniques and prioritization for the use of these funds from the USFWS DTRO and BLM. Enhancement of burned desert tortoise habitat will include the following components: 1) seed purchase, 2) habitat enhancement techniques, and 3) monitoring and evaluation.

The costs associated with habitat enhancement techniques are unknown at this time but involve the application of seed either by aircraft (helicopters or fixed wing) or on-the-ground (drilling, chaining, harrowing, etc.). However, regardless of the size of the restoration/rehabilitation area, aerial and on-the-ground seeding projects can range from simple to very complex. Currently, there are some costs available for seed acquisition. For instance, the cost of seeds varies widely from $7.00 up to as much as $100.00 per pound, depending on the species. Assuming an average cost of $30.00 per pound of seed, using an application rate of 1 to 3 pounds per acre, about $19,000 to $57,600 would be provided to reseed 640 acres of burned habitat. Exact methods, timing, acreage, and specific locations of habitat to be treated will be approved by BLM as the land manager, taking into consideration other current research efforts, and approved by the USFWS as the Section 10 permitting agency of the SLCHCP. The goal of the SLCHCP is to provide enough seed or other plant material to treat at least 5,120 acres over the 30-year permit term.[1] At an average cost of $38,300 to reseed 640 acres, approximately $306,400 would be needed to provide enough seed to treat 5,120 acres.

[1] According to recent seeding efforts, reseeding 5,120 acres within the 30-year permit term of the SLCHCP would require the treatment of 640 acres every three to four years.


Regional Project Setting
Nevada
Utah
California
Arizona
Covered Area
Caselton
322
320
93
318
319
Lincoln County
Iron County
Nevada
Utah
Caliente
Kershaw-Ryan State Park
Dixie N.F.
Hiko
375
317
Beaver Dam State Park
South Pahroc Range
East Pahranagat Range
Alamo
Elgin
Clover Mountains
Delamar
Delamar Mountains
Meadow Valley
Duzak
Lincoln County
Washington County
Kane Springs ACEC and Mormon Mesa CHU
Meadow Valley Mountains
Union Pacific Rail Road
Beaver Dam Slope ACEC and Beaver Dam Slope CHU
Halfway
Mormon Mountains
Coyote Springs Investment
(Not Included in Covered Area)
Nellis AFB Bombing Range
Sheep Range
Lamb
Lincoln County
Clark County
Mormon Mesa ACEC and Mormon Mesa CHU
Mesquite
168
170
Moapa
Gold Butte ACEC and Gold Butte CHU
Mormon Mesa/ Arrow Canyon ACEC and Mormon Mesa CHU
Arrow Canyon Range
Coyote
Coyote Springs Valley ACEC and Mormon Mesa CHU
Yucca Forest
Las Vegas Range
Dry Rock/Middle
Dry Lake
Southeastern Lincoln County Habitat Conservation Plan EIS
Figure 3-5
Covered Area
Lands Proposed for Development
- Alamo Community Expansion Area
- LCLA Lands
Additional BLM Disposal Lands
Private Lands Not Covered By SLCHCP
Beaver Dam Slope ACEC
Coyote Springs ACEC
Gold Butte ACEC
Kane Springs ACEC
Mormon Mesa/Arrow Canyon ACEC
Mormon Mesa ACEC
Piute-ElDorado Valley ACEC
Desert Tortoise Critical Habitat Beaver Dam Slope Unit
Desert Tortoise Critical Habitat Gold Butte-Pakoon Unit
Desert Tortoise Critical Habitat Mormon Mesa Unit
Desert Tortoise Habitat
2005 Fire Boundaries
Interstate
State Route
US Highway
Union Pacific Rail Road
N
4 2 0 4 8
Miles
ENTRIX, Inc.
2005 Burned Desert Tortoise Habitat within ACECs and Critical Habitat Units

Funding will also be provided to contribute to monitoring efforts and associated research studies testing the efficacy of seeding treatments in burned desert tortoise habitat. A study design will be developed by the SLCHCP's IMC (refer to Section 8.1.1 of the SLCHCP) in coordination with current BLM rehabilitation efforts and possibly other existing monitoring plans during the first year of implementation. Methods will be adjusted as necessary, depending on the results of the studies.

Public Education and Outreach. Potential effects of Covered Activities to desert tortoise habitat will be minimized in part by public education programs. The Plan Facilitator may elect to organize a Lincoln County Implementation and Monitoring Committee (IMC) educational sub-committee if it is determined necessary. Education will be facilitated through the use of pamphlets, interpretive trails, kiosks, signs, direct contact with landowners, and other methods. The focus of the education programs will be to:

- Inform the public of the terms of the Section 10(a)(1)(B) permit.
- Educate residents and visitors regarding the Covered Species, native plants, sensitive soils, critical habitat, etc.
- Encourage respect, protection, and enjoyment of the Mojave Desert.
- Inform the public on what constitutes violations of the ESA and the Section 10(a)(1)(B) permit and how to report violations.
- Educate residents and visitors regarding the effects of collection of desert tortoise.
- Educate residents and visitors regarding the effects of release of captive tortoises and the potential to spread disease.
- Educate residents and visitors regarding the effects of off-highway vehicles in undesignated and sensitive areas.
- Educate developers, residents and visitors regarding the effects of non-native plant species introduction such as red brome (*Bromus rubens*), filaree (*Erodium cicutarium*), and split grass (*Schismus arabicus*) into desert tortoise habitat as a result of grazing, increased due to disturbance by OHV and ground disturbance associated with development.
- Educate developers, residents and visitors about the risk of fire and prevention measures.
- Encourage participation in volunteer programs.

Public education will be directed toward the general public. Specialized education facilities, signs, and pamphlets will be developed for dog owners and OHV users in the LCLA area, Alamo Industrial Park and Community Expansion Area, and identified BLM disposal lands for future development. Educational materials and signs will be posted at significant public gathering sites such as libraries, city halls, club houses, community buildings, etc. The educational materials will explain the habitat requirements, the penalties for species injury or taking and reminders that Federal and non-Federal law enforcement personnel enforce these requirements.

Implement the LCLA Road, Fence, and Trail Plan. Lincoln County will implement a road, fence, and trail system strategic plan for the areas in or adjacent to the LCLA lands to discourage unauthorized vehicle access to critical habitat and to protect ACECs. Implementation of the road, fence, and trail system plan must be coordinated with the BLM and reviewed by the USFWS prior to commencement of developmental activities, to ensure the plan will be effective in minimizing impacts in the adjacent ACECs.

Predator Monitoring Control. Potential effects to desert tortoise habitat from urban development and the associated increase in solid waste that attracts predators, including dogs and ravens, will be minimized or mitigated in part by hiring or contracting a Wildlife Services Specialist for the Covered Area. Lincoln County may hire a Wildlife Services Specialist to monitor and control predators such as ravens, coyotes, feral dogs, cats, or other animals. The need for a Wildlife Services Specialist will be considered by the IMC through the AMP as development expands.

SOUTHWESTERN WILLOW FLYCATCHER

Currently, there are no known plans to develop flycatcher habitat on private lands within the Covered Area over the term of the permits. However, if suitable flycatcher habitat is removed as a result of land development, then the landowner(s) would be subject to implementing the conservation measures described in Sections 6.7 and 6.8 of the SLCHCP.

3.2.2.3.2 Utility and Infrastructure Development and Maintenance Activities

AVOIDANCE, MINIMIZATION AND/OR MITIGATION MEASURES

DESERT TORTOISE

The same avoidance, minimization, and mitigation measures would apply to this activity as proposed for Planned Land Development and Maintenance Activities constructed within the Covered Area for desert tortoise. The previous section summarizes proposed Conservation Measures to be implemented by the developers and applicable permittees to avoid and minimize effects of proposed utility and infrastructure development and maintenance activities on desert tortoise and its habitat.

SOUTHWESTERN WILLOW FLYCATCHER

No southwestern willow flycatcher habitat will be affected by utility and infrastructure development and maintenance activities within the Covered Area over the life of the Section 10 permits, so no mitigation is needed.

3.2.2.3.3 Flood Control Activities

AVOIDANCE, MINIMIZATION AND/OR MITIGATION MEASURES

The DAs required by Lincoln County will provide, to the maximum extent possible, for keeping the major washes that flow through the badland areas of the LCLA lands as open, natural areas. Furthermore, if a permit is required under Section 404 of the CWA for flood control activities, consultation with the USFWS under Section 7 of the ESA would be required and would not be covered under the SLCHCP.

DESERT TORTOISE

The same avoidance, minimization, and mitigation measures proposed for Planned Land Development and Maintenance Activities would also apply to flood control and management-related activities, since construction and maintenance would be a necessary part of this activity.

SOUTHWESTERN WILLOW FLYCATCHER

The City of Caliente will work with the USACE, UPRR, BLM and the USFWS to develop and implement long-term flood control solutions to minimize effects of flood control activities on approximately 8.3 acres of suitable southwestern willow flycatcher habitat (refer to post-flood habitat survey data provided in Volume III: Appendix E). The City of Caliente will mitigate for any residual effects associated with the removal of suitable flycatcher habitat by contributing funds to enhance or reestablish habitat elsewhere along Meadow Valley Wash, through establishment of a habitat bank on private or public (BLM) land and/or conservation easements on private land. The City of Caliente has agreed to contribute $12,000 per acre of suitable flycatcher habitat removed to be used for restoration and habitat replacement purposes (refer to Section 6.7.2.2.1 in the SLCHCP). The mitigation fee of $12,000 per acre for loss of suitable flycatcher habitat was derived from known costs of other riparian restoration projects occurring within the western and southwestern United States (i.e., Snohomish River Basin Salmon Conservation Plan, June 2005). This funding ($99,600) is contained within an existing, approved SNPLMA grant. Within 30 days after permit issuance, the City will submit a request for drawdown of this pre-approved funding.

The City of Caliente will also participate in local public education programs with Lincoln County, and assist Lincoln County in disseminating information regarding programs available to assist private landowners in

dealing with southwestern willow flycatcher habitat. Furthermore, the City of Caliente will participate in the development of a riparian restoration and management strategy for Meadow Valley Wash (see next section).

IMPLEMENTATION OF RESTORATION AND MANAGEMENT STRATEGY FOR THE CONSERVATION OF FLYCATCHER HABITAT IN THE MEADOW VALLEY WASH

A restoration and management strategy for the conservation of flycatcher habitat in the Meadow Valley Wash will be implemented. Implementation of the conservation strategy will occur over time commensurate with the level of anticipated take. Implementation of the strategy will include:

- Obtain legal access to private land identified for habitat restoration or protection;
- Obtaining approvals and permits required to undertake habitat restoration or protection on public land;
- Incorporating the basic components of habitat restoration described in Section 6.7.2.2.4 in the SLCHCP; and
- Monitoring to determine the effectiveness of conservation measures undertaken for the flycatcher.

Lincoln County is currently developing a management plan for habitat restoration in the Meadow Valley Wash.

3.2.2.3.4 Roadway Improvements and Maintenance Activities

AVOIDANCE AND MINIMIZATION MEASURES

DESERT TORTOISE

The proposed Conservation Measures to avoid and minimize effects to desert tortoise and/or their habitat from traffic and/or construction and maintenance of Lincoln County roads within the Covered Area are summarized below.

LINCOLN COUNTY SPECIFIC MEASURES

Lincoln County will implement the following measures and/or BMPs to avoid and minimize effects to desert tortoise and/or its habitat.

Monitoring and Management. Lincoln County will, through the Plan Facilitator, coordinate traffic level monitoring within the Covered Area. As the LCLA lands, Alamo Industrial Park and Community Expansion Area, and the 640-acre Section 36 disposal parcel are developed and traffic levels significantly increase on Lincoln County roads within the Covered Area, fencing and culvert construction will be considered for installation on a case-by-case basis to enhance safe desert tortoise passage.

County Road Worker Education. Prior to any maintenance or construction activities in identified desert tortoise habitat, Lincoln County road construction workers will participate in a training program developed and conducted by a USFWS authorized[1] desert tortoise biologist hired by the applicant(s).[2] Workers will be advised on the biology and ecology of the species, the definition of "take," the mitigation measures, and their responsibilities for avoiding impacts that may result in take, including the potential for fines if take occurs that could have been avoided.

Species Avoidance for County Road Maintenance. Lincoln County will be responsible for conducting pre-disturbance surveys and clearance in desert tortoise habitat where USFWS authorized (refer to Footnote 1 below for the definition of "authorized") biologists are reasonably certain that the

[1] To serve as an authorized desert tortoise biologist, a person must fill out a "Desert Tortoise Qualifications Statement" (contact the USFWS Las Vegas Nevada field office or download form at http://www.fws.gov/nevada/desert_tortoise/documents/form/DT_authorized_biologist_request_form.pdf) and submit it to the USFWS for approval. The USFWS will respond within 30 days with a letter stating whether the person is qualified to undertake the specific duties requested.

[2] Although each applicant is responsible for ensuring that all employees are appropriately trained as provided in the SLCHCP, the applicants wish to coordinate their efforts. Where feasible, UPRR will give advance notice of its training program to the other applicants and make its training program available to employees of the other applicants.

species exists. Pre-disturbance surveys will not be required within sites where a USFWS authorized biologist has determined that desert tortoises are not expected to occur. Desert tortoises discovered within proposed maintenance or construction areas will be avoided to the extent possible. If avoidance is not possible, tortoises will be moved out of harm's way by utilizing previously approved USFWS procedures.

Roadway Design and Construction. In desert tortoise habitat, Lincoln County will ensure that new roadside structures are designed and constructed to prevent animals, like the desert tortoise, from becoming entrapped. Existing structures, such as under-road culverts, will be ameliorated if they pose a trapping problem.

SOUTHWESTERN WILLOW FLYCATCHER

The proposed Conservation Measures to be implemented by Lincoln County to avoid and minimize effects of roadway improvements and maintenance activities to southwestern willow flycatcher habitat are summarized below.

MAINTENANCE/CONSTRUCTION TIMING

Prior to initiating roadway activities within identified southwestern willow flycatcher habitat, County staff who have participated in a training developed by a USFWS authorized[1] biologist will verify the presence or absence of active nests in the proposed work area. Southwestern willow flycatchers and/or their nests discovered within proposed maintenance or construction areas will be avoided or, if avoidance is not possible, construction activities in the riparian habitat will be suspended until chicks have fledged and dispersed from the construction site.

ROADWAY DESIGN AND CONSTRUCTION

Lincoln County will ensure that new road structures are designed and constructed to minimize effects to the southwestern willow flycatcher.

WORKER EDUCATION

Prior to any maintenance or construction activities in identified southwestern willow flycatcher habitat, Lincoln County road construction workers will participate in a training program developed and conducted by a USFWS authorized (refer to Footnote 1 below for definition of "authorized") southwestern willow flycatcher biologist hired by the applicant(s). Workers will be advised on the biology and ecology of the species, the definition of "take," the mitigation measures, and their responsibilities for avoiding impacts that may result in "take," including the potential for fines if take occurs that could have been avoided.

3.2.2.3.5 Union Pacific Railroad Activities

AVOIDANCE AND MINIMIZATION MEASURES

DESERT TORTOISE

The proposed Conservation Measures to be implemented by UPRR to avoid and minimize impacts of railway activities on desert tortoise habitat are summarized below.

[1] To serve as an authorized southwestern willow flycatcher biologist, a person must successfully complete training on the proper use of flycatcher survey protocols approved by the USFWS, and must possess a recovery permit issued by the USFWS under Section 10(a)(1)(A) of the ESA or must have other USFWS approval for conducting flycatcher protocol surveys.

WORKER EDUCATION

The worker training program will be developed and conducted by a USFWS authorized[1] biologist hired by the applicant(s). The program will advise the workers on the biology and ecology of the desert tortoise, the definition of "take," the threats to the desert tortoise, the mitigation measures, the responsibility for avoiding effects that may result in "take," and the potential fines if "take" occurs that is inconsistent with the authority to be granted by the incidental take permit and the SLCHCP. The USFWS authorized[2] desert tortoise biologist will provide training for the UPRR trainers to deliver the appropriate information as a solid reference and overview of the regulatory framework and species issues. Prior to maintenance or construction activities in suitable habitat areas, the UPRR trainers would deliver this information to the employees and subcontractors of the UPRR. In situations where sensitive resources are at risk and specific mitigation measures are required, the UPRR trainer will deliver the worker education program at the site. Although each applicant is responsible for ensuring that all employees are appropriately trained as provided in the SLCHCP, the applicants wish to their coordinate their efforts. Where feasible, UPRR will give advance notice of its training program to the other applicants and make its training program available to employees of the other applicants.

PRE-DISTURBANCE SURVEYS, CLEARANCES, AND RELOCATION

UPRR will use USFWS authorized desert tortoise biologists to conduct one-time surveys in those suitable habitat areas where authorized biologists are reasonably certain that desert tortoises exist. Pre-disturbance surveys will not be required within sites where a USFWS authorized biologist has determined that desert tortoises are not expected to occur.

In desert tortoise habitat, tortoises discovered within proposed maintenance or construction areas will be avoided to the maximum extent possible. If avoidance is not possible, tortoises will be moved out of harm's way by a USFWS authorized biologist or a UPRR employee or contractor that has been trained by a USFWS authorized biologist. The USFWS authorized biologists or trained employees or contractors will follow the most recent and up to date guidelines available as approved by the USFWS such as "Guidelines for Handling Desert Tortoises during Construction Projects" developed by the Desert Tortoise Council (1994).

RAILWAY DESIGN

In desert tortoise habitat, UPRR will design the new railroad structures in an effort to avoid entrapment of animals wherever practicable. The design will include culverts to allow safe passage of desert tortoises. Culverts will be placed over existing washes or drainages where possible. If desert tortoise entrapment within existing railroad structures is documented and brought to the attention of UPRR, then UPRR will remedy the situation where practicable.

SOUTHWESTERN WILLOW FLYCATCHER

For all railway construction and maintenance activities conducted in riparian areas, UPRR will implement the following measures to minimize, to the maximum extent practicable, effects to southwestern willow flycatcher habitat.

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[1] To serve as an authorized desert tortoise biologist, a person must fill out a "Desert Tortoise Qualifications Statement" (contact the USFWS Las Vegas Nevada field office or download form at http://www.fws.gov/nevada/desert_tortoise/documents/form/DT_authorized_biologist_request_form.pdf) and submit it to the USFWS for approval. The USFWS will respond within 30 days with a letter stating whether the person is qualified to undertake the specific duties requested.

[2] To serve as an authorized desert tortoise biologist, a person must fill out a "Desert Tortoise Qualifications Statement" (contact the USFWS Las Vegas Nevada field office or download form at http://www.fws.gov/nevada/desert_tortoise/documents/form/DT_authorized_biologist_request_form.pdf) and submit it to the USFWS for approval. The USFWS will respond within 30 days with a letter stating whether the person is qualified to undertake the specific duties requested.

WORKER EDUCATION

The worker training program will be developed and conducted by a USFWS qualified[1] southwestern willow flycatcher biologist hired by the applicant(s). The program will advise the workers on the biology and ecology of the flycatcher, the definition of "take," the threats to the flycatcher, the mitigation measures, the responsibility for avoiding effects that may result in "take," and the potential fines if "take" occurs that is inconsistent with the authority to be granted by the incidental take permit and the SLCHCP. This program also will include methods for avoiding flycatchers where possible in those areas and under those circumstances described in the next subsection (Pre-Disturbance Surveys and Clearances). The USFWS authorized[2] biologist will then provide training for the UPRR trainers to deliver the appropriate information as a solid reference and overview of the regulatory framework and species issues. Prior to maintenance or construction activities in sensitive habitat areas, the UPRR trainers would deliver this information to the employees and subcontractors of the UPRR. In situations where sensitive resources are at risk, the UPRR trainer will deliver the worker education program at the site. Although each applicant is responsible for ensuring that all employees are appropriately trained as provided in the SLCHCP, the applicants wish to their coordinate their efforts. Where feasible, UPRR will give advance notice of its training program to the other applicants and make its training program available to employees of the other applicants.

PRE-DISTURBANCE SURVEYS AND CLEARANCES

UPRR will use USFWS authorized biologists to conduct one-time surveys in a few areas of suitable southwestern willow flycatcher of up to 3 to 4 acres in the vicinity of mile post markers 447 to 452 and between mile post markers 395 and 396 as delineated by the USFWS (refer to Figure 5-4, Maps 2 and 8 in the SLCHCP). If individuals and/or their nests are discovered within proposed maintenance or construction areas, then the individuals will be avoided to the extent possible but will not preclude or suspend the Covered Activities.

MITIGATION MEASURES

DESERT TORTOISE

Cumulatively, the avoidance and minimization measures will not offset all of the potential effects from UPRR activities on approximately 800 acres of suitable desert tortoise habitat within the Covered Area or the total acreage of suitable habitat established pursuant to Section 5.1 in the SLCHCP. UPRR estimates that its activities will potentially disturb 100 percent of the total 800 acres of suitable habitat within its rights-of-way. Thus, UPRR will pay the $550 per-acre mitigation fee on the 800 acres (approximately $440,000) for disturbance of suitable desert tortoise habitat on non-Federal property throughout the Covered Area associated with UPRR's Covered Activities (refer to Figure 3-7).

The fees that are generated will be used toward the implementation of the SLCHCP and desert tortoise habitat restoration and research efforts described above (i.e., Head Start Program including translocation for the desert tortoise, habitat restoration, research, public outreach and education, etc.) to compensate for the effects of incidental take on the desert tortoise within the Covered Area as described in the SLCHCP and to ensure that such take does not jeopardize the desert tortoise.

SOUTHWESTERN WILLOW FLYCATCHER

Cumulatively, the avoidance and minimization measures will not offset all of the potential effects from UPRR's Covered Activities on the southwestern willow flycatcher and suitable habitat. Under the SLCHCP, UPRR is requesting coverage for 100 percent removal of 54 acres of suitable southwestern willow flycatcher habitat within their rights-of-way and privately-owned land in the Covered Area due to their operations,

[1] To serve as an authorized southwestern willow flycatcher biologist, a person must successfully complete training on the proper use of flycatcher survey protocols approved by the USFWS, and must possess a recovery permit issued by the USFWS under Section 10(a)(1)(A) of the ESA or must have other USFWS approval for conducting flycatcher protocol surveys.

[2] To serve as an authorized southwestern willow flycatcher biologist, a person must successfully complete training on the proper use of flycatcher survey protocols approved by the USFWS, and must possess a recovery permit issued by the USFWS under Section 10(a)(1)(A) of the ESA or must have other USFWS approval for conducting flycatcher protocol surveys.

maintenance and urgent response activities. UPRR has agreed to contribute $12,000 per acre (up to 54 acres total) of suitable flycatcher habitat removed, totaling up to approximately $648,000. The primary goal of the SLCHCP concerning the southwestern willow flycatcher is to achieve no net loss of suitable habitat within the Covered Area by implementing the following conservation options described below.

CONSERVATION OPTIONS

The responsible Party will contribute $12,000 per acre for loss of suitable flycatcher habitat as identified in Bio-West's Post-Flood Damage Vegetation Assessment (2005b) as modified pursuant to Section 5.2 of the SLCHCP. The mitigation fee of $12,000 per acre for loss of suitable flycatcher habitat was derived from known costs of other riparian restoration projects occurring within the western and southwestern United States (i.e., Snohomish River Basin Salmon Conservation Plan, June 2005). The contribution of funds collected from permittees whose activities affect southwestern willow flycatcher habitat within the Covered Area over the 30-year permit term, approximately $1,000,000, will be used to cover costs of enhancing or restoring habitat elsewhere along the Meadow Valley Wash. The restoration sites will be protected either through a habitat bank or conservation easement on private land, or other protective designation such as an ACEC on BLM land as described below.

All of the conservation approaches described below will provide direct benefits to the southwestern willow flycatcher and/or its habitat. The conservation options are based on recommendations in the Antelope and North Spring Valleys, Steptoe Valley & Uplands, Newark Valley Extended Watershed and Meadow Valley Wash & Uplands Conservation Area Assessment (The Nature Conservancy 2003), and meetings with USFWS and BLM in September 2006. In both cases, funds generated through the SLCHCP will be used for flycatcher habitat creation, enhancement, monitoring, maintenance, and protection.

Lincoln County Mitigation/Conservation Bank. With the funds collected, one option is for Lincoln County to create a riparian habitat mitigation or conservation bank to offset potential effects to southwestern willow flycatcher habitat within the Covered Area. The mitigation or conservation bank would be operated and maintained by Lincoln County.

Lincoln County would use the funds collected to acquire, establish and maintain the mitigation or conservation bank to provide for suitable willow riparian habitat. The advantage of mitigation banking is to consolidate small, fragmented habitat mitigation projects into large contiguous sites that will have much higher wildlife habitat values.

Habitat restoration or replacement (as described below) may take place on either private land or public land within the Meadow Valley Wash. Private landowners interested in participating in the SLCHCP (i.e., providing/donating land for the mitigation bank if deemed to provide potential southwestern willow flycatcher habitat) may "opt in" at any time during the permit term by signing a participation agreement. The Office of the County Clerk will provide copies of the participation agreement and additional pertinent information upon request. The Plan Facilitator will coordinate additional assistance from LCCD and NRCS under the Landowner Assistance Program for the landowner to determine whether their property provides suitable or potential southwestern willow flycatcher habitat at the landowner's request. Upon request by a private landowner, qualified NRCS staff will identify southwestern willow flycatcher habitat. Funding for conservation easements will be derived from SLCHCP sources.

The goal of the Landowner Assistance Program is to build a relationship with private landowners in the Covered Area to encourage conservation partnerships. The LCCD and NRCS promote voluntary conservation efforts on private lands. The LCCD is a legal entity of the State government that functions at the local level and who meets and coordinates with the NRCS District Conservationist regularly to discuss ongoing conservation programs and to outline additional work needs throughout Lincoln County. The purpose of the LCCD is to identify and carry out the conservation practices within the District. Landowners currently have working relationships with the LCCD. Lincoln County believes that landowners will be more comfortable working within existing programs and procedures and they will be more likely to participate in this SLCHCP working with the LCCD, than if they were

to work with other state or federal personnel. Lincoln County will provide the necessary funds to the NRCS from the mitigation fees collected under the SLCHCP on a project-by-project basis.

Habitat may also be protected on BLM land along the Meadow Valley Wash. The habitat would be protected by enhancing or creating suitable habitat within a riparian ACEC or other protective designation. A portion of the funding collected from the permittees to cover the costs of riparian habitat management may be used to develop a riparian habitat conservation strategy (refer to Section 6.5.1.2.1: Development or Meadow Valley Wash Riparian Restoration and Management Strategy in the SLCHCP).

Acquisition and Protection of a Conservation Easement within the Meadow Valley Wash Area. A conservation easement is a legal contract between the landowner and the easement holder in which the landowner gives up certain development rights and agrees to certain restrictions on the property. Private landowners along the Meadow Valley Wash may have suitable or potential habitat for the southwestern willow flycatcher on their property. An option for private landowners under the SLCHCP would be to protect suitable southwestern willow flycatcher habitat through conservation easement(s). Because perpetual conservation easements are binding on future owners, the resource values of these properties are protected indefinitely. Many state and local governments, like Lincoln County, offer tax benefits associated with this type of property encumbrance.

A Landowner Assistance Program is proposed in cooperation with the NRCS, to encourage private landowners to increase the amount of habitat available to listed species. If a landowner needs further assistance in determining whether "suitable" or "potential" southwestern willow flycatcher habitat exists on their property, then the Plan Facilitator will coordinate habitat delineation assistance for the landowner through the LCCD. Funding for LCCD/NRCS development and implementation of the Landowner Assistance Program would be derived from SLCHCP sources. Lincoln County will prepare, in consultation with BLM and USFWS, proposals to obtain funding from SNPLMA, LCLA, and LCCRDA land sale proceeds to supplement funding for the riparian habitat mitigation program.

Willow Riparian Replacement/Restoration. Within a conservation easement or mitigation/conservation bank described above, the permittees will replace the loss of up to 84.3 acres of suitable southwestern willow flycatcher habitat with native habitat at a 2:1 ratio, and the loss of non-native suitable flycatcher habitat with native habitat at a 1:1 ratio.

The components of the replacement/restoration project would include the following:

- Mitigation Area Site: The mitigation area(s) for the southwestern willow flycatcher will be sited in appropriate areas that can reduce the threat of fragmentation and provide management measures that address other threats such as cowbird parasitism or disruption of natural disturbance regimes. Careful consideration will be given to the ecological suitability of the site, location, size, and configuration. All restored or created habitat as mitigation must be verified by the USFWS regarding restoration success.
- Mitigation Objectives: The goal is to establish native species habitat that would potentially be used by southwestern willow flycatcher in the future. With the funds collected, the objective is to replace suitable non-native flycatcher habitat (i.e., tamarisk) with native vegetation at a ratio of 1:1; and suitable native flycatcher habitat (i.e., willows) at a ratio of 2:1.

  The short-term objective of the revegetation plan is to plant pole and stem-sized native species such as willows (i.e., Gooding's willow (*Salix gooddingii*) and coyote willow (*Salix exigua*) and cottonwoods (*Populous fremontii*). Shrub willows will be planted closest to the water, with cottonwoods and willow tree species planted on the upper banks and within the floodplain. Flycatcher habitat should have a canopy closure of greater than 60 percent and a patch size of greater than 0.1-acre. The planted area will be irrigated immediately following planting, allowing the water to soak the soils, unless the ground is already saturated. Planting will be performed or supervised by experienced personnel. Planted vegetation will be protected from grazing by degradable tubing/tree guards, or fencing, where determined necessary.
- Habitat Management and Monitoring: Lincoln County will have the ultimate responsibility for ensuring that the habitat mitigation sites are properly managed and monitored. Monitoring will be conducted at

time intervals appropriate for the management strategy. The results of the habitat management and monitoring program will be a part of the Annual Report described under Section 8 of the SLCHCP.

USFWS will be provided reasonable access to lands covered under the SLCHCP to ensure compliance with the terms of the SLCHCP and incidental take permit.

3.2.2.3.6 Other Privately-Owned Lands Subject to Land Conversion Activities

AVOIDANCE, MINIMIZATION AND MITIGATION MEASURES

DESERT TORTOISE

Should suitable desert tortoise habitat be removed through conversion of existing, previously undisturbed agricultural land to urban use or grazing land to irrigated and/or cultivated agricultural use within the Covered Area during the life of the Section 10 permit, then Lincoln County will work with the private landowners who wish to participate in the SLCHCP to ensure that the same avoidance, minimization and mitigation measures proposed for Planned Land Development and Maintenance Activities (i.e., collection of mitigation fees to be used toward desert tortoise habitat restoration and research efforts and etc. described in Section 6.3.2.1) are implemented to minimize effects to desert tortoise and/or its habitat from land conversion activities. Lincoln County is requesting take coverage on up to 564 acres of private agriculture and grazing lands on desert tortoise habitat within the Covered Area from land conversion activities.

SOUTHWESTERN WILLOW FLYCATCHER

Should suitable flycatcher habitat be removed through conversion of existing, previously undisturbed agricultural land to urban use or grazing land to irrigated and/or cultivated agricultural use along the Meadow Valley Wash within the Covered Area during the life of the Section 10 permit, then Lincoln County will work with the private landowners who wish to participate in the SLCHCP to ensure that the same avoidance, minimization and mitigation measures proposed for flood control, roadway improvements and maintenance activities, and UPRR activities are implemented to minimize effects to southwestern willow flycatcher and/or its habitat from this activity. The landowners would be required to either pay $12,000 per acre of suitable habitat removed to be used toward restoration and habitat replacement purposes or replace the loss of native habitat disturbed at a 2:1 ratio and the loss of non-native suitable flycatcher habitat with native habitat at a 1:1 ratio directly, as part of their obligations upon signing the participation agreement with Lincoln County. Lincoln County is requesting take coverage on up to 22 acres of flycatcher habitat on private land within the Covered Area resulting from land conversion activities.

3.2.2.3.7 Summary of Conservation Actions

Cumulatively, the avoidance and minimization measures proposed for the desert tortoise and southwestern willow flycatcher described in detail above will not offset the potential effects for all of the Covered Activities. Thus, the following mitigation measures will be implemented by the permittees as a condition of this HCP in order to fulfill the statutory criteria for issuing a Section 10 permit.

In summary, for the desert tortoise, each permittee will pay, or caused to be paid, a per-acre fee of either $250 or $550 (based on specific geographic area within the Covered Area, refer to Section 6.3.2.1) for disturbance to desert tortoise habitat. The mitigation fee will be imposed on all Covered Activities resulting in land disturbance on private lands within the Covered Area and will be paid at the time of issuance of the Section 10 permit or prior to carrying out the Covered Activity that results in land disturbance. A mitigation fee of $550/acre is the maximum allowable mitigation fee that Lincoln County can impose pursuant to NRS Chapter 349 for desert tortoise habitat disturbance; however, Lincoln County has established a GID and related property tax revenue stream (refer to Section 9.1.1.3 in the SLCHCP) to supplement legislatively authorized and capped per-acre desert tortoise fees to ensure that the necessary funding is provided to implement the conservation measures described herein The fees generated will be used toward the implementation of the following desert tortoise conservation efforts to offset all potential effects anticipated from the Covered Activities:

- Head Start Program for the desert tortoise
- Translocation Program for the desert tortoise
- Fund Research of the Ecological Implications of Fire
- Other Applied Research
- Habitat Restoration
- Public Education and Outreach
- Implement the LCLA Road, Fence and Trail Plan
- Predator Monitoring Control

The development, design, timing and implementation of these actions will be accomplished as part of the mitigation plan prescribed for the SLCHCP by the IMC during the first year of implementation of the SLCHCP. Implementation of these mitigation measures will occur commensurate with the timing of anticipated take associated with the loss of habitat so as to ensure adequate and timely mitigation for impacts associated with habitat loss and to ameliorate disturbances directly or indirectly resulting from the Covered Activities on the species.

In summary, for the southwestern willow flycatcher, each permittee will pay a per-acre fee of $12,000 for suitable flycatcher removed. The mitigation fee of $12,000 per acre for loss of suitable flycatcher habitat was derived from known costs of other riparian restoration projects occurring within the western and southwestern United States. The contribution of funds collected by Lincoln County from permittees whose activities affect southwestern willow flycatcher within the Covered Area over the 30-year permit term will be used to cover costs of flycatcher restoration elsewhere along the Meadow Valley Wash, either through creation of existing suitable habitat on BLM-administered or private land and/or protection of existing suitable habitat on private land through acquisition of conservation easements. All habitat created would be managed by Lincoln County as a habitat bank. A restoration and management strategy for the conservation of flycatcher habitat in the Meadow Valley Wash is currently being developed by the permittees. Implementation of these mitigation measures will occur commensurate with the timing of anticipated take associated with the loss of habitat so as to ensure adequate and timely mitigation for impacts associated with habitat loss and to ameliorate disturbances directly or indirectly resulting from the Covered Activities on the species.

3.2.2.4 Adaptive Management Program

This section summarizes the overall regulatory framework and overriding goal of the Adaptive Management Program (AMP) proposed as an element of the SLCHCP. Guidance regarding AMPs for HCPs is detailed in Federal guidelines for such programs (USFWS and National Marine Fisheries Service 1996).

The AMP and Annual Work Plan (further described in Section 8 of the SLCHCP) will be the framework that will allow the permittees, USFWS, and participants in the plan to work together over the 30-year permit term. Adaptive Management is considered an integral part of the SLCHCP implementation strategy. The adaptive management process has been incorporated into the Annual Work Plan process as described in Section 8.2 of the SLCHCP. During the development of the Annual Report, the IMC together with the Technical Advisor would review past years' plan performance, monitoring data, and research data. Using that information, the IMC and Technical Advisor would recommend any modification that may be necessary for continued successful implementation of the SLCHCP.

The SLCHCP is a prescription-based HCP in which the biological goals and objectives guide the development of the specific measures included in the operating conservation program. The biological goals and objectives (refer to Section 6.1 of the SLCHCP) for each of the Covered Species provide the basis for establishing enforceable prescriptions such that the permittees are only required to implement the measures in the operating conservation program to comply with their permits. For instance, the SLCHCP is structured toward implementing a specific replacement cost for disturbance of suitable habitat, which is reflected in the mitigation fees and contributed funds described in Section 6 of the SLCHCP. Aside from agreed-upon adjustments described in the SLCHCP, the desert tortoise per acre mitigation fees and the contributed amounts

per acre required to offset the loss of flycatcher habitat removed will not change during the term of the permit. Furthermore, if a permittee complies with the requirement to pay required amounts as a result of pending or future disturbance of suitable habitat, and pays all monies in advance, the permittee's obligation is satisfied and therefore no basis will exist for coming back to the permittee and requiring that the permittee pay an additional amount.

Adaptive management is a conservation planning strategy that, when implemented, is continuously being updated by newly generated information gathered by timely monitoring efforts associated with the proposed conservation actions described above, otherwise referred to as Effectiveness Monitoring. As part of the potential Conservation Measures being proposed, information will be collected to evaluate whether the biological goals and objectives of the SLCHCP and the Covered Species are being met, and, in response to that information if necessary, management is adjusted to ensure progress in meeting the program goals. In this way, Effectiveness Monitoring is the building block of the AMP.

The monitoring will determine the success of Conservation Measures implemented under the plan and measures will be adjusted accordingly to account for unexpected management impacts. The results of Effectiveness Monitoring will allow the permittees, USFWS and BLM to monitor progress of implementation of the SLCHCP. Changes to the SLCHCP will be developed and coordinated through the AMP based on Effectiveness Monitoring.

The permittees involved in the development of the SLCHCP recognize the responsibility to conserve certain natural resources within the Covered Area and the selected species and ecological communities that support such species on public lands. The actions agreed to by the permittees will contribute to management actions to assist in providing needed conservation for the Covered Species.

3.2.2.4.1 Structure of the Adaptive Management Program

The structure of the AMP will follow a schedule of actions, data collection, and reporting data that is widely recognized as providing accountable management for imperiled species and species of concern. Explicit steps in the adaptive management approach include:

- Articulate the conservation challenge or management "problem," including identifying its geographic boundaries, ecological processes, habitats, species of concern, and the time scale of effects (addressed in the SLCHCP).
- Define the management goals and objectives in order to articulate restoration goals and measurable objectives to provide direction to management efforts and to give measurements of progress [addressed in the SLCHCP].
- Define restoration and other management actions that are intended to mitigate for take associated with loss of listed species habitat and ameliorate disturbances directly and indirectly resulting from implementation of the Covered Activities (addressed in the SLCHCP). The mitigation plan will be developed by the SLCHCP IMC during the first year of implementation and will describe in detail conservation measures to be implemented (i.e., design, timing and implementation of desert tortoise habitat restoration and research actions and development of the Meadow Valley Wash riparian restoration and management strategy as discussed in Section 6.5.1.2.1 of the SLCHCP), including measurable project goals and objectives.
- Monitor yearly to provide the information necessary for tracking ecosystem conditions, evaluating progress toward project objectives, and reevaluating (or updating) all features of the AMP. The AMP will guide monitoring of the effectiveness of the proposed conservation actions in meeting the species biological goals and objectives of the SLCHCP, and informing recommendations for alternative management strategies if monitoring indicates that current conservation actions are not effective or if changes in land management actions are expected to impact species beyond that considered in the SLCHCP.
  - Select ecological indicators that will accompany certain management planning efforts and monitoring scheme development. Indicators will focus on species or other ecological features that can perform as response variables and thus be used to assess trends or otherwise measure progress. Indicators will be

used to identify habitat characteristics that accurately reflect landscape conditions as well as to assess indirectly the effects of management actions.

– Evaluate and make program adjustments accordingly from the information acquired via monitoring and focused research. Feedback will guide future management planning, project implementation and monitoring scheme design, and it will be used to amend the overreaching AMP.

As part of the AMP, the permittees are committed to conservation actions as elements in their overall plan to avoid the "take" of the Covered Species where possible, to minimize "take" where it cannot be avoided, and to mitigate for expected impacts to the maximum extent practicable. The AMP will monitor the effectiveness of such implemented conservation actions and management prescriptions in meeting these biological goals and recommend alternative actions to pursue in the event that the goals are not being met. Furthermore, many substantive features of the AMP will be developed through consultations amongst the permittees (UPRR, Lincoln County, and the City of Caliente), the IMC, USFWS, BLM, and the LCCD.

Furthermore, the adaptive management program will be reconciled with the no surprises assurances that all the permittees will be seeking under the SLCHCP further described in Section 8 of the SLCHCP. Adjustments made under the AMP will be to the implementation of the SLCHCP but will not change the overall commitments of the permittees or the mitigation funding to be collected.

3.2.2.4.2 Management Actions of the Adaptive Management Program

Although many substantive features of the AMP (refer to Sections 7.3 and 7.4 in the SLCHCP) would have to be developed through consultations among the permittees, the IMC, the Plan Facilitator, and the USFWS, several explicit biological goals are identified here that offer immediate opportunities to link focused monitoring to management actions in an adaptive framework.

As part of the AMP, Lincoln County, the City of Caliente and UPRR would be committed to three categories of actions as elements in their overall plan: 1) to avoid the take of the Covered Species, 2) to minimize take where it cannot be avoided, 3) and to mitigate for expected impacts. The AMP would monitor the effectiveness of the implemented actions and management prescriptions in meeting the Covered Species' biological goals and objectives and recommend alternative actions to pursue in the event that the goals and objectives are not being met.

DESERT TORTOISE

ACTION

Lincoln County, the City of Caliente, and UPRR would maintain or improve existing desert tortoise habitat quality and quantity within the Covered Area of the SLCHCP and to maintain stable or increasing desert tortoise populations within the Covered Area.

- Manage land-disturbing activities to ensure that current levels of disturbance in ACECs and adjacent desert tortoise habitat are either reduced or do not exceed baseline level.
- Upon approval by the BLM, implement select management activities on public lands to facilitate the recovery of the desert tortoise.
- Manage roads or traffic levels into adjacent ACECs to avoid or reduce desert tortoise mortality.
- Offset the loss of up to 19,840 acres of desert tortoise habitat (refer to Table 3-2) and the potential effects of taking desert tortoises on these lands by providing funds to be used toward the implementation of conservation efforts for the desert tortoise (i.e., habitat restoration of at least 5,120 acres of disturbed desert tortoise habitat associated with burned areas, participating in the Head Start Program which involves translocation, research, public outreach and education, implementation of the LCLA Road, Fence and Trail Plan, and predator monitoring control) as appropriate to avoid or reduce desert tortoise mortality.

SOUTHWESTERN WILLOW FLYCATCHER

ACTION

Lincoln County, the City of Caliente, and UPRR would strive to achieve a no net loss of suitable southwestern willow flycatcher habitat along the Meadow Valley Wash due to human activities within the Covered Area of the SLCHCP.

- Create, enhance, and/or protect a minimum of 84.3 acres of suitable southwestern willow flycatcher habitat (refer to Table 3-2) in the Meadow Valley Wash on land owned by interested landowners and/or managed by BLM. The objective of these measures is to replace the loss of native suitable flycatcher habitat with native habitat at a 2:1 ratio, and the loss of non-native suitable flycatcher habitat with native habitat at a 1:1 ratio.
- Select properties to enhance and protect in perpetuity by protecting habitat through a mitigation bank and/or conservation easement.

3.2.2.5 Funding and Administration

3.2.2.5.1 Funding

Lincoln County plans to fund the SLCHCP primarily from Long-Term funding sources but will pursue Supplemental revenue sources as well. Long-term revenue sources are those that can be planned for, readily secured and are available commensurate with land development and construction activities within the Covered Area. Supplemental revenue sources are those that can be planned for, however securing the revenue is not guaranteed.

Long Term revenues would be secured from the following sources:

- Desert tortoise mitigation fees paid by the developers, UPRR and/or private landowners as presented in Section 6.3.2.1 of the SLCHCP;
- Costs of replacing existing suitable flycatcher habitat by UPRR, City of Caliente and/or private landowners as presented in Section 6.7.2.2.1 of the SLCHCP; and
- GID ad valorem tax as presented in Section 9.1.1.3 of the SLCHCP.

The Long Term revenues will provide a reliable source of funding for implementation of the Conservation Measures in the SLCHCP. Since these Long Term revenue sources are derived directly from growth resulting from the Covered Activities, adequate revenues will be available to implement Conservation Measures commensurate with the cumulative level of take for the duration of the 30-year permit.

In addition to the taxes and fees generated over the permit term, monies may be available from other supplemental sources. These supplemental funds are not guaranteed; however, Lincoln County is committed to seeking the additional monies. Supplemental funding obtained by Lincoln County could possibly reduce the LCLA GID tax rate described in Section 9.1.1.3 in the SLCHCP. Any supplemental funding obtained may also be used for administrative purposes and will be given credit for mitigation of take as applied for that purpose.

A summary of total estimated funds, fees and taxes to be generated under the SLCHCP is provided in Table 3-4. Table 3-4 indicates approximately 20 million dollars will be available for Conservation Measures outlined within the SLCHCP for the desert tortoise and southwestern willow flycatcher over the 30-year permit term. The true availability of the funds will be dependent on the number of acres disturbed. Disturbance of habitat cannot begin until fees have been paid or riparian restoration funding has been provided by the permittees. Minimization and mitigation measures will be implemented as the funding becomes available. Therefore, the mitigation will be commensurate with the impact.

UPRR may pay all or a portion of desert tortoise habitat disturbance fees and southwestern willow flycatcher habitat restoration contributed funds upon issuance of the Section 10 incidental take permit and in advance of any related take. These funds total up to $1,088,000 depending on the actual acreage determined within the UPRR right-of-way and the amount to be disturbed. Any funds paid in advance would be available to earn

interest until such time as these monies are expended to implement required conservation measures. Further, any advance payment of funding by UPRR will enable conservation measures for both the desert tortoise and southwestern willow flycatcher to be implemented in advance of allowable levels of take by UPRR.

Table 3-4 Summary of Costs to Administer the SLCHCP and Implement the Conservation Measures for the Covered Species

Task	Projected Cost per Year	Projected Cost Over the 30-year Permit Term
Administration of the SLCHCP	$150,000	$4,500,000
Desert Tortoise Conservation Measures		
Desert Tortoise Head Start Program (including translocation)	$99,333	$2,970,000
Habitat Restoration of Burned Desert Tortoise Areas (≈ 6,695 acres)	$136,194.3	$4,085,829
Research on the Ecological Implications of Fire/ Other Research Efforts	$50,000	$1,500,000
Public Outreach and Education Program (tortoise and flycatcher)	$50,000	$1,500,000
LCLA Road, Fence, and Trail Plan	(one time cost)	$ 150,000
Predator Monitoring/Control and Law Enforcement	$100,000	$3,000,000
Flycatcher Conservation Measures		
Landowner Assistance Program		$65,000
Habitat Restoration, Replacement or Acquisition of Land	--	$946,000
Conservation Measures Maintenance Trust Fund	$50,000	$2,000,000
Total		**$20,716,829**

3.2.2.5.2 Plan Administration

The BLCC will be responsible for the administration and implementation of the SLCHCP under the conditions of the Section 10 permit(s) issued in relation thereto. The Lincoln County IMC will be established by the BLCC to assist with these responsibilities. A Plan Facilitator will be identified and authorized to administer the SLCHCP. Technical subcommittees will be established as needed to provide specific technical guidance related to a species and associated Conservation Measures.

Upon signing the IA, and as adequate funding becomes available, the BLCC will undertake the following:

- Appoint a Plan Facilitator (role described in Section 8.1.2 of the SLCHCP),
- Create the Lincoln County IMC (refer to Section 8.1.1 in the SLCHCP),
- Establish the Section 10 Trust Fund account for collected revenues (refer to Section 9 of the SLCHCP),
- Establish the Landowner Assistance Program with the LCCD (refer to Section 6.7.2.2.2 in the SLCHCP), and
- The IMC will meet as soon as practicable following the issuance of the incidental take permits. The BLCC will develop a draft annual plan and implementation budget by April 15 of each calendar year following issuance of the permits. Permittee reports would be due to the Plan Facilitator by July 30 of each year following issuance of the incidental take permits. Following its initial meeting, the IMC will meet as required, but no less than once every six months.
- The annual schedule will consider the fiscal budget timing for the County, Federal programs, and the Federal and state legislative sessions including:
  - Due dates for participant reports to the Lincoln County IMC,
  - Timeframe for development/approval of the Annual Work Plan and implementation budget (refer to Table 8-1 in the SLCHCP),
  - Annual report due date to the BLCC and the USFWS,

- Lincoln County IMC meetings, and
- Establish the GID for permanent funding of the SLCHCP.

The projected cost estimate to fund implementation of the SLCHCP including administration, reporting and coordination of the IMC is approximately $150,000 annually (further described in Section 9 of the SLCHCP).

IMPLEMENTATION AND MONITORING COMMITTEE

The Lincoln County IMC will oversee implementation of the SLCHCP with the assistance of the technical advisor(s) contracted by the BLCC and the Plan Facilitator. The Lincoln County IMC, consisting of the permittees and plan participants, may review, comment, and make recommendations to the BLCC regarding prioritized Conservation Measures (minimization/mitigation) and budget proposals. Budgets will be considered annually to coincide with the Lincoln County budget process.

ROLE OF THE PLAN FACILITATOR

The BLCC will administer the SLCHCP and select a Plan Facilitator to facilitate implementation of the SLCHCP and to chair the proceedings of the Lincoln County IMC. The Plan Facilitator will have a sufficient scientific or technical background to professionally accomplish these tasks or will consult with the technical advisor(s) or technical advisory subcommittee for specific tasks as appropriate with the approval of the Lincoln County IMC.

ANNUAL WORK PLAN

Implementation of the SLCHCP will require annual planning and budgeting by the Plan Facilitator and the Lincoln County IMC. The annual work plan will identify:

- Goals and objectives,
- Various tasks to be accomplished,
- Who will conduct the work, and
- Outline a schedule of events and budgets for the year.

The IMC will present the proposed Annual Work Plan to the BLCC for preliminary approval consistent with the County's annual budgeting process. The BLCC will then provide the proposed Annual Work Plan to the USFWS for review and comment. Within 30 days, USFWS will provide a concurrence review of the Annual Work Plan to the BLCC to ensure that 1) all avoidance, minimization, and mitigation measures are commensurate with the level of effect in any one year; and 2) the Annual Work Plan is adapted as appropriate to address priority conservation needs of the Covered Species and to respond to monitoring results. USFWS must concur with the proposed Annual Work Plan prior to final approval by the BLCC. Upon receipt of concurrence from USFWS, the proposed Work Plan will be presented to the BLCC for final approval and implementation. In the event the IMC, BLCC, and/or USFWS cannot reach agreement on the proposed Annual Work Plan, the involved parties will work together in good faith to resolve any disputes, and if necessary, follow the terms for dispute resolution as described in Section 14.5 of the Implementing Agreement.

To the extent practical, the Annual Work Plan will be consistent with the BLM's current land use plan, the BO for the LCLA lands (USFWS 2001), and the future BO for the Toquop Energy Project if issued by the USFWS. The Lincoln County IMC members will coordinate project prioritization in development of the annual work plans.

TECHNICAL ADVISOR(S)

The Technical Advisor(s) will be a person or group of persons contracted by the BLCC. The Technical Advisor will report directly to the Plan Facilitator.

3.2.3 Alternative A - Additional Lands for Development

This alternative would involve USFWS issuing an incidental take permit for development and associated activities on up to 44,135 acres of private lands within the Covered Area (Figure 3-9). This acreage includes all

BLM acreage proposed for disposal in Lincoln County under the Proposed Action of the Final RMP/EIS for the Ely District Resource (BLM 2008), as well as all other private land within the Covered Area including the approximately 1,372 acres of private property around the Carp area, 1,172 acres of private property around Elgin, the 7,456 acres of combined BLM disposal lands and private property from Alamo north to Hiko, the 640-acre Section 36 disposal parcel, and other private lands. The LCLA lands, Meadow Valley Industrial Park, and the Alamo Industrial Park and Community Expansion Area would be developed in the same manner described for the Preferred Alternative.

Covered Species would be the same as the Southeastern Lincoln County HCP alternative. Covered Activities permitted under the incidental take permit would be similar to those described for the Preferred Alternative. Activities that would occur on private lands in Lincoln County, Nevada, would include:

- Land development and maintenance activities (including future BLM disposal lands);
- Utility and infrastructure development and maintenance;
- Flood control activities;
- County roadway maintenance activities;
- Union Pacific Railroad construction and maintenance activities; and
- Other Privately-owned Lands Subject to Land conversion activities (e.g. previously undisturbed agricultural land to urban use or grazing land to irrigated and/or cultivated agricultural land).

Conservation measures would be the same as described for the Preferred Alternative, except they would occur across more land under this alternative. If the Covered Activities would potentially affect federally-listed species other than the proposed Covered Species under the Proposed Action, either the applicants would be required to include the additional species in the HCP and permit, or individual landowners would be required to develop HCPs and apply for permits prior to initiation of an activity that may result in take of a federally-listed species or consultation under Section 7 of the ESA would be required for those activities with a Federal nexus.

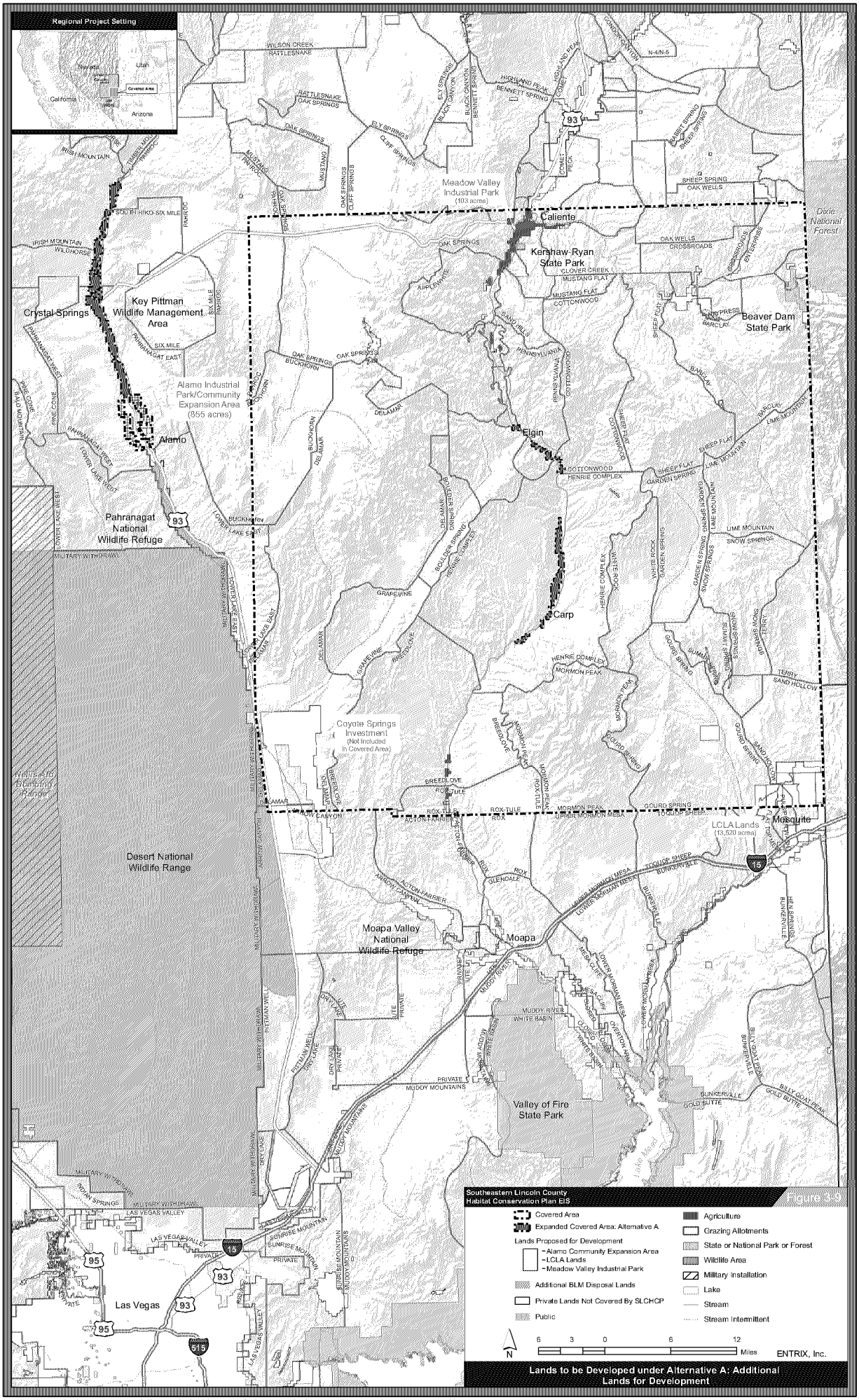
The Adaptive Management Program would be the same as described for the Preferred Alternative.

3.3 MITIGATION COMMON TO ALL ACTION ALTERNATIVES

General mitigation measures for the avoidance, minimization, and mitigation of impacts to the environment would apply to both the Preferred Alternative and Additional Federal Lands Alternative. Measures are presented below by potentially affected resource categories.

3.3.1 General

- All employees would be instructed that their activities must be confined to designated locations.
- Use of best management practices would be inspected on a daily basis via the contractor.
- Equipment intended for maintenance and repair activities would be trucks that have a tight turning capability and would be used to minimize the need to construct significant turning areas.
- Equipment left on-site during non-working hours would be parked at site-specific staging areas.



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3.3.2 Vegetation and Soil

- Best Management Practices (BMPs) for noxious weed management would be employed to minimize the potential to introduce weeds into the Covered Area. Noxious weed control measures would include, but not be limited to, cleaning wheel wells, wheels and tires, bumpers, and undercarriage of heavy equipment with high pressure water or air to remove any weed seeds prior to moving onto the construction site within the Covered Area.
- Vegetation management would be conducted to protect existing vegetation and would include the following components:
  - Steam cleaning of construction equipment prior to entering the Covered Area to prevent introduction of weed species;
  - Minimizing the amount of disturbance to the extent possible during maintenance and repair activities; and
  - Soil stabilization measures, including a mixture of hydromulch, straw, and native seed mix.
- To minimize disturbance to the surrounding soil and vegetation, construction limits would be marked prior to beginning any work under the proposed contract. Construction limits would remain marked until completion of the contract to ensure no disturbance to native vegetation beyond the narrowly defined area.
- Areas with native plants, would be restored or landscaped, possibly using pre-construction salvaged plants in buffer areas, common areas of residential developments, or park and recreational areas.

3.3.3 Wildlife

- All workers would be required to comply with the Migratory Bird Treaty Act (refer to Section 1.4.4 herein).
- Workers would maintain a defined work area perimeter and would keep all construction- related effects within the affected area.
- Construction and stabilization activities would not be allowed at night. This would allow birds to roost and forage in areas near the project without disturbance.

3.3.4 Hydrology and Water Quality

- A Storm Water Pollution Prevention Plan in accordance with Section 402 of the CWA and any State of Nevada or local requirements would be implemented during construction of the LCLA lands to minimize impacts to water quality.
- Contractors would be required to use standard erosion control best management practices, including silt fencing, sediment traps, vegetated buffers, sand filters, grassed filter strips, bio-retention structures, soil roughening on graded sites, and earthen perimeter dikes, near ephemeral washes and disturbed sites to control sediment generation and transport.
- Construction site waste management would be required, including: a) covered trash containers; b) frequent scheduled collections; c) oil and fuel products in covered area with dikes in place to contain spills during refueling; d) immediate clean-up of spills; and e) vehicle washing and maintenance areas in appropriate areas where untreated discharges can be captured.
- Construction would be sequenced as possible to avoid large expanses of graded, vacant land.
- Worker Environmental Awareness Training for all managers and employees (whether they are employed by the developers, UPRR, the County or a third party) would be required before a manager or employee is allowed to work on-site. During the training, the managers and employees would be informed that they may be removed from the site and/or be prohibited from returning to the site if they fail to comply with all applicable environmental laws, regulations, permits, plans and programs governing activity in the project area.

3.3.5 Cultural Resources

For the BLM disposal lands, any selected land parcels with significant cultural resources would either be eliminated from the sale or mitigated to eliminate any potential impacts to cultural resources. Protection of cultural sites that are eligible for inclusion in the National Register of Historic Places (NRHP) would be ensured through recovery or excavation of the site(s), easement agreements between the BLM and the Proponent to ensure that the site(s) would be protected, and/or the deletion of the parcels from the proposed sale. If parcels are removed from the sale to protect an eligible site, the BLM would reserve access across adjoining lands, if necessary, to ensure that access to the site would be maintained.

Construction documents would include stop- work provisions, should archeological or paleontological resources be uncovered, and construction contractors would be apprised of these protective measures during the pre- construction conference.

Mitigation measures would be included in construction documents to ensure that the contractor did not disturb sensitive areas. Areas for contractor activities would be clearly delineated (staked) on the ground to ensure that activities occurred only in designated areas.

Best management practices would emphasize changes in project design to avoid and protect sites and features, and/or could include archeological monitoring of the project and data recovery.

To reduce unauthorized collecting, construction personnel would be educated about cultural resources in general and the need to protect and report any cultural resources encountered. Work crews would be instructed regarding the illegality of collecting artifacts on Federal lands to avoid any potential Archeological Resources Protection Act violations.

If previously unknown archeological resources or human remains were discovered, work would cease in the area of the discovery and consultation with traditionally associated peoples, the State Historic Preservation Officer and the Advisory Council on Historic Preservation would be conducted, as appropriate. Procedures outlined in 36 CFR 800 and the Native American Grave Protection and Repatriation Act (NAGPRA) would be followed.

3.3.6 Air Quality

- Fugitive dust from the construction phase would be controlled by the Nevada Bureau of Air Pollution Control's (BAPC) Surface Area Disturbance Permitting Program. Permits with Dust Control Plans are required for all projects disturbing more than 20 acres.
- Vehicle tailpipe emissions are currently regulated through a variety of federal programs. Future industrial facilities would be subject to the stationary source permitting program of the BAPC. This program insures that the proposed stationary industrial sources (singly or combined) would not detrimentally affect air quality.
- The following mitigation measures would be implemented to minimize construction emissions:
  - Diesel and gasoline-powered construction equipment would be properly maintained and turned off when not in use.
  - Diesel and gasoline engines, motors, and equipment would be located as far as possible from sensitive receptors.

3.3.7 Hazardous Waste

Any fuel, transmission or break fluid leaks or hazardous waste leak, spills or releases would be stopped/repaired immediately and cleaned at the time of occurrence. All heavy equipment and vehicles would carry materials to absorb leaks or spills. Contaminated soil would be removed and disposed of at an appropriate facility. Petroleum products such as gasoline, diesel fuel, and lubricants would be containerized in approved containers. Hazardous materials would be properly stored in separate containers to prevent mixing, drainage, or accidents.

3.4 ALTERNATIVES CONSIDERED BUT DISMISSED

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Public scoping comments received in response to the purpose and need for the project provided suggestions for potential alternatives. Some of these alternatives may not have adequately met the purpose and need of the habitat conservation plan, duplicative of the alternatives considered in detail, or determined to include components that would cause unnecessary environmental impact. Therefore, a number of alternatives were considered, but dismissed from detailed consideration for reasons summarized below.

3.4.1 Multiple Species Permit with a Longer or Shorter Permit Term

This alternative would either shorten or lengthen the term of the permit, at which time it could be reauthorized, modified, or terminated. The shorter permit term alternative does not meet the purpose and need for pursuit of incidental take permits for development activities within the Covered Area, which includes full development of the LCLA lands. It is projected that Phase I of the LCLA land would require 20 years for full build out. Build out of the Phase II lands would exceed the 20-year permit duration. Thus, this alternative would not provide the permittees with take authorization for the timeframe in which effects to the Covered Species are expected to occur. A longer permit term would be difficult to justify, as the LCLA lands only require 30 years to achieve full build-out. Also, in the initial scoping comments, EPA requested that shorter permit terms be used because of the difficulty in foreseeing future events. For this reason, the alternative was dismissed.

3.4.2 Inclusion of CSI lands

Initially, Coyote Springs Investment lands were considered for inclusion in the broader Lincoln County HCP, but CSI decided to complete a separate habitat conservation planning process. Therefore, it was not considered feasible to include these lands as a component of an alternative.

3.4.3 Entire Lincoln County MSHCP

A habitat conservation plan covering the entire Lincoln County was considered, but private landowners in other portions of Lincoln County were not interested in participating in the process. For this reason, the alternative was dismissed.

3.4.4 Without Desert Tortoise Surveys, Clearances, and Relocations

A habitat conservation plan without surveys, clearances, and relocation of desert tortoise prior to construction activities was initially considered. However, these conservation measures were determined to be necessary for the substantial minimization of take or enhancement of numbers of Covered Species within the Covered Area of the SLCHCP. Therefore, the alternative was dismissed.

3.5 COMPARISON OF THE ALTERNATIVES

This section includes a comparison of the components of the alternatives, with specific reference to the goals of the project. Table 3-5 also highlights the components of the three alternatives considered.

3.5.1 No Action Alternative

Under the No Action Alternative, a Section 10(a) incidental take permit would not be issued for development and maintenance activities conducted within the Covered Area of southeastern Lincoln County. Development activities could still occur in the future if take of listed species was avoided, or if individual habitat conservation plans were developed for each activity. However, the benefits of the combined HCP would be lost, as coordinated efforts for funding, research, monitoring, and implementation of conservation measures would not occur.

Table 3-5 Comparison of the Alternatives for the Southeastern Lincoln County HCP Administrative Draft EIS

Component	No Action Alternative	Preferred Alternative Southeastern Lincoln County HCP Alternative	Alternative A Additional Lands for Development Alternative
Federal Permits			
Endangered Species Act (ESA) Section 10(a)(1)(B) Incidental Take Permit	Permits would not be issued and take of the Covered Species would not be authorized. Owners of individual parcels would be responsible for obtaining required permits.	Incidental take permits would be issued to Lincoln County, the City of Caliente and UPRR for take of the Covered Species on 19,924.3 acres of habitat. The permittees would implement the SLCHCP to minimize and mitigate the impacts of the taking.	Same as Preferred Alternative but ITP(s) would authorize take of the Covered Species on approximately 13,461 additional acres of habitat.
Lands Included in Alternative			
Total area and land ownership	Ownership of lands included in this alternative is as follows: ▪ LCLA Lands: 13,520 acres ▪ Meadow Valley Industrial Park: 103 acres ▪ Alamo Industrial Park and Community Expansion Area: 855 acres ▪ City of Caliente: 17.5 acres ▪ Lincoln County Roads (includes ROW): 1,274 acres ▪ UPRR Line: 3,699 acres ▪ Other Privately-owned Lands Subject to Land Conversion Activities (e.g. conversion of previously undisturbed agricultural land to urban use or grazing land to irrigated and/or agricultural use): 7,104 acres Total lands (i.e., Covered Area) considered in this alternative: 26,572.5 acres	Total Proposed Land Development within the Covered Area (includes utility and infrastructure development and maintenance activities): 18,579 acres ▪ LCLA Lands: 13,520 acres ▪ Section 36 Disposal Parcel: 640 acres ▪ Meadow Valley Industrial Park: 103 acres ▪ Alamo Industrial Park and Community Expansion Area: 855 acres ▪ BLM Lands identified for disposal around Alamo: 3,461 acres Total Proposed Flood Control Activities within the Covered Area (Caliente area only): 17.5 acres Total County Roadways within the Covered Area (including ROWs): 1,274 acres Total UPRR Line within the Covered Area (including ROW): 3,699 acres Other Privately-owned Lands Subject to Land Conversion Activities (e.g. conversion of previously undisturbed agricultural land to urban use or grazing land to irrigated and/or agricultural use): 7,104 acres Estimated total acreage within the Covered Area considered in this alternative: 30,673.5 acres	Total Proposed Land Development within the Covered Area (includes utility and infrastructure development and maintenance activities): 18,579 acres ▪ LCLA Lands: 13,520 acres ▪ Section 36 Disposal Land: 640 acres ▪ Meadow Valley Industrial Park: 103 acres ▪ Alamo Industrial Park and Community Expansion Area: 855 acres Additional Lands for Development: ▪ Private lands from Alamo to Hiko: 7,456 acres ▪ Private lands around Carp: 1,372 acres ▪ Private lands around Elgin: 1,172 acres ▪ BLM Lands identified for disposal around Alamo: 3,461 acres Total Proposed Flood Control Activities within the Covered Area (Caliente area only): 17.5 acres Total County Roadways within the Covered Area (including ROWs): 1,274 acres Total UPRR Line within the Covered Area (including ROW): 3,699 acres Other Privately-owned Lands Subject to Land Conversion Activities (e.g. conversion of previously undisturbed agricultural land to urban use or grazing land to irrigated and/or agricultural use): 7,104 acres Estimated total acreage within the Covered Area considered in this alternative: 44,134.5 acres

Table 3-5 Comparison of the Alternatives for the Southeastern Lincoln County HCP Administrative Draft EIS

Component	No Action Alternative	Preferred Alternative Southeastern Lincoln County HCP Alternative	Alternative A Additional Lands for Development Alternative
Activities			
Land Development and Maintenance	Individual developers would be responsible for obtaining necessary incidental take permits for development activities.	Activities would include development of four properties: 1) the Alamo Industrial Park and Community Expansion Area and BLM disposal lands around Alamo; 2) the Meadow Valley Industrial Park site located at the southern end of Caliente; 3) the 640-acre Section 36 disposal parcel; and 4) the LCLA lands.	The extent of activities would be greater than the Preferred Alternative. Activities would include development of the same four properties as included under the Preferred Alternative plus: 1) private lands from Alamo to Hiko; 2) private lands around Carp; 3) private lands around Elgin; 4) other private lands within the Covered Area under the Preferred Alternative. Activities would be implemented on up to 44,134.5 acres.
Utility Infrastructure Development and Maintenance	Owners of individual parcels would have no obligation to construct community utility infrastructure.	Community power, waste, sewer, and water facility construction, delivery, and maintenance services would be expanded during the term of the permit, especially in the LCLA land area.	Activities would be the same types and of the same design as described for the Preferred Alternative. The extent of activities would be greater than the Preferred Alternative to support additional land development.
Flood Control	Flood control activities would occur only if proper permits were acquired and review and conservation would occur on a piecemeal basis.	The City of Caliente would like coverage for 8.3 acres of suitable flycatcher habitat due to flood control activities in the Meadow Valley Wash: 1) clearance of debris and fill from the Wash to historic elevations; and 2) replanting of native trees and shrubs along the Wash.	Actions by the City of Caliente would be the same as included under the Preferred Alternative.
Roadway Improvements and Maintenance	Roadway upgrades and maintenance activities' effects on federally-listed species would be addressed through Section 7 consultation.	The County will implement avoidance and minimization measures to offset potential impacts from roadway maintenance activities on desert tortoise and the flycatcher within the Covered Area.	Actions by the County would be the same as included under the Preferred Alternative.
Union Pacific Railroad	UPRR activities would be addressed through individual Section 7 consultations in a project-by-project basis.	UPRR's activities on desert tortoise habitat have the potential to result in the loss of 800 acres of desert tortoise habitat and 54 acres of suitable flycatcher habitat in the Covered Area.	Activities would be the same types and of the same design as described for the Preferred Alternative.
Other Privately-owned Lands Subject to Land Conversion Activities	Landowners would need to seek separate consultation with the USFWS for effects to desert tortoise and southwestern willow flycatcher for conversion of previously undisturbed agricultural land to urban use or grazing land to irrigated and/or cultivated agricultural land.	Lincoln County is requesting take coverage for the loss of up to 564 acres of desert tortoise suitable habitat on private lands and the loss of up to 22 acres of suitable flycatcher habitat along the Meadow Valley Wash on private lands within the Covered Area from the possible conversion of agricultural land to urban use or grazing land to irrigated and/or cultivated agricultural land.	Activities would be the same as described for the Preferred Alternative.
Extent of Activities	Activities could occur within the private lands of the Covered Area.	Activities could occur within the private lands of the Covered Area.	Activities could occur within the private lands of the Covered Area and on additional private lands extending from Alamo to Hiko.

Table 3-5 Comparison of the Alternatives for the Southeastern Lincoln County HCP Administrative Draft EIS

Component	No Action Alternative	Preferred Alternative Southeastern Lincoln County HCP Alternative	Alternative A Additional Lands for Development Alternative
Conservation Measures			
Desert tortoise	Either take of the tortoise would be avoided, or if take could not be avoided, individual landowners would be responsible for developing habitat conservation plans to support applications for incidental take permits. BLM would continue to implement their land use plan as funding and staffing permitted. BLM would be responsible for implementing the terms and conditions of the biological opinion issued for their land use plan.	Avoidance and minimization measures for desert tortoise would include clearance surveys, process and transport prior to land disturbance; fencing (temporary/permanent); and construction best management practices (i.e., pre-construction general site measures, ground disturbance, trash mgmt., LCLA road, fencing and trailhead plan). A one-time per acre fee, either $550/ac for higher quality habitat and $250/ac for lower quality habitat, would be collected to implement the conservation actions for the desert tortoise (i.e., habitat restoration, head start and translocation program, public outreach and education, etc.) to compensate for the effects of incidental take on the desert tortoise from the proposed activities. Implementation of the SLCHCP would provide conservation for the species above and beyond BLM's responsibilities under their current land use plan and associated biological opinion.	A series of conservation measures would be implemented for the desert tortoise, including avoidance, minimization, and mitigation measures similar to those described for the Preferred Alternative.
Southwestern willow flycatcher	Either take of the flycatcher would be avoided, or if take could not be avoided, individual landowners would be responsible for developing habitat conservation plans to support applications for incidental take permits. BLM would continue to implement their land use plan as funding and staffing permitted. BLM would be responsible for implementing the terms and conditions of the biological opinion issued for their land use plan.	Avoidance and minimization measures for the southwestern willow flycatcher would include construction timing, roadway design and construction, worker education, and pre-disturbance surveys. Payment of mitigation fees of $12,000 per acre of suitable habitat removed to be used toward restoration and habitat replacement purposes or replace the loss of native habitat disturbed at a 2:1 ratio and the loss of non-native suitable flycatcher habitat with native habitat at a 1:1 ratio.	Similar conservation measures as described under the Preferred Alternative would be implemented for the southwestern willow flycatcher under Alternative A; however, other avoidance, minimization, and mitigation measures might be required to offset potential effects to additional federally-listed species inhabiting the area from Alamo north to Hiko.
Adaptive Management Framework			
	Individual landowners would not be responsible for development of an adaptive management plan.	Information would be collected to evaluate whether the biological goals and objectives of the SLCHCP and the Covered Species are being met, and, in response to that information, management would be adjusted to ensure progress in meeting the program goals. Monitoring would determine the success of conservation measures implemented under the plan, and measures would be adjusted accordingly to account for unexpected management impacts. The results of Effectiveness Monitoring would allow the permittees, USFWS and BLM to monitor progress of implementation of the SLCHCP. Changes to the SLCHCP would be developed and coordinated through the AMP based on Effectiveness Monitoring.	The adaptive management framework would be the same as described for the Preferred Alternative.

Table 3-5 Comparison of the Alternatives for the Southeastern Lincoln County HCP Administrative Draft EIS

Component	No Action Alternative	Preferred Alternative Southeastern Lincoln County HCP Alternative	Alternative A Additional Lands for Development Alternative
Funding and Coordination			
	If take of listed species is unavoidable, individual landowners would be responsible for funding and coordination of incidental take permits under the No Action Alternative. Funding for BLM actions under their land use plan would be available through appropriations and proposals submitted for funding under the SNPLMA and other external funding sources.	Coordination would occur through the creation of an Implementation and Monitoring Committee (IMC) and the Plan Facilitator position. These entities would oversee the management of the SLCHCP and collection of funds for the length of the incidental take permit. Technical advisors may assist the Plan Facilitator as needed or directed by the BLCC. A two-tiered disturbance fee for the loss of desert tortoise habitat ($550/ac in higher quality habitat or $250/ac outside of higher quality habitat) and a per acre monetary contribution of the loss of southwestern willow flycatcher habitat would apply to activities within the Covered Area of the SLCHCP. These monies would be included in a Section 10 Trust Fund.	Implementation and funding of the plan would be the same as described for the Preferred Alternative.

3.5.2 Preferred Alternative - Southeastern Lincoln County HCP Alternative

Under the Preferred Alternative, a number of activities would be included in a habitat conservation plan, with the implementation of associated conservation measures. These conservation measures and an adaptive management plan would ensure that effects of activities would be minimized where possible for listed species, especially desert tortoise and southwestern willow flycatcher. The Preferred Alternative would also provide opportunities for coordination among USFWS, BLM, Lincoln County, City of Caliente, and UPRR for implementing and funding conservation measures for desert tortoise and southwestern willow flycatcher.

It is the intent of the SLCHCP to provide a mechanism to streamline ESA Section 7 consultations whereby certain activities that require 404 permits and, in turn, require consultation with the USFWS pursuant to ESA Section 7, may rely on the SLCHCP's analysis of impacts on Covered Species, provided that the Covered Activities and the impacts on the Covered Species are within the scope of the SLCHCP. Incidental take coverage under the SLCHCP would only be available pursuant to this streamlined Section 7 consultation mechanism. The SLCHCP is designed to minimize and mitigate the effects of the proposed Covered Activities (i.e., land development, road and railway construction and maintenance, and flood control activities) on species warranting ESA protection.

3.5.3 Alternative A - Additional Lands for Development Alternative

Under the Additional Lands for Development Alternative, a greater amount of land would be developed in Lincoln County than under the Preferred Alternative. Conservation measures, funding mechanisms, and coordination opportunities would be the same as for the Preferred Alternative. However, the increased land developed would result in greater effects to desert tortoise, southwestern willow flycatcher, and their habitat, as well as other federally-listed species potentially inhabiting private lands or disposal lands within the Pahranagat Valley from Alamo north to Hiko. Potential effects to other natural resources such as vegetation, cultural resources, and soils would also be larger. However, socioeconomic benefits to Lincoln County and its residents would be increased.

3.6 ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The environmentally preferable alternative is the alternative that best promotes the national environmental policy as expressed in NEPA's Section 101. This can mean the alternative that causes the least damage to the biological and physical environment; it can also mean the alternative that best protects, preserves, and enhances historic, cultural, and natural resources (CEQ 1981).

The USFWS, as lead agency, identifies the Preferred Alternative – granting a 30-year Section 10 incidental take permit for desert tortoise and southwestern willow flycatcher through implementation of the Southeastern Lincoln County Habitat Conservation Plan as the Environmentally Preferable Alternative. The Preferred Alternative would best protect and preserve the natural resources of southeastern Lincoln County through:

- Maintaining habitat connectivity for sensitive species, wildlife, and plants with BLM lands surrounding or adjacent to the LCLA lands and Alamo area;
- Contributing to recovery efforts for the desert tortoise and enhancing riparian habitat for the southwestern willow flycatcher, and
- Providing funding mechanisms for research towards the recovery of the desert tortoise and riparian replacement and/or restoration of natural vegetation communities for the southwestern willow flycatcher.

3.6.1 Alternatives Comparison Summary

A comparison of the effects of the alternatives is provided in Table 3-6.

Table 3-6 Alternatives Comparison Summary

Impact Topic	No Action Alternative	Preferred Alternative	Alternative A
Vegetation	0	+	-
Wildlife	0	+	0
Threatened and Endangered Species and Species of Concern	0	+	-
Floodplains, Wetlands, and Waters of the United States	0	0	-
Hydrology and Water Quality	0	0	-
Cultural Resources	0	0	0
Soils and Geologic Resources	0	-	-
Ecologically Critical Areas	0	+	0
Visual Resources	0	-	-
Air Quality	0	- (temporary)	- (temporary)
Transportation and Circulation	0	+	-
Noise	0	-	-
Land Use, Planning, and Zoning	0	0	-
Recreation Resources	0	+	+
Public Services and Utilities	0	+	+
Socioeconomics	0	+	+
Hazardous Materials	0	0	0

(-) Adverse effects from the Alternative would result if individual landowners or permittees did not fully comply with land use and environmental permitting processes.
(+) Beneficial effects would result from the Alternative because Lincoln County would incorporate the maximum conservation and mitigation measures for the Covered Species.
(0) Neutral, or negligible, effects would result from the lack of measurable differences in impacts when compared to the Preferred Alternative.

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SECTION 4

Affected Environment

Section 4: Affected Environment

4.1 INTRODUCTION

This section summarizes the physical, biological, social, and economic environments of the extent of alternatives considered and the effects of implementing each alternative on that environment. It also presents the scientific and analytical basis for the comparison of alternatives presented in the alternatives section.

4.2 ENVIRONMENTAL SETTING

Lincoln County, Nevada is located in the southern portion of Nevada and borders the state of Utah. The City of Las Vegas is located in Clark County to the south, approximately 65 miles away. The Federal government manages the majority of lands within Lincoln County, making the County rural in nature. Lincoln County, in its entirety, comprises 6.8 million acres.

The Covered Area is located in the southeastern portion of Lincoln County, Nevada (see Figure 1-1). The Covered Area is defined as the area north of the Clark County line, west of the Utah-Nevada border, south of Township 3 South, and east of Range 62 East Mt. Diablo Meridian (MDM). The topography of the Covered Area is typical of the region's Basin and Range geography, and lies within both the Great Basin and Mojave Desert physiographic regions. Mountain ranges within the Covered Area are generally north-south oriented, separated by broad, flat valleys. The Clover Mountains are an exception, running east-to west. Elevations within the Covered Area range from 7,500 feet in the Mormon Mountains to about 2,500 to 3,000 feet in the area of the Lincoln County Land Act (LCLA) lands, which lie east of the Mormon Mountains.

Lincoln County is located in one of the most arid regions of the United States and thus receives little precipitation. Western Regional Climate Center data for 2006 reported a 4.88-inch average yearly precipitation at Alamo, and a 9.04-inch yearly average at Caliente. Average minimum/maximum temperatures were reported as 17.4/46.2°F in January and 56.5/95.4°F in July at Caliente, and 20.1/51.0°F in January and 55.0/100.3°F in July at Alamo. April through June and September are the driest months, while July to September receives high intensity thunderstorms of short duration. Winter rains that fall between October and March supply most of the eastern Mojave Desert area with the largest portion of its precipitation.

4.2.1 Land Management in the Vicinity of the Covered Area

Table 4-1 shows acres of Federal, state, and private lands in Lincoln County and the Covered Area considered for the Preferred Alternative.

Table 4-1 Land Management Status in Lincoln County, Nevada

Land Management Status	Acres in Lincoln County	Percent of Lincoln County	Acres in Covered Area	Percent of Covered Area
Federal Lands				
Bureau of Land Management	5,604,464	82.4	1,719,456	96.6
Department of Defense	269,661	3.9	-	-
U.S. Fish and Wildlife Service	271,615	3.9	-	-
U.S. Fish and Wildlife Service/DOD	502,539	7.3	-	-
U.S. Forest Service	29,367	<1	-	-
State Lands				
Nevada Division of State Parks	4,775	<1	2,286 *	<1
Nevada Wildlife Management Areas	954	<1	-	-
Private Lands	122,508	1.8	58,211	3.3
TOTAL	6,805,883		1,780,139	

Source: BLM and USFWS

*Acreage falls within the boundaries of the Covered Area, but State Park lands are not a part of the SLCHCP.

4.2.2 Federal

4.2.2.1 Bureau of Land Management

The BLM administers approximately 5.6 million acres, or 82.4 percent of the land, in Lincoln County. This land is currently managed by the Ely District, which recently completed their district-wide RMP (BLM 2008). The Preferred Alternative of the Draft Ely RMP/EIS emphasizes an ecosystem management-based approach.

The BLM lands within Lincoln County include Areas of Critical Environmental Concern (ACECs) established for protecting the desert tortoise and its critical habitat and wilderness areas and wilderness study areas (WSAs). The three ACECs occurring within the Covered Area are Mormon Mesa, Beaver Dam Slope, and Kane Springs. These ACECs were established under the Caliente Management Framework Plan Desert Tortoise Amendment for directing land management to assist in the recovery of the desert tortoise. The Final RMP/EIS retained the three existing ACECs: Beaver Dam Slope ACEC (36,800 acres), Kane Springs ACEC (61,680 acres), Mormon Mesa ACEC (109,680 acres) and designated 17 new ACECs (114,270 acres), including the Lower Meadow Valley Wash ACEC located within the SLCHCP Covered Area, for a total of 322,430 acres, which is less than 3 percent of the planning area.

4.2.2.2 U.S. Department of Defense

The Department of Defense (DOD) administers approximately 772,000 acres of land in Lincoln County. Of this acreage, approximately 503,000 acres overlap with the Desert National Wildlife Range managed by the USFWS. The DOD lands are managed as part of the Nellis Air Force Test and Training Range.

Nellis Air Force Base (AFB) has a Desert Military Operations Area that encompasses the airspace over lands owned by Coyote Springs Investment (CSI), LLC in southeastern Lincoln County (see Figure 1-1). This airspace is a special use airspace that provides maneuvering room for military aircraft training and separates this training from other air traffic (United States Air Force [USAF] 2007). The Desert Military Operations Area occurs from 500 feet above ground level (AGL) to 17,999 feet above mean sea level (MSL). Air Traffic Control Assigned Airspace (ATCAA) is also within this area, from 18,000 feet MSL to an altitude assigned by the Federal Aviation Administration (FAA). This airspace provides additional maneuvering airspace for training. The FAA assigns the ATCAA to Nellis AFB on an as-needed basis (USAF 2007). The Covered Area does not include any lands administered by the DOD.

4.2.2.3 U.S. Forest Service

The U.S. Forest Service manages approximately 29,000 acres, or less than one percent, of Lincoln County located in the Humboldt-Toiyabe National Forest, in the Ely Ranger District. No Forest Service lands occur within the Covered Area.

4.2.2.4 U.S. Fish and Wildlife Service

The USFWS administers approximately 775,000 acres of land in Lincoln County, of which approximately 502,539 acres overlap with the Nellis Air Force Test and Training Range. These lands comprise a portion of the Desert National Wildlife Range (DNWR), which is part of the National Wildlife Refuge System. The DNWR encompasses approximately 1.6-million-acres in both Lincoln and Clark Counties, and supports approximately 150,000 acres of desert tortoise habitat. Critical habitat for the tortoise was not designated in the DNWR because land management practices were determined to provide sufficient protection for the tortoise. However, perpetuating the desert bighorn sheep and its habitat is the most important objective of the Refuge. No lands administered by the USFWS occur within the Covered Area.

4.2.3 Non-Federal

Non-Federal lands located within the Covered Area include the approximately 13,500 acres of LCLA land, the acreage associated with the Meadow Valley Industrial Park site near Caliente, the Alamo Industrial Park site and Community Expansion area, UPRR land and rights-of-way, and Lincoln County roads and rights-of-way. Also located within the Covered Area but not covered under the SLCHCP is the privately-owned CSI lands

located in the southwestern corner of the Covered Area boundary as illustrated in Figure 1-1 of the SLCHCP. The other non-Federal lands are primarily located adjacent to Clover Creek, Meadow Valley Wash and adjacent washes.

4.2.3.1 State of Nevada

Lands held by the State of Nevada include areas managed by Nevada Division of State Parks, NDOW and Nevada Department of Transportation (NDOT). The Key Pittman Wildlife Management Area (WMA) is located along the Pahranagat River, near Hiko. State parks within Lincoln County include Cathedral Gorge State Park, Spring Valley State Park, Echo Canyon State Park, Beaver Dam State Park, and Kershaw-Ryan State Park. State Parks within the Covered Area and the Key Pittman WMA are not included in the SLCHCP.

4.2.3.2 Local Governments

Local governments include Lincoln County and the City of Caliente and unincorporated towns of Alamo, Panaca, and Pioche (the county seat). The City of Caliente is included within the Covered Area of the SLCHCP, but existing development within the town limits of Panaca and Pioche are not included in the SLCHCP. In Paharanagat Valley, the Covered Area includes only the Alamo Industrial Park and Community Expansion Area and lands identified for disposal by BLM.

4.2.4 Biological Resources

4.2.4.1 Threatened and Endangered Species

4.2.4.1.1 Covered Species

Two federally listed species, one species listed as threatened and the other as endangered under Federal and/or Nevada Revised Statutes, occur in the Covered Area. The status of the desert tortoise and southwestern willow flycatcher within the Covered Area is summarized in this section.

- The desert tortoise is listed as threatened under the ESA and protected by the State of Nevada. A recovery plan for the species was approved in 1994, and is currently under revision. The desert tortoise is proposed for coverage under the SLCHCP.
- The southwestern willow flycatcher is listed as endangered under the ESA and protected by the State of Nevada. A recovery plan for the species was approved in 2002. The flycatcher is proposed for coverage under the SLCHCP.

Detailed information on these species is included in Section 3 of the SLCHCP.

4.2.4.1.2 Listed and Candidate Species Not Covered under the SLCHCP

Other listed and candidate species not covered under the SLCHCP are known to occur in habitats outside the Covered Area that may potentially be affected indirectly by the Covered Activities. These species are not covered under the SLCHCP because the likelihood of take occurring as a result of the Covered Activities is negligible, and activities that would typically result in effects to these species would require other Federal authorizations (such as permits issued under Section 404 of the CWA), triggering the need to consult with the USFWS under Section 7 of the ESA.

WHITE RIVER SPRINGFISH AND HIKO WHITE RIVER SPRINGFISH

These springfishes are subspecies of *Crenichthys baileyi*.

The White River springfish (*C. baileyi baileyi*) is a species listed as endangered under the ESA. White River springfish are endemic to the remnant waters of the White River system in eastern Nevada. The entire population is confined to the spring pool at Ash Springs, Lincoln County, Nevada with infrequent occurrences reported in the outflow stream (Tuttle et al. 1990). Ash Springs has a surface area of less than 2 acres, and the portion of the pool occurring on BLM-administered land is used by the public as a swimming facility. Exotic

fish such as the convict cichlid and short-finned molly also inhabit the pool at Ash Springs. Historically, White River springfish inhabited Ash Springs and its outflow stream and were considered common in these areas. The population size prior to 1998 was estimated at approximately 1,200 to 9,800 individuals (USFWS 1998). There are no current population estimates; however, based on observations, it appears to be similar to pre-1998 estimates.

Designated critical habitat for the White River springfish includes Ash Springs (Lincoln County, Nevada), its outflow, and the surrounding land for a distance of 50 feet (U.S. Fish and Wildlife Service 1998a), which is outside of the Covered Area for the SLCHCP.

The Hiko White River springfish (*C.bailey grandis*) is a species listed as endangered under the ESA. Hiko White River springfish are endemic to the remnant waters of the White River system in eastern Nevada. Hiko White River springfish are present in Hiko Spring and in Crystal Spring and its outflow. The fish has also been introduced into Blue Link Spring in Mineral County, Nevada. The original Hiko Spring population was extirpated from Hiko Spring and its outflow stream by 1967. The population that now exists at Hiko Spring descends from individuals taken from Crystal Spring. As of 1995 the populations at Hiko and Blue Link Springs were considered stable, having approximately 5,500 and 12,000 fish, respectively. The latest surveys conducted in November of 2007 estimated a population size of 1,148 springfish at Crystal Springs and 656 springfish at Hiko Spring (NDOW 2007). Blue Link Spring is declining in habitat quality; however, it still maintains a sizable population of several thousand springfish. Critical habitat for the Hiko White River springfish includes Crystal and Hiko springs, their associated outflows, and surrounding land areas 15m from the bank in Pahranagat Valley, Lincoln County, Nevada (USFWS 1998, FR 1985). No critical habitat has been designated for the introduced population at Blue Link Spring.

Critical habitat for the Hiko White River springfish is designated at Crystal Spring, which is outside of the Covered Area for the SLCHCP.

PAHRANAGAT ROUNDTAIL CHUB

The Pahranagat roundtail chub (*Gila robusta jordani*) is a species listed as endangered under the ESA. The historic distribution and abundance of the Pahranagat roundtail chub is uncertain, because the species was not collected prior to alteration of the habitat of Pahranagat Valley. Once found in over 30km of the Pahranagat creek, including Crystal, Hiko and Ash springs (Tanner 1950), the Pahranagat roundtail chub is now confined to 3.5 km of the creek and 2.5km of the main irrigation ditch in the Pahranagat Valley of Lincoln County. Prior to 1998, the population was estimated between 150 and 260 individuals (USFWS 1998), and is currently estimated to be less than 100 fish. A refuge population was developed at Key Pittman WMA, which, based on observation, currently contains several thousand individuals of several age classes. The decline of the Pahranagat roundtail chub is attributed to alteration of its habitat for agricultural irrigation and to the introduction of a variety of competing and predatory aquatic organisms such as the convict cichlid (*Cichlasoma nigrofasciatum*), carp (*Cyprinus cario*), mosquitofish (*Gambusia affinis*), shortfin molly (*Poecilia mexicana*), the bullfrog (*Rana catesbeiana*), and the oriental snail (*Melanoides* sp.).

The Pahranagat roundtail chub is endemic to spring waters of the Pahranagat Valley, Nevada. No habitat for this species occurs within the Covered Area. The present distribution of this species is limited to a small section of Pahranagat Creek on private land. A new refugium was established for this species in 2004 at the Key Pittman Wildlife Management Area located near Hiko, Nevada (BLM 2008).

YELLOW-BILLED CUCKOO

The western Distinct Population Segment (DPS) of the yellow-billed cuckoo (*Coccyzus americanus*) was added to the list of candidate species for protection under the ESA in 2001. The western DPS breeds west of the Rocky Mountain crest in large blocks of riparian habitat in California, Arizona, Colorado, Idaho, Nevada, Utah, Wyoming, New Mexico, Texas, and Northern Mexico. The cuckoo breeds in riparian woodlands dominated by cottonwoods (*Populus fremontii*) and willows (*Salix* spp). Patches of habitat are typically at least 17 hectares in size with a minimum of 3.0 hectares of closed canopy broad leaf forest (Laymon and Halterman 1987). Optimal patch size is greater than 80 hectares and wider than 580 meters (Laymon and Halterman 1987). Because nests are generally constructed in willows, while foraging occurs in the cottonwood canopy, multistory structure is required (Laymon and Halterman, 1987). Yellow-billed cuckoos are generally absent

from salt cedar (*Tamarisk* spp.) dominated areas (Hunter 1984), although they are known to breed in salt cedar in southern Nevada. Declines in yellow-billed cuckoo populations are attributed to habitat loss and fragmentation, pesticide use, and shooting (Laymon WMPA, Fleury 1994, Laymon BLM, AZ PIF, Wiggins 2005).

Yellow-billed cuckoos are known to occur within more mature riparian vegetation scattered throughout the Pahranagat Valley and the Meadow Valley Wash (Halterman 2001, NDOW 2006, Johnson et al. 2007). There is no potential habitat that occurs within the Alamo Industrial Park and Community Expansion Area, but habitat does exist approximately 2 miles south of the southern boundary of this Area. Cuckoos have also been detected in more mature riparian vegetation along the Meadow Valley Wash, which is within the Covered Area. Although cuckoos have been detected in the Meadow Valley Wash, the habitat is of marginal quality, which most likely limits the numbers of cuckoos occurring in this area.

WOUNDFIN

The woundfin (*Plagopterus argentissimus*) was listed as an endangered under the ESA in 1970 and a final recovery plan for the species was approved on April 19, 1995. The woundfin is a streamlined, silvery minnow (Miller and Hubbs 1960), reflecting blue in bright sunlight. The species rarely achieves a standard length of more than 7.5 cm and lives to a maximum of about 4 years. The original range of woundfin extended from near the junction of the Salt and Verde rivers at Tempe, Arizona, to the mouth of the Gila River at Yuma, Arizona (Gilbert and Scofield 1898). Woundfin were also likely found in the mainstream Colorado River from Yuma (Jordan and Evermann 1896; Meek 1904; Follett 1961) upstream to the Virgin River in Nevada, Arizona, and Utah, and into La Verkin Creek, a tributary to the Virgin River in Utah (Gilbert and Scofield 1898, Snyder 1915, Miller and Hubbs 1960, Cross 1975). Additionally, based on woundfin biology, there is reason to believe that woundfin occurred further upstream on the Verde, Salt, and Gila rivers in Arizona.

Woundfin have been extirpated from almost all of their historical range, except the mainstem Virgin River. Woundfin presently range from Pah Tempe Springs on the mainstream of the Virgin River and the lower portion of La Verkin Creek in Utah, downstream to the Riverside diversion near Halfway Wash. A single specimen was taken from the middle Muddy River, Clark County, Nevada, in the late 1960s (Deacon and Bradley 1972) but none have been collected there since and the species is considered extirpated from this river. The species has been transplanted by the Arizona Game and Fish Department into four localities in Arizona: the Hassayampa River, Salt River, Sycamore Creek, and Paria River (Arizona Game and Fish Stocking Records, unpub. data). Additionally, a captive population was established in 1988 at Dexter National Fish Hatchery and Technology Center, New Mexico and in 2005 at the Utah Division of Wildlife's Wahweap Hatchery.

Historically, the woundfin was probably the most abundant fish in the Virgin River. Even as recent as 1973 to 1975 surveys, the woundfin was the most common native species, comprising 5,000 of 10,822 native fish collected (Cross 1978). Since the red shiner (*Cyprinella lutrensis*) invaded the Virgin River, the range and abundance of woundfin have become increasingly curtailed due to competition and direct predation of their eggs or larvae. Other more minor threats include predation by piscivorous birds (i.e., kingfishers and herons), soft-shelled turtles, and other vertebrate species. This is especially true during periods of low flow and clear water. Fish that feed on all life-history stages of woundfin include the introduced channel catfish (*Ictalurus punctatus*), black bullhead (*Ameiurus melas*), largemouth bass (*Micropterus salmoides*), and green sunfish (*Lepomis cyaneilus*), in addition to native Virgin spinedace (*Lepidomeda mollispinis*), probably prey on larvae. The introduced mosquitofish (*Gambusia affinis*) may also prey on larval life stages. Woundfin and its habitat do not occur in any waters within the Covered Area.

VIRGIN RIVER CHUB

The Virgin River chub (*Gila seminuda*) is a subspecies of Gila robusta of the Cyprinidae family, and was listed as endangered under the ESA in 1989. It is a silvery, medium-sized minnow that averages about 20 cm in total length but can grow to a length of 45 cm. The Virgin River chub is endemic to 134 miles of the Virgin River in southwest Utah, northwest Arizona, and southeast Nevada. Historically, the Virgin River chub is believed to have occurred throughout most of the Virgin River from its original confluence with the main stem Colorado upstream to La Verkin Creek, near the town of Hurricane, Utah.

Virgin River chub historically were collected within the Moapa River in Nevada and within the mainstem Virgin River from Pah Tempe Springs (also called La Verkin Springs), Utah, downstream to the confluence with the Colorado River in Nevada (Cope and Yarrow 1875, Cross 1975). It is likely that Virgin River chub historically occurred well above Pah Tempe Springs. No Virgin River chub or its habitat occur within the Covered Area.

Virgin River chub are most often associated with deep runs or pool habitats of slow to moderate velocities with large boulders or instream cover, such as root snags. Adults and juveniles are often associated together within these habitats.

At present, the Virgin River chub occurs within the Muddy River in Nevada and in only 50 miles of the mainstem Virgin River from Pah Tempe Springs, Utah downstream to the Bunkerville Diversion in Nevada. Virgin River chub have not been collected below this point, except for a few individuals, since the late 1970s (Virgin River Fishes Data Base). The Virgin River chub also occurs within the Moapa River in Nevada. A captive population of Virgin River chub is currently maintained at the Dexter National Fish Hatchery and Technology Center as a refugium population and for propagation studies.

Virgin River chub are most frequently captured between the mouth of the Virgin River Gorge and the confluence of the Virgin River with Beaver Dam Wash. Chub occasionally are captured within Beaver Dam Wash, but are seldom encountered more than 100 yards from the confluence. Virgin River chub are considered rare throughout the lower Virgin River, primarily due to the paucity of boulders and cool deep water.

Virgin River chub were listed as endangered by the USFWS on August 24, 1989 (54 FR 35305-35311). On April 19, 1995, the USFWS approved the final Virgin River Fishes Recovery Plan (1995). Critical habitat was designated for the species on January 26, 2000 (54 FR 4140-4156).

YUMA CLAPPER RAIL

The Yuma clapper rail (*Rallus longirostris yumanensis*) occurs in marshland habitats within the basins of the lower Colorado River (Mexico, Arizona, California, Nevada, and Utah) and Salton Sea (California) and was listed as endangered under the ESA in 1967. The Yuma clapper rail is secretive and not often seen in the dense marsh vegetation it inhabits. The largest populations are found within the extensive marshes associated with the mainstem lower Colorado River and adjacent to the Salton Sea (USFWS 1983). Rails are also found along major tributaries systems of the Colorado River including the Gila, Salt, and Verde rivers in Yuma, Maricopa, Pinal, Yavapai (possibly), and Gila counties, Arizona; the Bill Williams River in La Paz County, Arizona; and the Virgin and Muddy rivers in Clark, County, Nevada, Washington County, Utah, and Mohave County, Arizona. No Yuma clapper rails or its habitat are found within the Covered Area.

In 1987, the Yuma clapper rail population along the lower Colorado River was estimated to be between 400 and 750 individuals in the United States, with 450-970 individuals in Mexico (Eddleman 1989). In 1994, the population on the Colorado River in the United States was estimated to be 1,145 individuals. The Yuma clapper rail population in Mexico was estimated to include 6,300 birds in 2000 (Hinojosa-Huerta et al. 2000). Surveys in 2003 documented 809 birds in the United States, though a population estimate had not been determined for Mexico. It is believed that approximately one-quarter to one-half of all Yuma clapper rails occurs in the Colorado River delta in Mexico (the unlisted population); however, the amount of movement between rail populations within Mexico and the United States is unknown. These population estimates suggest that Yuma clapper rail populations have been relatively stable within the lower Colorado River basin.

Once believed to be highly migratory (with most birds thought to spend the winter in Mexico), telemetry data showed most rails (over 70 percent) do not migrate (Eddleman 1989). Very little is known about the dispersal of adult or juvenile birds, but evidence indicates that Yuma clapper rails can effectively disperse to new habitats provided that habitat corridors exist between the old and new sites (Rosenberg et al. 1991). Rosenberg et al. (1991) speculated that Yuma clapper rails are recent invaders (since 1900) to the northern portions of the lower Colorado River basin after extensive damming of the river in the early 1900s. The dams created relatively stable water benefiting marshland habitats suitable for rails.

4.2.4.1.3 Species of Concern Not Covered Under the SLCHCP

Other species of concern not covered under the SLCHCP occur within the Covered Area. These species are either federally-protected (albeit not under the ESA), state-protected, or of conservation concern due to known limited distributions. These species are not covered under the SLCHCP because even if the species become federally-listed over the life of the proposed action, the applicants do not anticipate that take authorization will be needed. Further, conservation measures implemented for the Covered Species are expected to benefit these sensitive species as well. However, these species are included in the impact analysis because actions that are part of the SLCHCP could indirectly affect one or more of these species, and such impacts must be addressed under NEPA.

BALD EAGLE

The bald eagle (*Haliaeetus leucocephalus*) was listed as endangered in 1967 under the Endangered Species Preservation Act of 1966. Only those eagles south of the 40th parallel were considered endangered. In 1978, the USFWS listed the bald eagle throughout the lower 48 States as endangered except in Michigan, Minnesota, Wisconsin, Washington, and Oregon, where it was designated as threatened. In 1995, the USFWS reclassified the bald eagle from endangered to threatened status throughout the lower 48 States. In July of 2007, the USFWS determined that the bald eagle had recovered to the point that it no longer required protection under the ESA, and removed the bald eagle from the list of threatened and endangered species. The bald eagle remains protected under the MBTA and the Bald and Golden Eagle Protection Act.

Bald eagles are known to utilize lakes and reservoirs, agricultural, and sagebrush habitats in Nevada. Bald eagles winter near lakes and reservoirs containing fish and that remain open during freezing temperatures. Bald eagles are known to hunt along major waterways and require old-growth trees as roost sites (GBBO 2005). A wintering population survey of the total North American population was completed in 1997 and resulted in 98,648 individuals, with the largest numbers in Alaska (44,000) and British Columbia (28,507) (USFWS 2006). During the winter, bald eagles are known to roost in tall cottonwoods at Pahranagat NWR, just south of the Alamo Industrial Park and Community Expansion Area (Herron et al. 1985) outside of the Covered Area.

MEADOW VALLEY WASH DESERT SUCKER AND MEADOW VALLEY WASH SPECKLED DACE

The Meadow Valley Wash desert sucker (*Catastomus clarki* ssp. unnamed), a BLM sensitive species and a State protected species, and the Meadow Valley speckled dace (*Rhinichthys osculus* ssp. unnamed), a BLM sensitive species, occur at various locations throughout both Meadow Valley Wash and Clover Creek.

The Meadow Valley Wash desert sucker feeds on epiphyton scraped from stones. This species seems to prefer more rapid waters when feeding or spawning, moving to pools during resting periods (Sigler 1987). The desert sucker spawns in later winter or early spring within riffles (Sigler 1987). It persists in muddy or turbid waters, but does equally well in clear water. Adults live in deeper water (up to 6-8 feet) but young prefer shallow water (6-18 inches).

As an adult, the Meadow Valley Wash speckled dace feed throughout the water column and from the substrate, taking aquatic arthropods and plants found drifting or on the bottom of the stream. The younger dace feed on mid-water plankton. It lives in a wide variety of habitats, but typically occurs in water less than three feet deep. It is most active at night. This species can spawn through the summer months, but the peak is in June and July. Eggs are attached to a patch of bare rock or gravel that was cleaned off by the male. The eggs hatch within a week or so and the young remain in the area for another week. After leaving the area they hatched in, the young often congregate in warm shallow water near large rocks. This information was taken from Sigler, 1987.

Records of one or both fish species exist throughout much of the drainage. Specific records occur near Rox (Rkm 28.7 SD in 1984) and north of Vigo (Rkm 56-61.2) and near Carp (Rkm 64.5) and 1.5 miles north of Leith (Rkm 84.2); 0.5 miles north of Elgin (Rkm 98.5) and near Willow Creek which is 5-6 miles north of Elgin (Rkm 107.5); and 1.5 miles south of Stine (Rkm 113) and just north of Stine (Rkm 117.6). These species range upstream within permanent stream sections in Eagle Valley, including Condor Canyon near Panaca.

ARIZONA TOAD

The Arizona toad (*Bufo microscaphus*), a BLM sensitive species, occurs at various locations throughout Meadow Valley Wash. This species favors sandy riverbanks, washes and arroyos in riparian areas with mule fat, willows, cottonwoods, sycamores and up into pine-oak woodland (Stebbins 2003). This species breeds from March to July with the peak probably in June (Stebbins 2003). It has a strong preference for breeding in shallow, exposed streamside, quiet water or over flow pools with silt free sandy or gravelly bottoms. Both young and adults prefer sandy, damp terraces with scattered vegetation for shelter and burrow sites.

Much of the historic habitat of Arizona toad has been impacted by impoundments causing more quiet pool areas that are favored by Woodhouse's toad (*B. woodhousii*). The Arizona toad apparently readily hybridizes with Woodhouse's toad and has done so extensively in the Meadow Valley Wash. Both historic and recent records of the Arizona toad occur throughout the Meadow Valley Wash drainage.

THREECORNER MILKVETCH

The threecorner milkvetch (*Astragalus geyeri* var. *triquetrus*) is an herbaceous winter annual that is listed as critically endangered by the State of Nevada, and a BLM sensitive species. Herbaceous winter annuals of the Mojave Desert threecorner milkvetch have life spans of less than one year and typically take five to eight months from seed germination to seed dissemination and plant death. Seeds germinate following sufficient precipitation events during winter months, which is about 15 to 25 mm in the northern Mojave Desert (Beatley 1976). With less precipitation, they tend not to germinate.

Threecorner milkvetch occurrence is closely related with the Muddy Creek Formation, a Tertiary aged sedimentary rock widely exposed along Lake Mead's portion of the Colorado River and its tributary valleys. The species occurs on deep sand and unconsolidated dunes weathered from this formation and deposited as Aeolian or fluvial sand. It may also occur in areas of stabilized sand that have a cemented or hardened surface, or a cryptogamic crust, and frequently with sparse gravel on the surface (Niles et al. 1995). Plant species typically associated with threecorner milkvetch include: white bursage (*Ambrosia dumosa*), creosote bush (*Larrea tridentata*), littleleaf rattany (*Krameria erecta*), Torrey ephedra (*Ephedra torreyana*), woody crinklemat (*Tiquilia canescens*), beavertail pricklypear (*Opuntia basilaris*), Fremont dalea (*Psorothamnus fremontii*), smallseed sandmat (*Chamaesyce polycarpa*), desert plantain (*Plantago ovata*), desert palafox (*Palafoxia arida*), brittle spineflower (*Chorizanthe brevicornu*), desert trumpet (*Eriogonum inflatum*), and birdcage evening primrose (*Oenothera deltoides*).

The species typically occurs at elevations ranging from 1,200 to 2,400 feet. Plants typically occur on very slight slopes less than two degrees, but can be found uncommonly on slopes as great as 21 degrees. Threecorner milkvetch occurs on all exposures with west and southwest exposures the most common. This pattern suggests that pods and seeds are wind transported in the prevailing wind direction to windward slopes.

The known global distribution of threecorner milkvetch is nearly confined to Clark County, with its most northern distribution extending into Lincoln County and northwestern Arizona. In 1995, surveys by Niles et al. (1995) discovered the species in Lincoln County (Sand Hollow Wash), which is located in the extreme northeastern corner of the Lincoln County Land Act lands.

STICKY WILD BUCKWHEAT

The sticky wild buckwheat (*Eriogonum viscidulum*) is an herbaceous winter annual that is state listed as critically endangered and a BLM sensitive species. Like the threecorner milkvetch, sticky wild buckwheat has a life span typically lasting five to eight months, and germinates following sufficient precipitation during winter months. Years with above average and much above average winter rains yield very high germination rates. When adequate temperature and moisture follows during the growing season, sticky wild buckwheat produces high numbers of individuals – much higher than any documented for threecorner milkvetch, which is sometimes associated with the buckwheat.

Sticky wild buckwheat is typically found in dune formations, open beach sand at waterline and on adjacent sandy slopes of Lake Mead, solidified sands of dry wash channels, and sandy soils within matrix creosote bush ecological systems. Associated species include: white bursage (*Ambrosia dumosa*), rice-grass (*Stipa hymenoides*), big galleta (*Pleuraphis rigida*), California croton (*Croton californica*), birdcage evening

primrose (*Oenothera deltoides*), gravel milkvetch (*Astragalus sabulonum*), redroot cryptantha (*Cryptantha micrantha*), desert twinbugs (*Dicoria canescens*), littleleaf rattany (*Krameria erecta*), and Torrey ephedra (*Ephedra torreyana*).

Sticky wild buckwheat typically occurs at elevations ranging from 1,200 to 2,515 feet. They occur on slopes averaging about eight degrees, but they can be on slopes as great as 53 degrees. Sticky wild buckwheat occurs on all exposures with west and east exposures the most common. As with threecorner milkvetch, seed deposition by prevailing west winds may account for their most common aspects.

The known global distribution of sticky wild buckwheat is restricted and, like threecorner milkvetch, nearly confined to Clark County, although it extends into Lincoln County, Nevada and Mohave County, Arizona. Sticky wild buckwheat is slightly narrower in its Clark County distribution than threecorner milkvetch, which extends further west beyond the Muddy River and further east beyond the Virgin River. Sticky wild buckwheat was included in the eastern Mojave Desert surveys of Niles et al. (1995), where it was discovered in Lincoln County in the vicinity of the extreme northeastern corner of the Lincoln County Land Act lands.

LAS VEGAS BUCKWHEAT

The Las Vegas buckwheat (*Eriogonum corymbosum* var. *nilesii*) is a woody perennial shrub up to 4 feet high with a mounding habitat. It is not currently protected by state or Federal law, but has been considered for listing by the state of Nevada. The subspecies is distinguished from closely related taxa by leaves that are densely hairy on one or both surfaces, at least twice as long as wide, with dense hairs spread along the stem. The numerous flowers are small and yellow with small bract-like leaves at the base of each flower. This plant flowers in late September and early October, and are malodorous, smelling like rotting flesh.

A key feature of the Las Vegas buckwheat that distinguishes it from other members of the *corymbosum* complex is its marked preference for gypsum soils (Reveal 2003). The buckwheat is a gypsocline, a species that principally occurs on gypsum but is also found on other unusual substrates such as claybeds and high-boron shales. The subspecies typically occurs on deeper soils than the Las Vegas bearpoppy (*Arctomecon californica*), another endemic gypsocline that shares much of the same habitat preferences and range. Gypsum soil outcroppings occupied by Las Vegas buckwheat are in general sparsely vegetated with bare exposed soils covered with a cryptogamic soil crust. It generally shares habitat with other gypsum obligate species such as the Las Vegas bearpoppy, Parry sandpaper plant (*Petalonyx parryi*), Palmer's phacelia (*Phacelia palmeri*), wingseed blazing star (*Mentzelia pterosperma*), and froststem suncup (*Camissonia multijuga*).

Presently, the Las Vegas buckwheat is known from nine locations in southern Nevada, most located within Clark County. In 2005, two new populations of the subspecies were reported, one in Coyote Spring Valley outside of the Covered Area, and another adjacent to Toquop Wash in Lincoln County, Nevada, which is within the Covered Area. The Toquop population occupies approximately 72 acres within a 160-acre mining claim established on April 14, 2005, on BLM land. Portions of the site have already been disturbed by the construction of roads to access and excavate soil test pits. To date, Las Vegas buckwheat has not been observed elsewhere within the Covered Area.

4.2.4.2 Other Wildlife

4.2.4.2.1 Terrestrial

Wildlife species occurring within the Covered Area include those typically found in and adapted to the arid Mojave Desert Ecosystem. The distribution and abundance of species is influenced by many factors, including plant species diversity, vegetation structure, substrate, predator/prey populations, and availability of cover sites and water. Environmental conditions within the desert are highly variable, and many species are able to quickly take advantage of favorable circumstances (e.g. rainfall) and/or to escape harsh situations through adaptations of physiology (e.g. use of metabolic water) and/or behavior (e.g. hibernation, underground burrows and migration). Man-made structures designed to collect and store rainfall and run-off help to provide water for quail, doves, rabbits and a variety of other small birds and mammals during the dry season. Eight big game and 47 small game wildlife water developments are located in the western portion of the SLCHCP Covered Area (BLM 2007). Washes and stream courses often serve as corridors for animal movements, providing

habitat connectivity across the greater landscape. Generally, wildlife also occurs in greater numbers and diversity with higher structural complexity of the vegetation and plant species diversity. Riparian communities, as found along portions of the washed, have the highest species diversity of wildlife within the Mojave Desert Ecoregion. This habitat type is extremely limited in this ecoregion. Many riparian-dependant wildlife species have become imperiled due to loss and/or modification of riparian and aquatic habitats within the ecoregion.

Mammal species typically occurring in the Mojave Desert and present within the Covered Area include coyote (*Canis latrans*), kit fox (*Vulpes macrotis*), black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), rock squirrel (*Spermophilus variegatus*), antelope ground squirrel (*Ammospermophilus leucurus*), desert wood rat (*Neotoma lepida*), Merriam's kangaroo rat (*Dipodomys merriamii*), desert pocket mouse (*Chaetodipus pencillatus*), and the ringtail (*Bassaryscus astutus*).

The BLM manages habitat for big game species, such as desert bighorn sheep and mule deer. Mule deer are usually associated with washes and areas of relatively dense vegetation and/or topographic relief; however, use of these areas increases during the cooler months when water is not as limiting. The greatest concentration of bighorn sheep in Nevada occurs in Clark County and southern Lincoln County. Populations of bighorn sheep are found in all of the mountain ranges surrounding Coyote Spring Valley, including between the Arrow Canyon Range and the southern Meadow Valley Mountains, and between the Las Vegas Range and the Arrow Canyon Range.

The Mojave Desert Scrub Ecosystem within the Covered Area provides breeding and wintering habitat for many species of birds, most of which forage and nest on the ground or among low shrubs. Approximately 400 bird species have been reported in Nevada with more than 240 species recorded as breeding in the state (Great Basin Bird Observatory 2006). Of particular importance for bird diversity within the Covered Area are patches of cottonwood, willow, ash, mesquite, desert willow, salt cedar, and other riparian plant species that occur in scattered locations along the Meadow Valley Wash, Pahranagat Creek, and springs. These trees provide feeding, roosting and nesting sites for a variety of species, as well as resting sites for migrating birds. Bird species' diversity within Mojave Desert scrub habitats within the Covered Area is not particularly high. Typical species present in the Covered Area include red-tailed hawk (*Buteo jamaicensis*), common raven (*Corvus corax*), greater roadrunner (*Geococcyx californianus*), mourning dove (*Zenaidura macroura*), Gambel's quail (*Callipepla gambelii*), cactus wren (*Campylorhynchus brunneicapillum*), Say's phoebe (*Sayornis* sayi), western kingbird (*Tyrannus verticalis*), house finch (*Carpodacus mexicanus*), the non-native house sparrow (*Passer domesticus*), pinyon jay (*Gymnorhinus cyanocephalus*), loggerhead shrike (*Lanius Ludovicianus*), and sage sparrow (*Amphispiza belli*).

The herpetofauna within the Covered Area is particularly diverse. Lincoln County includes snake and lizard species typical of Mojave Desert scrub habitat as well as several species associated with the Sonoran Desert. The substrate and presence of cover often influence the site-specific occurrence of many reptile species. Reptile species present within the Covered Area include desert tortoise (*Gopherus agassizii*), chuckwalla (*Sauromalus obesus*), collared lizard (*Crotaphytus bicinctores*), western banded gecko (*Coleonyx variegatus*), zebra-tailed lizard (*Callisaurus draconoides*), desert night lizard (*Xantusis vigilis*), desert iguana (*Diposaurus dorsalis*), western whiptail (*Cnemidophorous tigris*), and side-blotched lizard (*Uta stansburiana*). Ten species of snakes have been found within the Covered Area, including western patch-nosed snake (*Salvadora hexalepis*), coachwhip snake (*Masticophous flagellus*), Great Basin rattlesnake (*Crotalus viridus lotus*), striped whipsnake (*Coluber taeniatus*), common kingsnake (*Lampropeltis getula*), and sidewinder (*Crotalus cerastes*). Amphibians present in the Covered Area include the red-spotted toad (*Bufo punctatus*) and Arizona toad (*B. microscaphus*).

4.2.4.2.2 Aquatic and Riparian Species

Meadow Valley Wash and Clover Creek are the only perennial streams within the Covered Area. These streams ultimately drain into the Muddy River. The ephemeral nature of other washes within the Covered Area precludes the establishment of fish species. Desert riparian and aquatic habitats are also present downstream of the Covered Area in the Virgin River.

Fish species that occur within the Covered Area are found in the Meadow Valley Wash and Clover Creek. Game fish include both rainbow (*Oncorhynchus mykiss*) and brown trout (*Salmo trutta*). Catfish (*Ictalaurus*

sp.) are also occasionally found in the Meadow Valley Wash. Endemic species include the Meadow Valley Wash sucker (*Catostomus clarki* ssp.) and Meadow Valley Wash speckled dace (*Rhinichthys osculus* ssp.). Both the sucker and the dace are undescribed subspecies that occur only in the Meadow Valley Wash and Clover Creek. Pahranagat roundtail chub (*Gila robusta jordani*), White River springfish (*Crenichthys baileyi baileyi*), and Hiko White springfish (*C. B. grandis*) are listed fish species that occur in Pahranagat Creek and associated springs in the vicinity of Alamo and Ash springs; however, the Pahranagat Creek is not located within the Covered Area of the SLCHCP.

The distribution of riparian and aquatic habitats in southern Nevada is limited, and much of the habitats that remain are severely degraded due to water diversions and/or invasion by non-native plant and animal species. The riparian and aquatic habitats associated with the Muddy and Virgin rivers and the numerous springs in Upper Moapa Valley have been heavily impacted, but still provide some of the highest quality riparian habitat in the region.

4.2.4.3 Vegetation

The vegetation communities within and surrounding the Covered Area are characteristic of the Mojave Desert Scrub Ecosystem (Clark County Department of Comprehensive Planning 2000). Based on the USGS Southwest ReGAP landcover classification system (2005), the dominant plant communities occurring within the Covered Area include the Creosotebush-White Bursage Desert Scrub, Mojave Mid-Elevation Mixed Desert Scrub, Mixed Salt Desert Scrub, North American Warm Desert Wash, and North American Warm Desert Playa (Figure 4-1).

Generally, vegetation is sparsely distributed and consists of low shrubs, cacti and perennial grasses. Occasional short stature trees are found in the washes. Creosotebush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*) are dominant in most areas. Mojave yucca (*Yucca schidigera*), barrel cactus (*Ferocactus* sp.), chollas (*Opuntia* spp.) and beavertail pricklypear (*Opuntia basilaris*) also are prevalent, although less frequently found within the Pahranagat Wash ephemeral channel alluvial plain. Blackbrush (*Coleogyne ramosissima*) dominated stands occurs along the northern extant of the Development Area. Common shrub species identified throughout the area include Mormon tea (*Ephedra* sp.), indigo bush (*Psorothamnus fremontii*), four-winged saltbush (*Atriplex canescens*), hopsage (*Grayia spinosa*), spiny mendora (*Mendora spinencens*), brittlebush (*Encelia farinosa*) and purple sage (*Salvia dorii*). Associated grass species include big galleta, (*Pleuraphis rigida*), Indian ricegrass (*Acnatherum hymenoides*), and several non-native annual species (*Bromus* spp., *Schismus* spp.).

General descriptions of vegetation associations found within Covered Area are as follows.

MOJAVE DESERT SCRUB

This vegetation class includes Mojave mixed scrub and creosote-bursage vegetation. Mojave Desert scrub vegetation includes desert thorn (*Lycium* spp.), shadscale (*Atriplex confertifolia*), hopsage (*Grayia spinosa*), blackbrush (*Coleogyne ramosissima*), brittlebrush (*Encelia farinosa*) and desert saltbush (*Atriplex polycarpa*) that occur on lower slopes and in washes. Mojave Desert scrub vegetation is the primary vegetation type in desert tortoise habitat used for cover and forage. Three-corner milkvetch and sticky buckwheat are two state-listed plant species that occur within this vegetation community and are found within the Covered Area. Another rare endemic plant, the Las Vegas buckwheat (*E. corymbosum var. nilesii*), is also known to occur in the vicinity of the Toquop Energy parcel.

BLACKBRUSH

Typically a transitional vegetation class between Mojave Desert scrub and Great Basin shrubs, blackbrush usually occurs in elevations of 4,000–5,000 feet. Blackbrush is associated with juniper and shrubs such as spiny hopsage, shadscale, and creosote (*Larrea tridentata*). In Lincoln County, this vegetation class occurs on slopes and in valleys in the Mormon, Delamar and Clover mountains.

PINYON-JUNIPER

This vegetation class is dominated by a canopy of singleleaf pinyon pine (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*). Juniper communities are widely distributed in open canopy stands, and typically

occur at lower elevations below the pinyon-juniper zone. In southern Nevada, pinyon-juniper communities commonly appear with ponderosa pine (*Pinus ponderosa*), blackbrush, sagebrush (*Artemisia* spp.), and bitterbrush (*Purshia tridentata*). This ecosystem also includes about 1,508 acres of the mixed conifer vegetation class, which consists of ponderosa pine and appears in small cluster communities in the Clover Mountains on north and northwest-facing slopes. The pinyon-juniper vegetation class appears as elevational bands in the Delamar and Clover mountains, and on basin slopes in the Mormon Mountains.

SAGEBRUSH/PERENNIAL GRASSES

Sagebrush and sagebrush/perennial grasses occur mainly in the northerly portion of Lincoln County in lowland steppes and valleys below 6,000 feet. This vegetation class includes shrubs such as rabbitbrush (*Chrysothamnus* spp.), bitterbrush, cliffrose (*Cowania mexicana*) spiny hopsage, and shadscale. Principal grasses include wheatgrass (*Agropyron* spp.), bluegrass (*Poa* spp.), needlegrass (*Stipa* spp.), ricegrass (*Achnatherum hymenoides*), fescues (*Festuca* spp.), and galleta (*Hilaria jamesii*).

SALT DESERT SCRUB

Salt desert scrub is commonly found on playas, in intermountain basins, and in localized depressions where poorly draining silty loam soils develop into a desert pavement. This vegetation class is dominated by one or more shrub types such as shadscale, winterfat (*Krascheninnikovia lanata*), desert holly (*Atriplex hymenelytra*), budsage (*Artemisia spinescens*), and fourwing saltbush (*Atriplex canescens*). This vegetation class appears in Lincoln County, notably in patchy areas around Caliente and Alamo, in the basins between the South Pahroc Range and the Delamar Mountains, and in clusters in the Mormon Mountains.

LOWLAND RIPARIAN

Riparian areas within the Covered Area occur along the Meadow Valley Wash and Clover Creek. Both of these drainages are intermittent, meaning that during normal precipitation years they are dry in some sections and flow year-round in other areas. The hydrology of the creeks are primarily controlled by geology and major faults. In the areas where depth to bedrock is shallow, the water flows on the surface. In areas where depth to bed rock is deep, the water is subsurface.

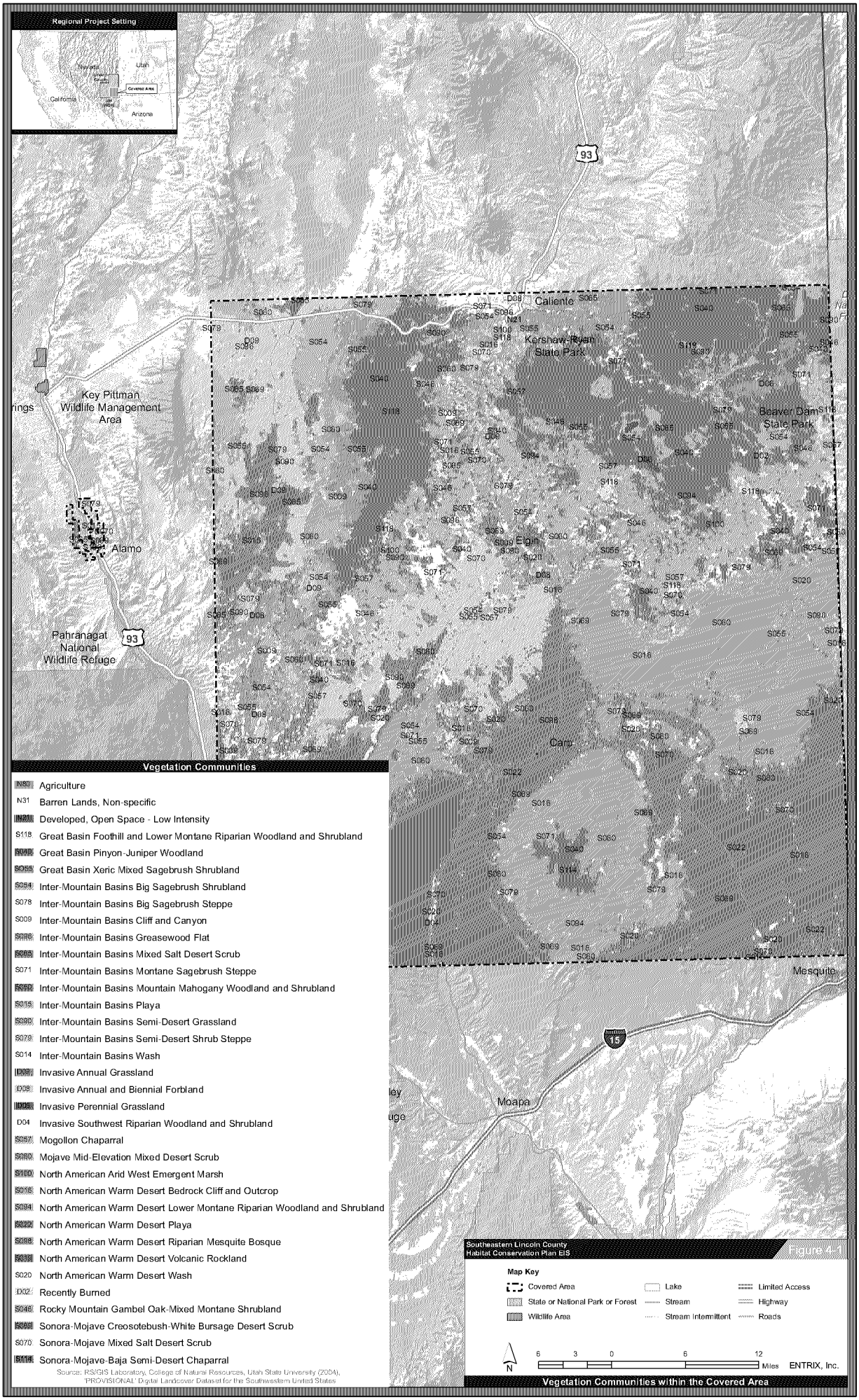
Vegetation consists mainly of cottonwood-willow communities consisting of Fremont cottonwood (*Populus fremontii*), Goodding's black willow (*Salix gooddingii*), coyote willow (*Salix exigua*), honey mesquite (*Prosopis glandulosa*), screwbean mesquite (*Prosopis pubescens*), and desert willow (*Chilopsis linearis*). Non-native tamarisk or salt cedar (*Tamarix* spp.) has been introduced into this vegetation class, as well as species of bromes (*Bromus* spp.).

AGRICULTURE

A portion of land within the Covered Area (approximately 7,103.55 acres based on the Bio-West vegetation data, 2003; BLM private parcels data within the Meadow Valley Wash, 2005; and the Southwest Regap data, September 15, 2004) is characterized as agricultural land (i.e., fields that are mowed, grazed, or tilled on a regular basis.

URBAN

A very small portion of land within the Covered Area is characterized as urban. This land is associated with the City of Caliente.


Regional Project Setting
Nevada
Utah
California
Arizona
Covered Area
Caliente
Kershaw-Ryan State Park
Key Pittman Wildlife Management Area
Beaver Dam State Park
Alamo
Elgin
Pahranagat National Wildlife Refuge
Mesquite
Moapa
Vegetation Communities
Agriculture
Barren Lands, Non-specific
Developed, Open Space - Low Intensity
Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland
Great Basin Pinyon-Juniper Woodland
Great Basin Xeric Mixed Sagebrush Shrubland
Inter-Mountain Basins Big Sagebrush Shrubland
Inter-Mountain Basins Big Sagebrush Steppe
Inter-Mountain Basins Cliff and Canyon
Inter-Mountain Basins Greasewood Flat
Inter-Mountain Basins Mixed Salt Desert Scrub
Inter-Mountain Basins Montane Sagebrush Steppe
Inter-Mountain Basins Mountain Mahogany Woodland and Shrubland
Inter-Mountain Basins Playa
Inter-Mountain Basins Semi-Desert Grassland
Inter-Mountain Basins Semi-Desert Shrub Steppe
Inter-Mountain Basins Wash
Invasive Annual Grassland
Invasive Annual and Biennial Forbland
Invasive Perennial Grassland
Invasive Southwest Riparian Woodland and Shrubland
Mogollon Chaparral
Mojave Mid-Elevation Mixed Desert Scrub
North American Arid West Emergent Marsh
North American Warm Desert Bedrock Cliff and Outcrop
North American Warm Desert Lower Montane Riparian Woodland and Shrubland
North American Warm Desert Playa
North American Warm Desert Riparian Mesquite Bosque
North American Warm Desert Volcanic Rockland
North American Warm Desert Wash
Recently Burned
Rocky Mountain Gambel Oak-Mixed Montane Shrubland
Sonora-Mojave Creosotebush-White Bursage Desert Scrub
Sonora-Mojave Mixed Salt Desert Scrub
Sonora-Mojave-Baja Semi-Desert Chaparral
Source: RS/GIS Laboratory, College of Natural Resources, Utah State University (2004), 'PROVISIONAL' Digital Landcover Dataset for the Southwestern United States
Southeastern Lincoln County Habitat Conservation Plan EIS
Figure 4-1
Map Key
Covered Area
State or National Park or Forest
Wildlife Area
Lake
Stream
Stream Intermittent
Limited Access
Highway
Roads
N
6 3 0 6 12
Miles
ENTRIX, Inc.
Vegetation Communities within the Covered Area

4.2.5 Hydrology and Water Quality

4.2.5.1 Surface and Groundwater Resources

SURFACE WATER

Few perennial streams or rivers exist in Lincoln County. Meadow Valley Wash, Clover Creek, and the Pahranagat Creek are the only streams with reaches that support perennial flow in the county. These streams, plus ephemeral washes such as the Pahranagat Wash, ultimately drain into the Muddy River.

The Pahranagat Creek (White River) is located near the proposed Alamo Industrial Park and Community Expansion Area. Ephemeral drainages cross the proposed site from east to west and there are no perennial drainages, streams, springs, or creeks within the site of the proposed Alamo Industrial Park and Community Expansion Area.

Other sources of perennial waters in the county are springs. Over 567 springs are known to occur in Lincoln County (USGS 1999). A number of reservoirs and lakes also occur in the county.

There are 167 springs with associated riparian areas within the Covered Area (USGS 1999). These springs provide an important source of water for the area. A majority of these springs have ponded or standing water (lentic) riparian habitat associated with them. The Meadow Valley Wash, the primary surface water source, traverses the Covered Area from north to south and is the only perennial stream, greater than one-half mile in length, within desert tortoise and southwestern willow flycatcher habitat. This stream is characterized by peak flows in February and March, when peak snowmelt occurs. Mean annual flow, measures at the Rox-Tule gaging station, is recorded at 3.39 cubic feet per second (cfs). Mean annual flow 4.5 miles of Caliente was recorded in 2004 as 4.43 cfs (USGS 2005). Near Ursine, to the south, mean annual flow was recorded as 6.22 cfs (USGS 2005). Mean annual flow for the Muddy River at Glendale was recorded in 2004 as 40.3 cfs (USGS 2005). Figure 4-2 shows the surface water sources in the Covered Area.

GROUNDWATER

Groundwater occurs in carbonate, alluvial, and volcanic geologies in Lincoln County. Predominantly, groundwater development has occurred in the basin fill aquifer. Groundwater sources come from portions or all of 11 hydrographic units in the Covered Area. Water for supplying the needs of future development on non-Federal lands in the County will likely be produced from local groundwater resources, in particular the deep carbonate aquifer underlying the region. Information on groundwater basins associated with the Covered Area is provided in Table 4-2 and Figure 4-3.

Table 4-2 Water Availability in the Groundwater Basins in and Adjacent to the Covered Area

Basin #	Basin Name	Est. Perennial Yield (Acre-Feet/Year)	Permitted Water Rights (Acre-Feet/Year)	Designated Groundwater Basin (Area or Sub-Area)**
181	Dry Lake Valley*	2,500	11,584	No
182	Delamar Valley	3,000	2,493	No
203	Panaca Valley*	9,000	28,378	Yes
204	Clover Valley	1,000	3,481.8	No
205	Lower Meadow Valley Wash	5,000	23,714.17	Yes
206	Kane Springs Valley	500	1,000	No
209	Pahranagat Valley*	25,000	9,124	No
210	Coyote Springs Valley	18,000	16,304	Yes
220	Lower Moapa Valley*	16,500	5,713	Yes
221	Tule Desert	1,000	2,103.62	No
222	Virgin River Valley	3,600	12,343.55	Yes

Sources: NDWR No Date, 2007; Nevada State Engineer Ruling 5612, February 2007; Nevada State Engineer Ruling 5875, July 2008.

*Less than 10 percent of this groundwater basin is included within the Covered Area
**Basins where permitted groundwater rights approach or exceed the estimated average annual recharge and water resources are being depleted or require additional administration

Two types of aquifers lie beneath the Covered Area. An upper, basin-fill (alluvial) aquifer is confined by the topographic basin and estimated to be about 1,000 feet thick (Dettinger et al. 1995). The lower aquifer underlying the southeastern portion of the Covered Area is part of the large, regional groundwater flow system commonly referred to as the "Carbonate Aquifer" or the White River Flow System (Eakin 1966, LVVWD 2001) and underlies a large portion of southern Nevada. The White River Groundwater Flow System encompasses thirteen topographic basins.

The carbonate rocks in the aquifer consist predominantly of limestone and dolostone (Dettinger et al. 1995). The Middle and Upper Cambrian Bonanza Kind Formation (and partly equivalent Highland Peak Formation and Muav Limestone) forms the basal part of the carbonate aquifer in the White River (as well as the Colorado and Death Valley) Groundwater Flow System (D'Agnese et al. 2002, Belcher et al. 2002, Laczniak et al. 1996, Winograd and Thordarson 1975, as cited by Page et al. 2006). The upper portion of the carbonate aquifer consists of Upper Mississippian and Lower Permian units, including the Bird Spring Formation and partly equivalent Callville Limestone and Pakoon Dolomite (Page et al. 2006).

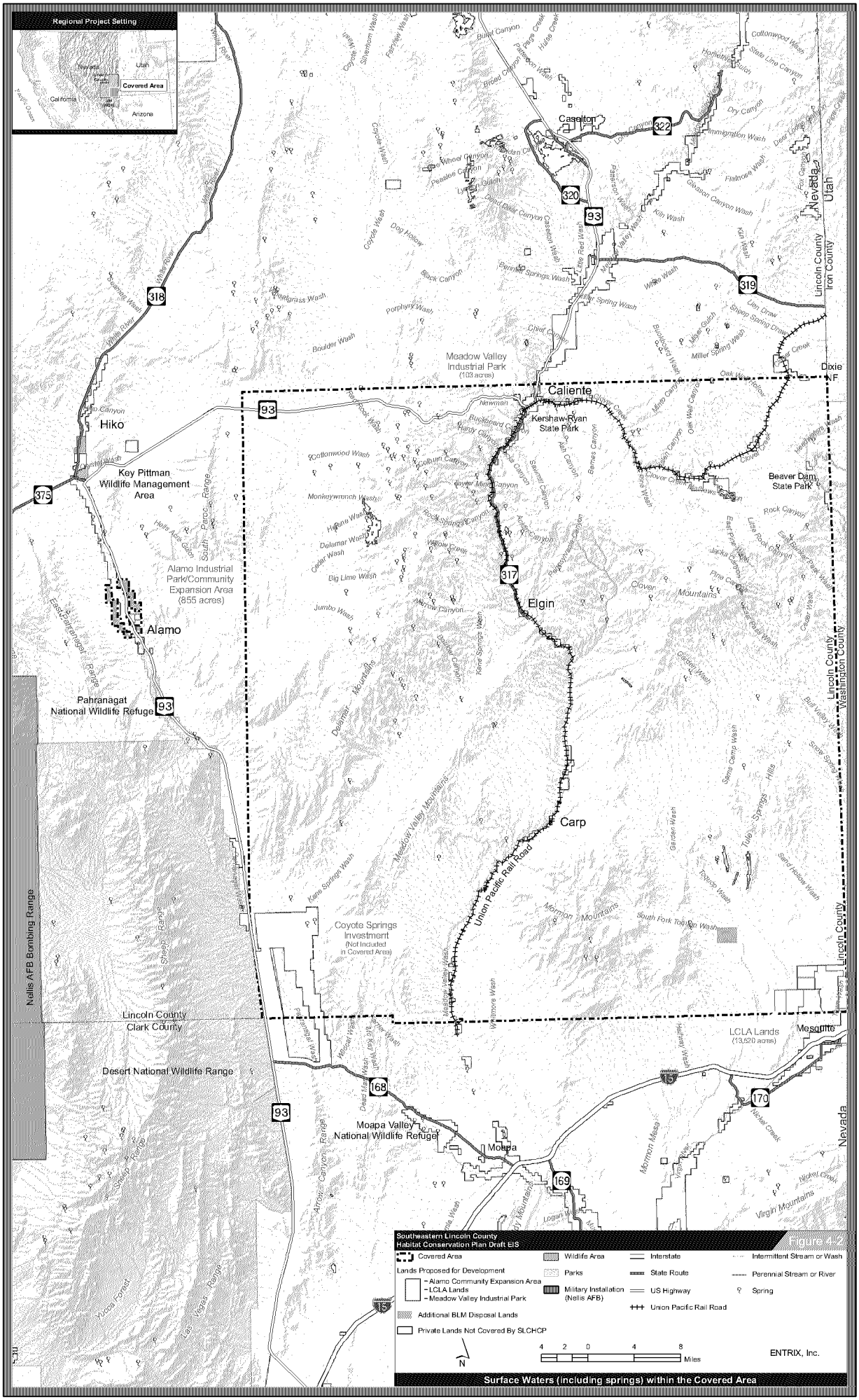
The Carbonate Aquifer system is the focus of ongoing studies and monitoring, because a portion of the groundwater flow system discharges into the Warm Springs Area and various tributaries of the Muddy River. Groundwater recharge to the aquifers occurs from precipitation falling over the basins and the adjacent mountain ranges. The Carbonate Aquifer is recharged from precipitation in the mountains and in the northern part of the Groundwater Flow System. Recharge rates for all southern Nevada aquifers have been estimated at 160,000 afy, with cumulative discharges estimated at 77,000 afy.

Groundwater flow through the carbonate rocks is mostly through fractures and faults (Page et al. 2005). Carbonate rocks are soluble in groundwater, thus dissolution factors are important in the development of secondary porosity and permeability. Potentiometric maps indicate that flow travels generally southward, based on water levels in wells (Wilson 2001, Thomas et al. 1986, as cited by Page et al. 2005).

Current trends in Nevada, including Lincoln County, have been toward the development of groundwater for municipal, industrial, and agricultural uses. The Alamo area is located within the Pahranagat Valley Hydrographic Basin (Basin 209). Based on surface drainage patterns, the regional groundwater flow in the general vicinity is to the south. Groundwater is located in two distinct strata: 1) the younger valley fill at or near the surface; and 2) the deeper Paleozoic carbonate rocks which are recharged from adjacent valleys. Both the Tule Desert and Clover Valley groundwater basins are located within the Covered Area in the Ado River Basin (Hydrographic Basin 13). Neither of these basins are designated groundwater basins where permitted ground water rights approach or exceed the estimated average annual recharge and the water resources are being depleted or require additional administration.

The basin-fill deposits in the Tule Desert Hydrographic Area are not much developed for water supply. One well that taps groundwater in the basin-fill is known as the Tule Desert Well and supports seasonal livestock grazing. Based on the NDWR Well Driller's Log Database, two other wells associated with agricultural use are present in the Tule Desert Hydrographic Area (HA). These wells are 566 and 605 ft deep, however it has not been determined if these wells are currently being used. Groundwater in the fractured-rock aquifer within the Tule Desert has not been developed.

Permitted groundwater rights filed with the Nevada State Engineer's Office are limited to the above mentioned Tule Desert Well (with an annual duty of 3.62 afy) and one Lincoln County Water District well, with a permitted annual duty of 2,100 afy (see ruling 5181 below). Pending water well applications include one LCWD and three Virgin Valley Water District applications. Diversion rates for these applications vary between 6 and 10 cfs, and they are associated with municipal or quasi-municipal use. An additional six applications for total of 30 cfs filed by the LCWD in March 2007 are also still pending (NDWR 2007).



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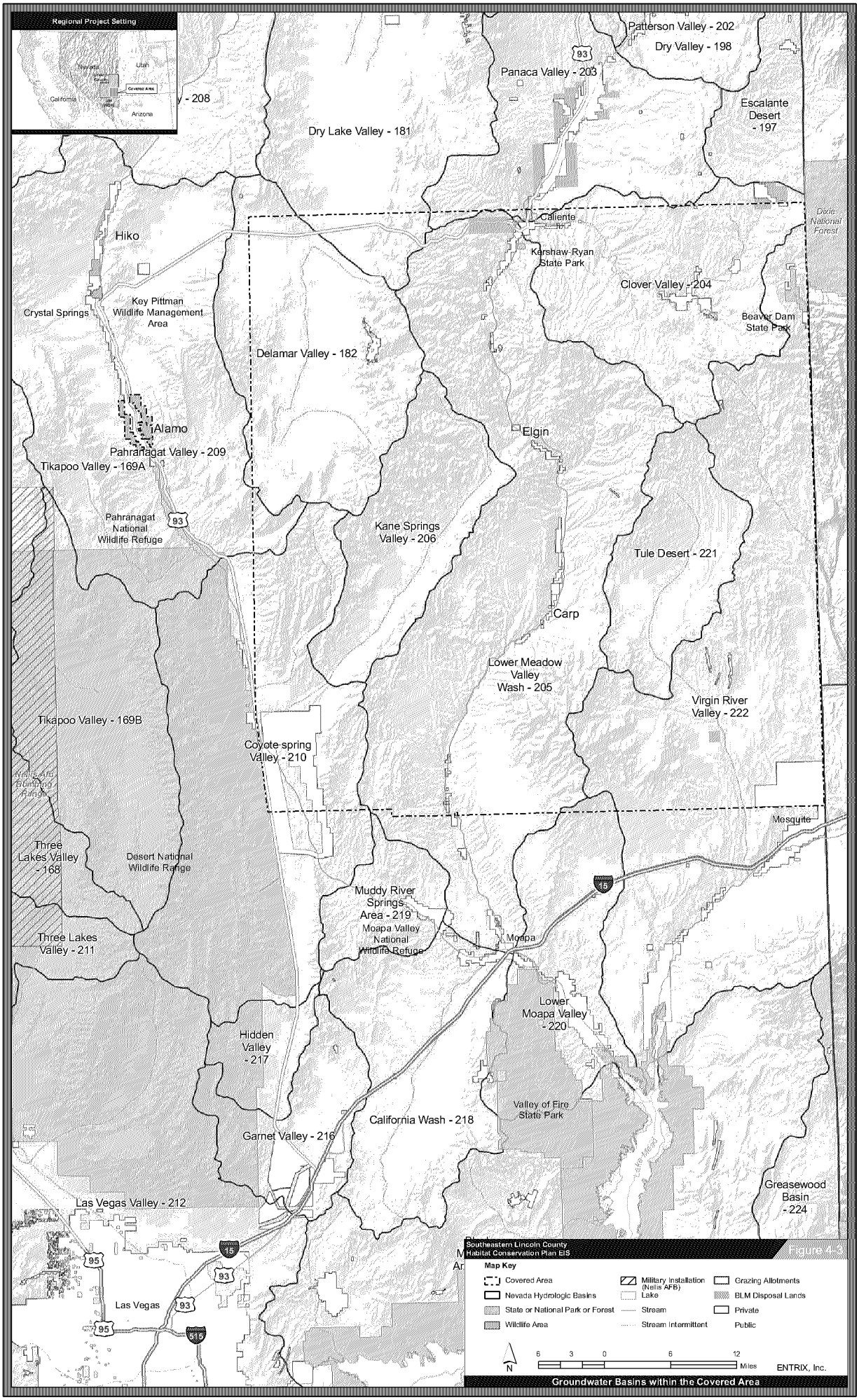

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The LCLA Groundwater Development Project is also being proposed by the LCWD and would be located in southeastern Lincoln County. LCWD currently holds water rights for 2,100 afy of groundwater in the Tule Desert HA and has submitted applications for another 7,240 afy in the basin, which is being held in abeyance until additional data are collected and submitted to the Nevada State Engineer (NSE) pursuant to Ruling No. 5181 dated November 26, 2002. Additionally, in August 2001, the LCWD and Vidler Water Company (Vidler) collectively filed water rights applications with the NSE for the appropriation of up to 14,480 afy of groundwater in adjacent Clover Valley. As part of the LCLA Groundwater Development Project, LCWD proposes to construct up to 15 production wells located in the Tule Desert HA and up to 15 production wells in the Clover Valley HA, water pipelines, and associated facilities to convey water pumped under these rights and applications. Issuance of rights-of-way by BLM would also be necessary for LCWD/Vidler to construct the water pipelines and associated facilities for water conveyance. Groundwater pumped as part of this project would be used for the operation of the Toquop Energy coal-fired power plant and urban development of the LCLA lands north of Mesquite, Nevada,

The Southern Nevada Water Authority (SNWA) has identified several water supply options to address the current and future water supply issues in Lincoln County (SNWA 2004). Groundwater diversion applications for between 125,000 and 200,000 acre-feet per year from White Pine, Nye, and Lincoln counties have been filed with the Nevada Division of Water Resources by SNWA (2004). Groundwater would be piped from the source regions into the Las Vegas metropolitan area. In Lincoln County, the basins that are fully committed to existing uses includes Indian Springs Valley, Penoyer Valley, Railroad Valley (south) Lake Valley, Dry Valley, Rose Valley, Patterson Valley, Panaca Valley, Clover Valley, Lower Meadow Valley Wash Valley, and the Virgin River Valley. Many of these overcommitted basins are designated basins (see Table 4-2), indicating that the Nevada Division of Water Resources will closely monitor future groundwater use and may not issue new groundwater permits (BLM 2005).

Additionally, the BLM issued a Record of Decision in November 2008, for the Kane Springs Valley Groundwater Development Project which will allow LCWD, in cooperation with the power district and other entities, to construct groundwater facilities and ancillary utility infrastructure designed to pump and convey up to 5,000 acre feet per year of groundwater for delivery to the northern portion of the Coyote Springs Valley. The project facilities would be located in southern Lincoln County, within or immediately adjacent to the 2,640-foot-wide utility corridor established by the Lincoln County Conservation, Recreation and Development Act of 2004 (Public Law 108-424).

4.2.5.2 Water Quality

Water quality data is available for the Muddy River near Lincoln County at two sites (near the Reid Gardner power plant site, 1999 to 2004 and at Glendale, 1996 to 2005; NDEP 2006). The temperature standard was exceeded during May at each of the sites a number of times. The phosphate standard was also exceeded at the Glendale site during this time period.

According to STORET data, since 1999, Meadow Valley Wash and Clover Creek have each been monitored for water quality once, in late June of 2000. No exceedances occurred, but dissolved oxygen was recorded as low for both (2.4 and 3.5 mg/L, respectively; EPA No date). Wilson Creek was sampled four times since 1999, with one temperature exceedance in June.

In 2005, the Virgin River was listed on the 303(d) impaired waters list for boron, iron, temperature, total phosphorus, and selenium from the state line to Lake Mead (NDEP 2005). The Muddy River from its source to Glendale was listed for iron, temperature, and total phosphorus in 2005. In 2003, the Virgin River from Mesquite to the state line was listed on the 303(d) impaired waters list for total nitrogen (EPA 2003). In 1998, the Virgin River from Mesquite to the state line was listed on the 303(d) impaired waters list for total phosphorus and boron, while the Muddy River to Glendale was listed for total phosphorus and boron (EPA 1998).

4.2.6 Floodplains, Wetlands, and Waters of the United States

4.2.6.1 Floodplains

Floodplain maps have been developed from topographic maps for Lincoln County by the Federal Emergency Management Agency (FEMA). The maps are in the process of being updated; the most recent completed versions are from 1984 and 1985.

Meadow Valley Wash and Clover Creek are the only perennial or intermittently flowing streams within the Covered Area in Lincoln County. In most areas, these floodplains are confined within narrow canyon walls. This type of stream morphology combined with spring snowmelt or short but intense rains can result in flash flooding. In 2005, a series of rain on snow events in January resulted in heavy flooding of Meadow Valley Wash, scouring out riparian vegetation and resulting in the worst flooding since 1938 (Bio-West 2005b).

4.2.6.2 Wetlands

According to NWI 1:100,000 scale maps, there are a number of freshwater emergent wetlands associated with perennial streams, dammed lakes, and reservoirs (USFWS 2006). The majority of these wetlands are associated with Federal lands, such as the Pahranagat National Wildlife Refuge. Natural springs in Lincoln County also are likely to have associated wetlands but are too small to be noted on the 1:100,000 scale maps. No wetlands are known to occur on the Section 36 disposal parcel, LCLA lands, Meadow Valley Industrial Park, or the proposed Alamo Industrial Park and Community Expansion Area. The drainages that cross the LCLA lands do not support riparian vegetation (BLM 2001). The NWI maps do identify a 506-acre freshwater emergent wetland along Clover Creek, east of Caliente.

Riparian wetlands occur within the floodplain of the Meadow Valley Wash. In 2001, Bio-West surveyed vegetation communities along the Meadow Valley Wash from 1 mile north of Caliente south into Clark County. In this area, 167 acres of wetlands were identified, comprising six vegetation types. These types are described below (Bio-West 2001).

Bulrush Marsh. This community is dominated by bulrushes, primarily *Schoenoplectus americanus* and *S. acutus*. Vegetation height varies from 3 to 8 feet, with an aerial cover averaging 75 percent. It is uncommon in the Covered Area, but is found within other wetland communities in close proximity to Meadow Valley Wash or near seeps and springs.

Cattail Marsh. *Typha latifolia* and *T. domingensis* dominate this vegetative community; little else occurs in this dense marsh. Vegetation is 5 to 12 feet high and occurs in small patches among other riparian vegetation types nearly everywhere that permanent water is found.

Mixed Marsh. This marsh contains cattails and bulrushes, but is not dominated by one or the other. Sedges, grasses, and forbs such as mannagrass and watercress also occur in this community. It occurs where there is permanent water cover.

Mixed Wet Meadow. Low statured vegetation and a lack of standing water characterize this herbaceous community. Saltgrass, yerba mansa (*Anemopsis californica*) and spikerush (*Elocharis* sp.) are commonly found species.

Water Cress/Duck Weed Marsh. This community occurs in small patches. Watercress, duckweed, and lemma dominate the marsh, which has slow moving water one to 18 feet deep.

Wetlands are also likely to be associated with the 167 springs located in the Covered Area.

4.2.7 Cultural and Paleontological Resources

In the Mojave Desert, where humans have lived for approximately 12,000 years, early groups were mostly mobile hunter-gatherers (Lyneis, 1982; Willeg and Aikens, 1988). Early Paleoindian groups focused more heavily on large game than later Archaic peoples who put greater emphasis on plant resources, as evidenced by an increasing profusion of, and sophistication in, ground-stone technology through time. The archaeological record indicates that over the past 8,000 years, increasing Archaic population density in the Great Basin pressured people into more restricted mobility, diverse diet breadth, and rigorous seasonal resource scheduling

(Fowler 1986). Virgin River and Muddy River Anasazi settlements, which developed approximately 300 A.D., broke from the strict hunter-gatherer lifeway typical of the rest of the Great Basin (Fowler 1986). These groups were more sedentary, living in pit-houses overlooking horticultural fields near the rivers. Still, use of surrounding lands, such as the Toquop Wash area, probably remained similar to that of earlier groups, even if less intensive. At approximately 1,000 to 1,200 years ago, a rapid population decline occurred in the area and, again, hunter- gatherer groups occupied the area. Considerable debate exists as to the nature of this shift and whether it represents a simple change in settlement-subsistence pattern (a byproduct of climatic change), or replacement of Anasazi peoples by Numic-speaking groups expanding from the southeast California area (Fowler 1986; Madsen and Rhode 1994).

The protection of and consideration of impacts on cultural resources is governed by numerous Federal and state mandates, which include, but are not limited to, Section 106 of the Natural Historic Preservation Act of 1966, as amended, the Archeological and Historic Preservation Act of 1974, Federal Land Policy and Management Act, and the Nevada State Protocol Agreement. According to these mandates, impacts to cultural resources are mitigated by first identifying sites that may be affected by land development through field inventory and then by project redesign (i.e., avoidance) or various data recovery techniques (i.e., surface collection, partial or complete excavation, surface mapping, artifact and feature analysis, architectural documentation, archival research, or some combination thereof) (BLM 2005).

The results from the cultural surveys conducted on private lands within the Covered Area are summarized below.

LCLA LANDS

Cultural resource surveys were conducted as a part of the EA for the BLM's sale of the LCLA lands. A paleontological field reconnaissance of the area to be sold under the LCLA was conducted on April 23 to April 26, 2001 (Livingston 2001). The purpose of the survey was to determine the kinds of landforms and exposures that exist within the LCLA project area and assess the potential for discovering significant concentrations of vertebrate fossils. Prior to the 4-day examination, the project area was divided into four different landform types based on visibility of exposures likely to reveal vertebrate fossils. These landform types include stable to accretional surfaces, extremely steep faces, cutbanks, and Badlands. Of the four landforms, the Badlands have the highest potential for exposed vertebrate fossils.

Fossil-bearing rocks are abundant in the LCLA project area, occurring as lenses of siltstone with mudcrack impressions and fragmented clay shale with lithified algal balls and tufa-coated rocks. Although these lenses of rocks are mostly likely the place for vertebrate fossils to be found, no such fossils were found during the survey. In addition, no deposits were found that are of such significance that long-term protection is merited, nor were any deposits found that have fossil specimens that merit any intensive recovery program.

Badland areas show the highest vertebrate fossil potential and are the least likely to be developed for residential and commercial development because of steep slopes. In the event that scientifically valuable fossils are encountered during construction, the development agreement would require developer(s) to identify and protect high value paleontological resources through implementation of a paleontological resources recovery plan approved by Lincoln County.

MEADOW VALLEY INDUSTRIAL PARK

No effect to cultural resources would occur at this site, as none are known to exist (refer to the affected environment section in this FEIS). Paleontological resources are unassessed at this site; however, much of the ground has already been disturbed from other land uses. In the event paleontological or cultural resources are discovered, mitigation measures would require workers to stop work and ensure that these resources were appropriately protected.

SECTION 36 DISPOSAL PARCEL

Cultural resource inventories were conducted to identify archaeological and historical resources on the 640-acre Section 36 disposal parcel. A Class I existing information inventory provided the locations of previously recorded sites in the proposed power plant site, as well as sites within a 1-mile radius. The results of the Class I inventory provided the groundwork for development of site expectations and a Historic Properties

Identification Plan, used to guide the Class III intensive field survey of the proposed power plant site. During the field survey, archaeologists walked parallel transects, 15 to 30 yards apart. When artifacts were encountered, the isolate or site boundary was mapped using a global positioning system (GPS) and was recorded on Intermountain Antiquities Computer System (IMACS) forms (Toquop Energy Project citation).

The Class I inventory identified eight previously recorded cultural resources in the area of potential effect for indirect impacts. These include three prehistoric rock alignments, one historic dump, one can scatter, one isolated Elko projectile point, and two cryptocrystalline flakes. In addition, nine previously recorded cultural resources were identified in the proposed power plant site. These include six prehistoric rock alignments, one prehistoric lithic scatter, one historic telephone line, and one isolated Great Basin stemmed projectile point. During the Class III intensive field survey, two additional prehistoric rock alignments were identified in the proposed power plant site (Toquop Energy Project citation).

In summary, 19 cultural resources are situated in the areas that might be affected by the proposed project activities. Seven prehistoric rock alignments are recommended as eligible for nomination to the National Register of Historic Places, while 12 sites are recommended as ineligible (Toquop Energy Project citation).

ALAMO INDUSTRIAL PARK AND COMMUNITY EXPANSION LAND SALE AREA

A Class III cultural resource survey was conducted in and around Alamo on July 19 and 20, 2006, by Knight & Leavitt, Associates, Inc. The survey located two prehistoric sites and two historic sites in the proposed Project Area. One of the prehistoric sites (26LN3678) had been previously discovered by NDOT; however, the 2006 survey enlarged the site from the find by NDOT and extended the boundary. The site is approximately 100 acres in size and is recommended as eligible for the NRHP. The second prehistoric site (26LN4676) is also recommended as eligible for the NRHP. The two historic sites (26LN4677 and 26LN3966) are highly disturbed sites which are not intact; therefore, neither of these sites are recommended for inclusion in the NRHP.

In summary, of the four archaeological sites recorded in the Alamo project area, two were recommended eligible for the NRHP. BLM would reserve access to any NRHP eligible sites. In addition, these sites would be avoided by all future development and surface disturbing activities.

OTHER PRIVATE LANDS WITHIN THE COVERED AREA

Not all lands within the Covered Area have been surveyed for cultural and paleontological resources. The Federal lands within the Covered Area are under the jurisdiction of the BLM Ely District. The Ely District has recently developed a Resource Management Plan (RMP) that addresses the history of southeastern Lincoln County, the cultural surveys conducted and resources recovered (BLM 2008). To date, approximately 12,114 cultural resource sites have been identified within the Ely District Plan Area covering a time span of over 10,000 years. The sites range from small temporary campsites, hunting stations, rock art sites, artifact scatters, quarries, rock shelters, and food collecting sites, to historic mining camps, staging stations, trails, and structures.

4.2.8 Soils, Minerals, and Geological Resources

4.2.8.1 Geology

Southeastern Nevada has a complex geologic history comprised of several episodes of sedimentation, igneous activity, orogenic deformation, and continental rifting. These past events have influenced the location and potential for economic mineral values within Lincoln County and the Covered Area. Extensional forces developed within the Great Basin, a physiographic area covering the majority of Nevada and western Utah, from the middle of the Cenozoic Era to the present. The high angle fault-controlled mountain ranges and intervening valleys are the result of the regional extension. The mountain ranges are north-to northeast trending and are separated by broad alluvial desert basins, lending the region its name of Basin and Range. Volcanic activity increased with the extensional forces and accompanying thinning of the continental thrust. Valley fill within the region contains the erosional remnants of the mountain blocks (Strobel 2005).

The geology of Lincoln County is comprised of three basic soil types: carbonate rocks, non-carbonate rocks, and alluvial fill (Figure 4-4). The carbonate rocks, such as limestone, are typically fractured. These fractures have become widened by the rock being dissolved by ground water. Carbonate rocks in the area can be thick, estimates ranging between 5,000 ft to 30,000 ft (Strobel 2005).

Non-carbonate rocks in Lincoln County are varied and include gneiss, schist, granite, shale and siltstone, and volcanic rocks such as basalt. These rocks and the carbonate rocks form the mountains in Lincoln County and underlie the fill sediments found in valleys.

Fill sediments found in valleys are referred to as basin fill. These unconsolidated sediments eroded off mountains and have been deposited by streams in valleys. How thick the fill is in an area in part depends upon how resistant the rocks of local mountains are to wind and water erosion. Most groundwater used in eastern Nevada is pumped from basin fill aquifers (Strobel 2005).

4.2.8.2 Minerals

Lincoln County has a long mining history. Silver was discovered near Pioche in 1863, which led to the arrival of many to mine for silver and other metals in the area. A Nevada Bureau of Mines and Geology GIS data layer shows 341 mine shafts as occurring in Lincoln County (NBMG 2001). Over 148 of these occur on present day private land. The majority of these mine shafts are abandoned. Historically, mining occurred in Lincoln County for gold, silver, lead, zinc, manganese, copper, nickel, iron, fluorspar, montmorillonite, and other metals.

There are three mining districts located within the Covered Area, although currently their production is minimal and sporadic. Major non-metallic minerals extracted in the area include quartz, gypsum, perlite, fluorspar, barite, and vermiculite. There is a small potential for geothermal resources at various locations in the Covered Area, but USGS data and geophysical evidence indicates the potential for occurrence is quite low.

Current mining activities in Lincoln County are limited. The largest mining operation is for perlite west of Caliente off of U.S. Highway 93 and employs 10 people (NDOM 1997). A pozzolan mine is operating northwest of Panaca. Plans for mining gypsum on BLM administered land within the Plan area are under development.

4.2.8.3 Soils

Soils within the Lincoln County are mostly either stony or gravelly loam of varying degrees or alluvium derived from mixed rocks. Primary types of soils are entisols and aridisols, and to a lesser extent mollisols and inceptisols. Entisols are weakly developed soils that are basically unaltered parent material (rock). Aridisols form where moisture is scarce. With little vegetation to add to the soil, organic matter is low. Calcification and salinization are important processes. Sodium is often present in high concentrations, making these soils alkaline. Mollisols are dark brown to black with a rich organic layer. Inceptisols are just starting to show horizons (Ritter 2006).

Meadow Valley Wash contains two main soil associations. Along the upper wash area, Veet-Mosida is the predominant soil, a very gravelly well-drained sandy loam found on inset fans and stream terraces. The second most predominant soil is the Geta-Bluepoint-Arizo association, found along the lower wash. Geta is a fine loamy sand, well drained and found along stream terraces. Bluepoint is a fine loamy sand, somewhat excessively drained and found at dunes. Arizo is a rather gravelly loamy sand, excessively drained and found along drainage ways. Around Rainbow Canyon, more toward the middle section of the wash, the soil association changes from Veet-Mosida to Zaqua-Rock Outcrop, which is a mixture of very gravelly sandy loam and unweathered bedrock. Zaqua is a well-drained residuum and colluvium from tuffaceous rocks (see Figure 4-4).

4.2.9 Ecologically Critical Areas

The Covered Area contains portions of the USFWS-designated Mormon Mesa and Beaver Dam Slope Critical Habitat Units and the BLM-designated Mormon Mesa and Beaver Dam Slope ACECs and the Kane Springs ACEC established for the recovery of the desert tortoise (refer to Section 3.2 of the SLCHCP and Figure 4-5

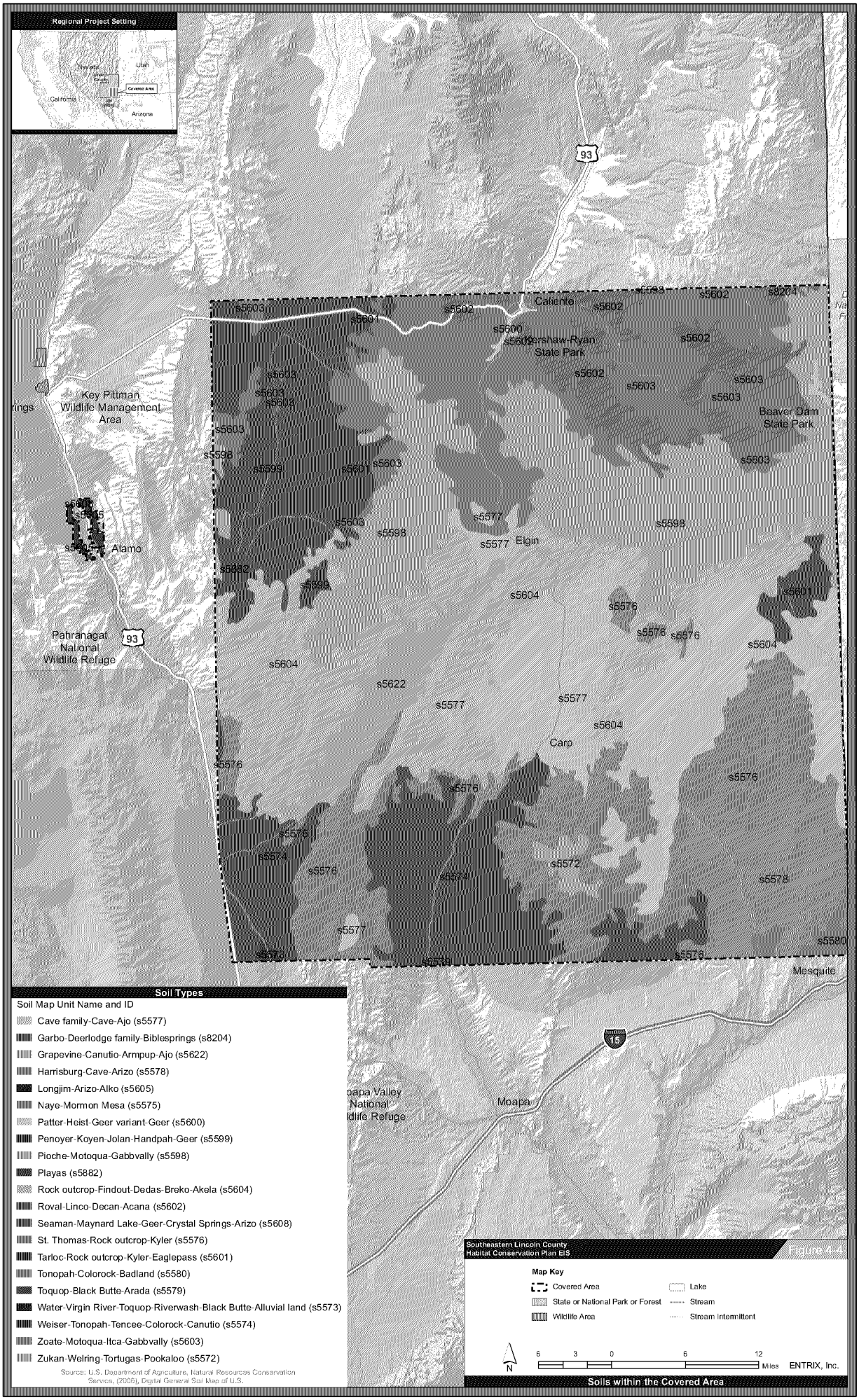
herein). The Mormon Mesa ACEC also includes riparian habitats on BLM-administered land along the Lower Meadow Valley Wash for several other sensitive or listed species including the federally endangered southwestern willow flycatcher, state protected Gila monster (*Heloderma suspectum*), and state sensitive loggerhead strike (*Lanius ludovicianus*). The Lower Meadow Valley Wash was designated as an ACEC under the Final BLM Ely District RMP/EIS (2008). The Meadow Valley Wash hosts a plethora of federally-endangered, threatened, and candidate species, as well as Nevada State protected species and BLM Sensitive species. Some of the more prominent terrestrial and aquatic species include the southwestern willow flycatcher (endangered), desert tortoise (threatened), yellow-billed cuckoo (candidate), Meadow Valley Wash desert sucker and speckled dace (sensitive), Arizona toad (sensitive), and chuckwalla (sensitive).

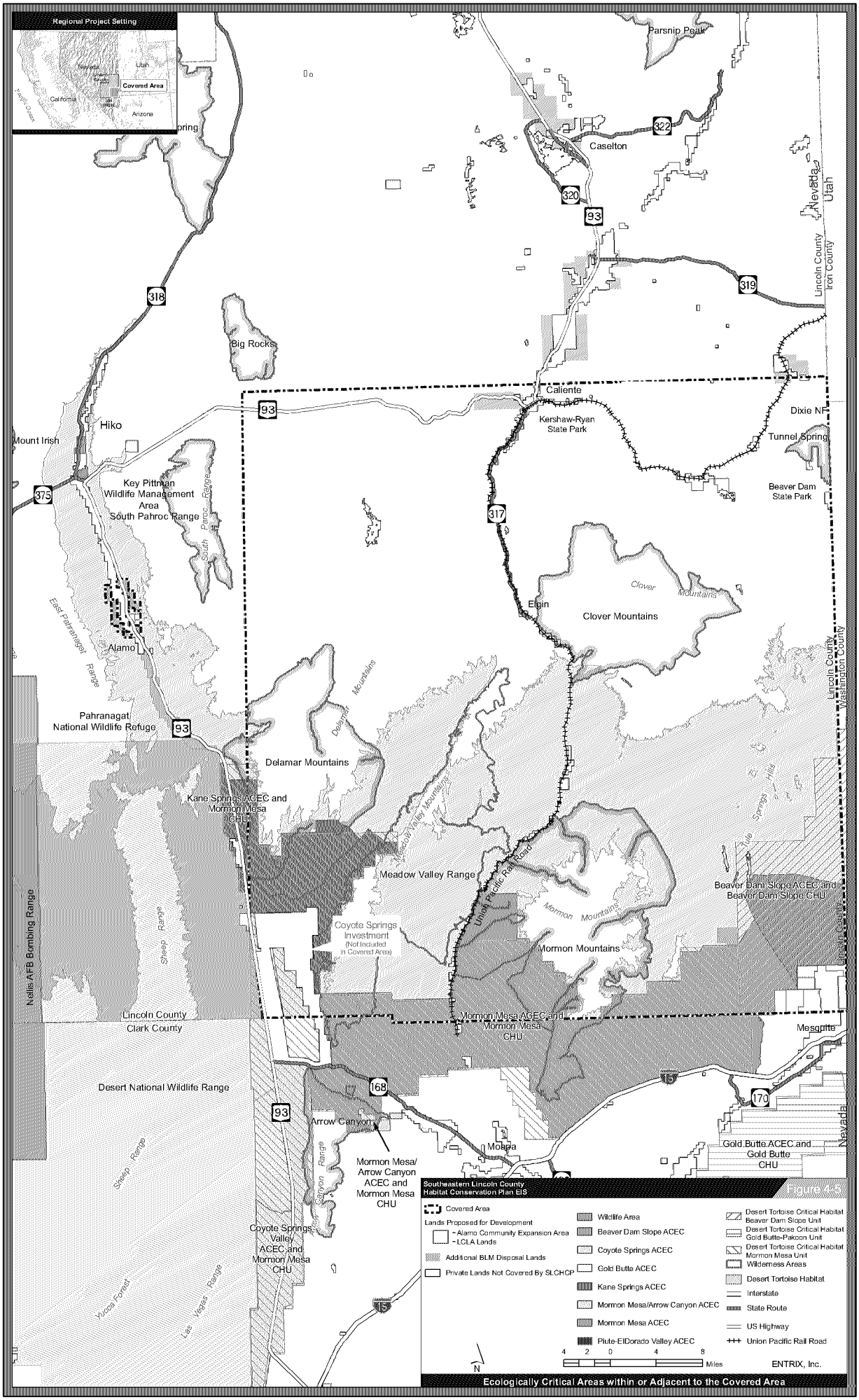
BLM regulations define an ACEC as an area "within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards." Only BLM lands are included within ACECs. These areas are managed differently than other special management designations, such as wilderness study areas, as the designation does not automatically prohibit or restrict other uses in the area (with the exception that a mining plan of operation is required for any proposed mining activity within a designated ACEC). In order for an area to be designated an ACEC, special management beyond standard provisions established by the plan must be required to protect the relevant and important values (BLM 2000).

The Kane Springs ACEC is located in southwestern Lincoln County, west of the Mormon Mesa ACEC. The ACEC extends north along U.S. Highway 93 towards Alamo from the Lincoln/Clark County border. The Mormon Mesa ACEC is located in south central Lincoln County west of the Kane Springs ACEC. The ACEC extends north from the Lincoln/Clark County line and the cities of Mesquite and Moapa Nevada, near the Mormon Mountain Range. The Beaver Dam Slope ACEC is located to the east of the Mormon Mesa ACEC, along the Nevada/Utah border (Figure 4-5). The recently designated Lower Meadow Valley Wash ACEC is an 80 mile perennial stream stretch of the historic Meadow Valley Wash. The Lower Meadow Valley Wash begins 2 miles east of Barclay Nevada near the Utah/Nevada State Line, at the Big Springs in the Clover Creek drainage. It then flows west-by northwest through Caliente and then south through Elgin, Carp, and Rox Nevada towards the Lincoln Clark County Line and includes the perennial inflows of Ash and Pine Creek from the Clover Mountains. The Lower Meadow Valley wash feeds into the Muddy River and Virgin River drainage of the Lower Colorado River System. The Meadow Valley Wash hosts a plethora of federally endangered, threatened, and candidate species, as well as Nevada State protected species and BLM Sensitive species (BLM 2008).

These ACECs offer several relevant and important features and encompass important desert tortoise and hot desert wildlife habitats in Lincoln County. The current condition, state, and trend of the relevant and important values of these ACECs are byproducts of historic human uses, present human uses, and unnatural and reoccurring fire regimes. The area is composed of a mixture of Mojave vegetative communities, including northern and southern desert shrub and annual grasslands. In some areas native shrubs, cactus, yuccas, and Joshua tree composition has been replaced with non-native red brome and native annual grasses due to increased fire frequency and intensity. Previous grazing use by domestic cattle and sheep and wild horses and burros have additionally altered the vegetative state and composition of the Mojave habitats within the ACECs. Development in adjoining non-ACEC designated areas is increasing near the communities of Las Vegas, Mesquite, Moapa, and Alamo. The ACECs also are receiving tremendous increases in recreational utilization, off-highway vehicle use, and utility and other infrastructure construction due to the ever increasing demand for these resources from the growing populations of the greater Las Vegas area.

The current threats and risks to the wildlife and critical Mojave Desert wildlife habitats of Kane Springs, Mormon Mesa, and Beaver Dam Slope ACECs include: conversion of Mojave shrub habitats to annual grassland from altered fire regimes, habitat fragmentation from past development/actions within ACECs and current development and habitat loss adjacent to ACECs, direct mortality and indirect alteration of habitat from vehicles and off-highway vehicle use, and increased predation rates due to habitat fragmentation and increased predator abundance and distribution from human activity and actions (BLM 2005).


Regional Project Setting
Nevada
Utah
California
Arizona
Covered Area
Soil Types
Soil Map Unit Name and ID
Cave family-Cave-Ajo (s5577)
Garbo-Deerlodge family-Biblesprings (s8204)
Grapevine-Canutio-Armpup-Ajo (s5622)
Harrisburg-Cave-Arizo (s5578)
Longjim-Arizo-Alko (s5605)
Naye-Mormon Mesa (s5575)
Patter-Heist-Geer variant-Geer (s5600)
Penoyer-Koyen-Jolan-Handpah-Geer (s5599)
Pioche-Motoqua-Gabbvally (s5598)
Playas (s5882)
Rock outcrop-Findout-Dedas-Breko-Akela (s5604)
Roval-Linco-Decan-Acana (s5602)
Seaman-Maynard Lake-Geer-Crystal Springs-Arizo (s5608)
St. Thomas-Rock outcrop-Kyler (s5576)
Tarloc-Rock outcrop-Kyler-Eaglepass (s5601)
Tonopah-Colorock-Badland (s5580)
Toquop-Black Butte-Arada (s5579)
Water-Virgin River-Toquop-Riverwash-Black Butte-Alluvial land (s5573)
Weiser-Tonopah-Tencee-Colorock-Canutio (s5574)
Zoate-Motoqua-Itca-Gabbvally (s5603)
Zukan-Welring-Tortugas-Pookaloo (s5572)
Source: U.S. Department of Agriculture, Natural Resources Conservation Service, (2006), Digital General Soil Map of U.S.
Caliente
Key Pittman Wildlife Management Area
Kershaw-Ryan State Park
Beaver Dam State Park
Alamo
Elgin
Pahranagat National Wildlife Refuge
Carp
Mesquite
Moapa
Moapa Valley National Wildlife Refuge
93
15
Southeastern Lincoln County Habitat Conservation Plan EIS
Figure 4-4
Map Key
Covered Area
State or National Park or Forest
Wildlife Area
Lake
Stream
Stream Intermittent
N
6 3 0 6 12
Miles
ENTRIX, Inc.
Soils within the Covered Area


Regional Project Setting
Nevada
Utah
California
Arizona
Covered Area
Parsnip Peak
Caselton
322
320
93
Nevada
Utah
Lincoln County
Iron County
319
318
Big Rocks
Caliente
Kershaw-Ryan State Park
Dixie N.F.
Tunnel Spring
Beaver Dam State Park
Hiko
Mount Irish
375
Key Pittman Wildlife Management Area
South Pahroc Range
317
Clover Mountains
Elgin
East Pahranagat Range
Alamo
Pahranagat National Wildlife Refuge
Delamar Mountains
Lincoln County
Washington County
Kane Springs ACEC and Mormon Mesa CHU
Meadow Valley Range
Union Pacific Rail Road
Beaver Dam Slope ACEC and Beaver Dam Slope CHU
Nellis AFB Bombing Range
Sheep Range
Coyote Springs Investment
(Not Included in Covered Area)
Mormon Mountains
Lincoln County
Clark County
Mormon Mesa ACEC and Mormon Mesa CHU
Mesquite
Desert National Wildlife Range
168
170
Arrow Canyon
Moapa
Gold Butte ACEC and Gold Butte CHU
Nevada
Mormon Mesa/ Arrow Canyon ACEC and Mormon Mesa CHU
Coyote Springs Valley ACEC and Mormon Mesa CHU
Yucca Forest
Las Vegas Range
Southeastern Lincoln County Habitat Conservation Plan EIS
Figure 4-5
Covered Area
Lands Proposed for Development
- Alamo Community Expansion Area
- LCLA Lands
Additional BLM Disposal Lands
Private Lands Not Covered By SLCHCP
Wildlife Area
Beaver Dam Slope ACEC
Coyote Springs ACEC
Gold Butte ACEC
Kane Springs ACEC
Mormon Mesa/Arrow Canyon ACEC
Mormon Mesa ACEC
Plute-ElDorado Valley ACEC
Desert Tortoise Critical Habitat Beaver Dam Slope Unit
Desert Tortoise Critical Habitat Gold Butte-Pakoon Unit
Desert Tortoise Critical Habitat Mormon Mesa Unit
Wilderness Areas
Desert Tortoise Habitat
Interstate
State Route
US Highway
Union Pacific Rail Road
N
4 2 0 4 8
Miles
ENTRIX, Inc.
Ecologically Critical Areas within or Adjacent to the Covered Area

4.2.10 Visual Resources

Lincoln County is a rural county with less than 4,200 residents. Because more than 98 percent of all lands are federally-owned; development is limited to small pockets. Caliente and Alamo are the largest population centers, at less than 2,000 people each. The landscape is predominantly desert scrub with mesa-type mountains and large, open valleys, which allow for long viewing distances. Mesquite-catclaw forests occur in pockets and rock outcrops along mountain edges can create visually variety in the desert landscape. Terminal lakes and reservoirs occasionally dot the landscape, with willow and other riparian vegetation occurring in association.

A few main highways provide viewing access to the county's landscape. U.S. Highway 93 heads north from the Clark County line and follows along the edge of the Desert National Wildlife Range and Pahranagat Wash, next to the Delmar Mountains. A main east west route (Highways 375, 93, and 319) heads through typical basin and range country, with only a couple of settlements and towns, including Caliente, which occurs next to Meadow Valley Wash. U.S. Highway 93 continues north from Caliente through Lake Valley and alongside the Wilson Creek Range, until White Pine County is reached.

The Covered Area includes lands managed by the BLM (see Figure 1-1). The BLM uses a Visual Resource Management (VRM) system, consisting of four classes, for evaluating the relative value of visual resources and assigning management objectives for protecting visual resource values on public lands administered by the BLM. Class I is assigned to those areas where a management decision has been made to maintain a natural landscape. Classes II, III, and IV are assigned based on a combination of scenic quality, sensitivity level, and distance zones. Objectives for management of the four VRM classes are as follows:

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

Figure 4-6 shows the BLM's VRM classifications within the Covered Area. Approximate acreage totals by VRM Class are as follows: VRM Class I: 466,897 acres; VRM Class II: 445,147 acres; VRM Class III: 514,073 acres; VRM Class IV: 301,019 acres.

4.2.11 Agricultural Resources

Agriculture provides a large part of Lincoln County's economy. The majority of agricultural land is in the southern part of Lincoln County in the Pahranagat Valley near Alamo and Ash Springs, along with land in the eastern part of Lincoln County around Panaca and to a lesser extent, near Ursine (Eagle Valley) (Lincoln County 1991). Typical farming and livestock practices include: land leveling, fence construction and maintenance, constructing and maintaining irrigation ditches, planting, harvesting, irrigation (flood and sprinkler), haying, weed control, and pipeline construction. These activities require a constant presence to carry out necessary daily work. Ditch maintenance requires frequent burning, cleaning, and other treatments to minimize water flow obstructions and to efficiently utilize water authorized for use by the Nevada State Engineer for crop irrigation and livestock watering. Vegetation control along irrigation ditches is often a

necessary practice to allow free flow of irrigation water and to minimize water use by willows or other riparian vegetation that has become established along the ditches.

Year-long livestock ranching activities became common by the mid 19th century (Provencher et al. 2003). Farms and ranches were established in Meadow Valley Wash south of Caliente during the mid-to-late 1880s, and peak farming and ranching activities occurred through the first half of the 20th century (Averett 1995, as cited in Bio-West, Inc. 2005b). Many of the former ranches and farms within the Meadow Valley Wash between Caliente and Carp are no longer active. In the late 1930s, approximately 30 ranches were purchased by the Federal government under the Land Utilization Program (Averett 1995, as cited in Bio-West, Inc. 2005b). Today, the remaining ranches and farms continue to pasture livestock and/or raise crops such as alfalfa (Bio-West 2005b).

As of the 2002 agricultural census, approximately half of farmland is used for crops (52.49 percent, NASS 2002). Lincoln County ranks 12th in the total value of agricultural products sold in Nevada, and 8th for crops, including nurseries and greenhouses. Crops grown in Lincoln County as reported by the agricultural census include grains (corn and oats), fruits and nuts (apples, pecans), nursery and greenhouse, hay and other forage, poultry, cattle, horses, sheep, and goats. Of livestock animals, the largest quantity was cattle (13,703).

Agricultural activities occur both on private and Federal lands, as the BLM assigns grazing allotments to its lands in Lincoln County. According to the USDA 2002 Census of Agriculture, Lincoln County had 109 farms in 2002, down from 132 farms in 1997 (NASS 2002). No acreage information is available for 2002, but those 132 farms in 1997 totaled 48,944 acres.

Market production increased in value from 2002 to 1997, up 55 percent to $11,451,000. Crops comprised $7,096,000, while livestock sales accounted for $4,355,000 of the total sales. The average production value per farm was $105,051, up 88 percent from 1997. This data may not only indicate an increase in production; because average acres of farm size in 2002 were unavailable, it is unknown whether this has changed from the 371 acres reported in 1997. Government payments to farms also increased during this five-year period, up 19 percent to $31,000 total.

The average age of the principle operator of farms in Lincoln County is 56.2 years. Farming is the primary operation for 67 percent of operators.

Approximately 7,104 acres of agricultural lands occur within the Covered Area, primarily along the Meadow Valley Wash and Clover Creek.

4.2.12 Air Quality

Air quality in a given location is described as the concentration of various pollutants in the atmosphere. Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. This section describes existing air quality conditions. Topics discussed include climatology, meteorology, and local air quality of the Covered Area.

4.2.12.1 Climatology and Meteorology

The Covered Area is located in the southwestern desert region of Nevada. Southern Nevada's climate is dry throughout the year, with long, hot summers and short, mild winters. Maximum daily temperatures in the summer typically exceed 100°F, with lows in the 70s.

The number of days with inclement weather varies from year to year. This climate is controlled primarily by Nevada's rugged and varied topography. The prevailing westerly winds move warm, moist Pacific air over the western slopes of the Sierra Nevada Range where the air cools. Condensation takes place and most of the moisture falls as precipitation. As the air descends the eastern slopes, compressional warming occurs and little precipitation falls. The result is that the lowlands of Nevada are largely desert landscapes.

Precipitation in and around the area is spread fairly uniformly throughout the year with maximum precipitation occurring in January and July.

Friday, August 10, 2007 3:41:39 PM T:\GIS\ENTRIX\3133701_LincolnMSHCP\mxd\DraftEIS_Figures0307\Fig3-1_CoveredActivities_111171_02.mxd

During the winter, precipitation is primarily associated with storms moving eastward from the Pacific Ocean. Surface evaporation rates run counter to local precipitation amounts and are relatively high. Snow accumulation is rare in the lower desert region. Flurries are observed once or twice during most winters, but snowfall of 1 inch or more occurs only once every 4 to 5 years. Freezing temperatures do occur with some regularity (BLM 2007).

During the summer, precipitation is associated with storms that move south-southwest from the Gulf of Mexico and the Pacific Ocean. A couple of weeks during the summer, warm moist air predominates within the area and causes scattered, occasionally severe thunderstorms. Snow rarely falls in the area. The climate in the area is dry and hot in the summer and cool in the winter.

Strong winds can occur during the spring and fall seasons. Winds stronger than 50 miles per hour (mph) are infrequent but can occur with some of the more vigorous storms. Winter and spring wind events often generate widespread areas of blowing dust and sand. Strong wind episodes in the summertime are usually connected with thunderstorms, and are thus more isolated and localized. Prevailing wind direction is typically southwesterly, unless associated with a thunderstorm outflow. Surface winds are characterized by prevailing southwesterly winds with an average speed of approximately 10 mph.

4.2.12.2 Local Air Quality

Naming of airsheds in Nevada corresponds to the state's groundwater basins. As discussed previously in Section 4.2.5: Hydrology and Water Quality, groundwater sources in the Covered Area come from portions of all 11 hydrographic units (see Table 4-2 for the groundwater basins in the Covered Area). Each of these airsheds is designated unclassifiable/attainment for all criteria pollutants with respect to the National Ambient Air Quality Standards (NAAQS) (Figure 4-7).

Given the rural landscape and mining history of Lincoln County, it is likely that a potential source of air quality concerns could be the tailings associated with abandoned mines. While no air quality measurements exist for Lincoln County, similar sites in Nevada show no exceedance of particulate matter. Therefore, it is unlikely that air quality in Lincoln County is currently in exceedance of particulate matter, or other contaminants, given its rural nature with limited industry. Because there are no significant sources of pollutant emissions in the region, the air quality is good.

No air quality monitoring by the State of Nevada or the EPA has occurred in Lincoln County. Because there are insufficient data available to determine status, the Covered Area is listed as unclassified/attainment with respect to state and Federal air pollutants criteria. However, the Nevada Bureau of Air Quality Planning (NBAQP) has monitored other sites in Nevada for particulate matter less than 10 microns (PM_{10}) and other air pollutants (NBAQP 2003). Two sites in Nevada that are not located near large population centers were identified and PM_{10} data (in micrograms per cubic meter [$\mu g/m^3$]) from these sites is presented in Table 4-3 below. None of the sites exceeded state or Federal air quality standards. Lehman Caves is located in Great Basin National Park and has some of the cleanest air in Nevada. It is likely that remote sites of Lincoln County are similar to these measurements. Battle Mountain, Nevada (population 2,870) has a mixture of residential and commercial uses. The measurements from two sites within this city were near commercial and residential development (Police/Fire Station) and near residential development and Interstate-80 (Junior High School).

The nearest area in violation of the state and Federal air pollutant criteria is the Las Vegas area, located southwest of the Covered Area. The Las Vegas Valley Hydrographic Area 212, located in Clark County, is classified as moderate nonattainment for carbon monoxide and serious nonattainment for fugitive dust (PM_{10}). The remaining portion of Clark County is designated as unclassifiable/attainment for these pollutants (40 CFR Part 81.329). Monitoring data from the nearest stations (Apex and Mesquite) south of the Covered Area are shown in Table 4-4 for comparison with Clark County and NDEP air quality standards.

4.2.12.2.1 Air Pollutant Impacts upon Health

The criteria and other regulated pollutants and their impact upon health and environmental welfare are discussed in the following subsections.

Table 4-3 Annual Standard (Mean) of Particulate Matter (PM_{10}) in $\mu g/m^3$ for Four Sites in Rural Nevada

Year	Battle Mountain Junior High School	Battle Mountain Police/Fire Station	Lehman Caves	Lehman Caves IMPROVE site
1992	-	31	-	-
1993	-	34	11	-
1994	-	33	8	-
1995	-	34	6	8
1996	-	37	-	9
1997	-	32	-	6
1998	18	30	-	-
1999	24	-	-	-
2000	22	-	-	-
2001	25	-	-	-
2002	23	-	-	-

Source: NBAQP

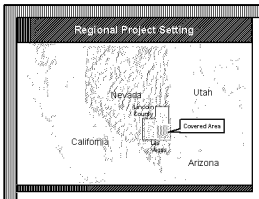
Table 4-4 Clark County and Nevada Air Quality Standards

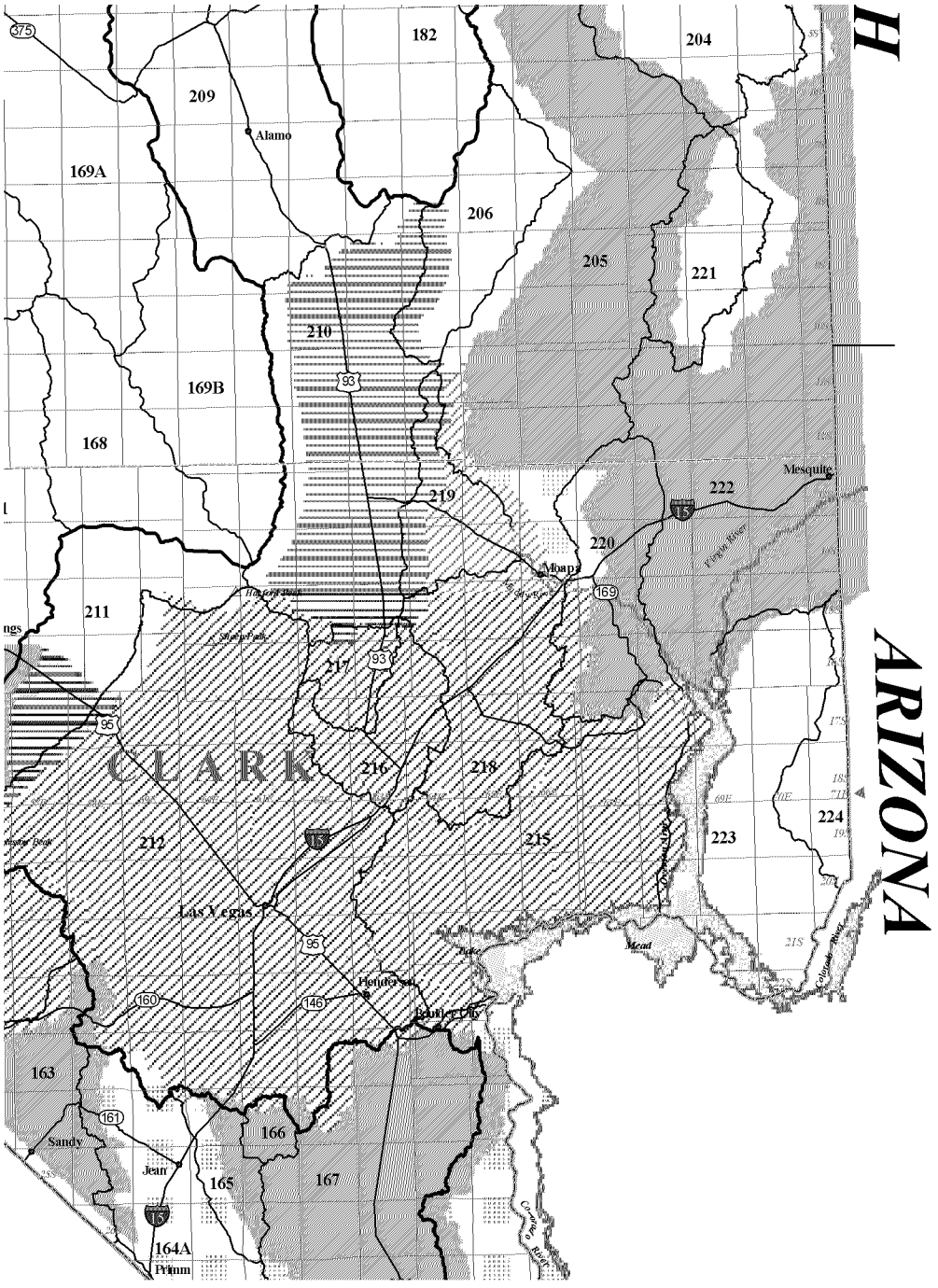
Pollutant	Averaging Time	Apex 2004 Data	Mesquite 2004 Data	Clark County Standard	NDEP Standard
Carbon Monoxide (CO)	One-Hour	NM	NM	40,000 $\mu g/m^3$ (35.0 ppm)	40,000 $\mu g/m^3$ (35.0 ppm)
	Eight-Hour	NM	NM	10,000 $\mu g/m^3$ (9.0 ppm)	10,000 $\mu g/m^3$ (9.0 ppm)
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	NM	NM	100 $\mu g/m^3$ (0.053 ppm)	100 $\mu g/m^3$ (0.053 ppm)
Ozone (O_3)	One-Hour	0.0971 ppm[1]	0.0887 ppm	235 $\mu g/m^3$ (0.12 ppm)	235 $\mu g/m^3$ (0.12 ppm)
	Eight-Hour	0.0819 ppm[1]	0.0724 ppm	157 $\mu g/m^3$ (0.08 ppm)	157 $\mu g/m^3$ (0.08 ppm)
Sulfur Dioxide (SO_2)	Three Hour	NM	NM	1,300 $\mu g/m^3$ (0.5 ppm)	1,300 $\mu g/m^3$ (0.5 ppm)
	Twenty-Four Hour	NM	NM	260 $\mu g/m^3$ (0.10 ppm)	365 $\mu g/m^3$ (0.14 ppm)
	Annual Arithmetic Mean	NM	NM	60 $\mu g/m^3$ (0.02 ppm)	80 $\mu g/m^3$ (0.03 ppm)
Particulate Matter (PM_{10})	Twenty-Four Hour	150 (85)[2] $\mu g/m^3$	134 (130)[2] $\mu g/m^3$	150 $\mu g/m^3$	150 $\mu g/m^3$
	Annual Arithmetic Mean	19 $\mu g/m^3$	21 $\mu g/m^3$	50 $\mu g/m^3$	50 $\mu g/m^3$
Particulate Matter ($PM_{2.5}$)	Twenty-Four Hour	NM	NM	65 $\mu g/m^3$	65 $\mu g/m^3$
	Annual Arithmetic Mean	NM	NM	15 $\mu g/m^3$	15 $\mu g/m^3$

Source: Clark County, Department of Air Quality and Environmental Management. Clark County Air Quality Regulations. 2003.

$\mu g/m^3$ = micrograms per cubic meter
ppm = parts per million.
NM = Not monitored at this location.

[1]Highest value in 2004, during second eight-hour increment on May 15, 2004.
[2]Highest value in 2004 (second highest value).





Southeastern Lincoln County
Habitat Conservation Plan EIS

- Regional Boundary
- Administrative Boundary
- Inferred Boundary Line
- State Line
- County Line
- Township / Range Line
- Road
- City
- Mountain Peak
- Water Body
- Dry Lake
- Marsh

DESIGNATED BASINS

- Designated
- Designated (Irrigation Denied)
- Designated (Preferred Use)
- Designated (Preferred

N

ENTRIX, Inc.

Location of Airsheds within Lincoln County

Ozone (O_3). Ozone is a photochemical oxidant and the major component of smog. While ozone in the upper atmosphere is beneficial for shielding the earth from harmful ultraviolet radiation from the sun, high concentrations at ground level cause health problems due to lung irritation. Ozone is generated by a complex series of chemical reactions between reactive organic compounds (ROC) and nitrogen oxides (NO_x) in the presence of ultraviolet light. High ozone levels result from ROC and NO_x emissions from vehicles and industrial sources, in combination with daytime wind flow patterns, mountain barriers, a persistent temperature inversion and intense sunlight. For this reason, ROC and NO_x are considered precursors to ozone and are consequently regulated as ozone. The EPA 8 hour standard for ozone is 0.08 ppm (EPA 2006).

Nitrogen Dioxide (NO_2). NO_x emissions are primarily generated from the combustion of fuels. NO_x includes nitric oxide (NO) and NO_2. Because NO converts to NO_2 in the atmosphere over time, and NO_2 is more toxic than NO, NO_2 is the listed criteria pollutant. As a gas, it can penetrate deep into the lungs where tissue damage occurs. The control of NO_x is also important because of its role in the formation of ozone. The EPA quarterly average standard for nitrogen dioxide is 0.053 ppm (EPA 2006).

Carbon Monoxide (CO). CO is a byproduct of incomplete combustion, principally from automobiles and other mobile sources of pollution. CO emissions from wood-burning stoves and fireplaces can also be measurable contributors. The major immediate health effect of CO is that it competes with oxygen in the blood stream and can cause death by asphyxiation. However, concentrations of CO in urban environments are usually only a fraction of those levels where asphyxiation can occur. Peak CO levels typically occur during winter months due to a combination of higher emission rates and stagnant weather conditions, such as ground-level radiation inversions. The EPA 8 hour standard for carbon monoxide is 9 ppm (EPA 2006).

Sulfur Dioxide (SO_2). SO_2 is produced when any sulfur-containing fuel is burned. Health and welfare effects attributed to SO_2 are due to the highly irritating effects of sulfate aerosols, such as sulfuric acid, which are produced from SO_2. Pipeline (regulated) natural gas contains trace amounts of sulfur, while fuel oils contain much larger amounts. SO_2 can increase the occurrence of lung disease and cause breathing problems for asthmatics. It reacts in the atmosphere to form acid rain, which is destructive to lakes and streams, crops and vegetation, as well as to buildings, materials and works of art. The EPA annual mean standard for sulfur dioxide is 0.03 ppm (EPA 2006).

Particulate Matter (PM). Particulates in the air are caused by a combination of wind-blown fugitive or road dust, particles emitted from combustion sources (usually carbon particles), and organic sulfate and nitrate aerosols formed in the air from emitted hydrocarbons, sulfur oxides, and NO_x. Windblown fugitive dust is the primary source of PM_{10} in Lincoln County. These can occur from unpaved roads, disturbed areas and stockpiles during construction activities. Particulate matter may contribute to the development of chronic bronchitis and may be a predisposing factor to acute bacterial and viral bronchitis. Respirable particulate matter is referred to as PM_{10}, because it has a diameter size of equal to or less than 10 microns. Respirable particulate can contribute to increased respiratory disease, lung damage, cancer, premature death, reduced visibility and surface soiling. Fine particulates come from fuel combustion in motor vehicles and industrial sources, residential and agricultural burning and from the reaction of NO_x, SO_x and organics. The state of Nevada annual standard for PM10 is 50 µg/m³; the EPA has removed an annual standard for PM_{10} effective December 17, 2006, citing lack of evidence linking health problems to long term exposure of coarse particle pollution (EPA 2006). The EPA annual mean standard for $PM_{2.5}$ is 15 µg/m³ (EPA 2006).

Sensitive Receptors. Certain population groups are considered more sensitive to air pollution and odors than others, in particular, children, elderly and acutely ill and chronically ill persons, especially those with cardio-respiratory diseases. Sensitive land uses would include those locations where such individuals are concentrated, such as hospitals, schools, residences and parks with active recreational uses. There are no residential neighborhoods that border the Covered Area; therefore, there are no sensitive receptors.

4.2.13 Transportation and Circulation

Transportation in Lincoln County can occur by foot, bike, car, or bus. The nearest commercial airport is in Las Vegas, Nevada (approximately 45 miles south of the county line). A general aviation airport is located in Panaca.

4.2.13.1 Roads

There is one two-lane U.S. highway that runs roughly north south through Lincoln County: U.S. Highway 93. U.S. Highway 93 connects with U.S. Highway 50 and Interstate 80 to the north and Interstate 15 to the south. Other major state and county roads include 318 (north from the intersection of 375 and 93 towards White Pine County; 375 (east west through western portion of the county), and 319 (east from Panaca to the Utah state border). South from Caliente, 317 provides access to the communities of Elgin and Carp, along Meadow Valley Wash. As of 1991, the County road system included approximately 3,447 miles of maintained road (Lincoln County 1991). U.S. Highway 93 and State Route 381 are utilized by interstate trucking and freight carriers (Lincoln County 1991).

The primary responsibility for maintenance and construction of County roads and transportation related facilities is the Lincoln County Road Department and the Lincoln County RTC (Lincoln County 2006).

The sections of road addressed in this FEIS are U.S. Highway 93, maintained by NDOT, and State Road 317, maintained by Lincoln County, within the Covered Area.

4.2.13.2 Public Transportation

Lincoln County Transportation is a publicly-funded senior citizen transit service that provides service to Las Vegas, northward to Ely, and throughout communities in Lincoln County (Lincoln County 2006, Lincoln County 1991).

4.2.13.3 Airports

In Lincoln County, there are two airports, one in Panaca and another in Alamo. The Panaca airport is approximately 5,000 feet in length and is paved and lighted. No charter or commercial services are available (Lincoln County 1991, Lincoln County 2006). Noncommercial airstrips serve the rest of Lincoln County (Lincoln County 2006).

4.2.13.4 Railroads

The Union Pacific has railroad lines that run north and south along Meadow Valley Wash, towards Las Vegas, and also east west along Clover Creek, towards Salt Lake City. These railroad tracks are for commercial use only (Lincoln County 2006).

The sections of railroad addressed in this FEIS are within the Covered Area from Caliente south to Clark County along the Meadow Valley Wash.

4.2.14 Noise

Noise is generally defined as unwanted or intrusive sound. Sound can be perceived as noise because of loudness, pitch, duration, occurrence at unwanted times or from an unwanted source, or because it interrupts or interferes with a desired activity. A sound that is considered neutral or desirable by one person may be considered unpleasant noise by another person, because of a perception of inappropriateness or disturbance or unwanted content or meaning. Noise can adversely affect natural soundscape, wildlife, and human populations. It can directly impact them by modifying or intruding upon the natural soundscape, masking the natural sounds that are an intrinsic part of the environment. Noise may vary in character from day to night and from season to season. To characterize a particular noise, the following variables are used: magnitude, frequency and duration.

The magnitude of variations in air pressure associated with sound waves results in the quality commonly referred to as loudness. Customarily, sound magnitude is expressed in decibels (dB) which are logarithmic (power of 10) ratios comparing measured sound pressures to a reference pressure. An increase of 10 dB equals a doubling of the noise level. Thus, a noise of 70 dB is approximately twice as loud as 60 dB and four times as loud as 50 dB.

A second characteristic of sound that must be included in the measurement of noise is frequency. Frequency refers to the number of times per second the object producing the sound vibrates. The unit of measurement of frequency is Hertz (Hz) (defined as one vibration per second).

The human ear responds to sounds with frequencies in the range of 20 to 20,000 Hz. Frequencies above or below this range are inaudible to humans and are referred to as ultrasound and infrasound, respectively. Within the audible range, subjective response to noise varies. People generally find higher pitched sounds to be more annoying than lower pitched sounds. Most of the sounds we hear in the environment do not consist of a single frequency but rather a broad band of frequencies with each differing in sound level. The method commonly used to quantify environmental sounds consists of evaluating all of the frequencies that comprise a sound in accordance with A-weighting that reflects the fact that human hearing is less sensitive at low frequencies and extreme high frequencies than in the frequency mid-range. This is called A-weighting, and the decibel level so measured is called A-weighting sound level (dBA).

The third characteristic of noise that must be accounted for to describe human noise response is duration. Noise induced hearing loss, for example, is directly related to magnitude, frequency content and duration of noise exposure. Annoyance due to environmental noise is also associated with how often noise is present and how long noise persists.

A noise survey has not been conducted for the Covered Area. Except for localized areas, the baseline soundscape on lands within the Covered Area is likely to be only natural sounds. Noise sources are located along roads, railroads tracks, and trails and include: construction equipment, road vehicles, off-highway vehicles (OHV), planes, and railcars.

The USAF operates Nellis AFB. Nellis AFB is a member of the U.S. Air Force's Air Combat Command. It boasts the largest and most demanding advanced air combat training in the world. As mentioned in Section 4.2.1: Land Management in Lincoln County, the Desert Military Operations Area of Nellis AFB has a flyover zone directly over CSI lands in southeastern Lincoln County (not included in the Covered Area of the SLCHCP), where training operations can occur (USAF 2007). In order to reduce noise levels for residents living in a development constructed in the mid-1980s, the Air Force voluntarily restricted live-ordinance flights to the north of the base. In 2003, F-22 fighters were added to Nellis AFB, and in order to further reduce noise impacts to the surrounding area, virtually all takeoffs were scheduled between 10:30 p.m. and 6:30 a.m. (USAF 2002). Typical aircraft exercising launch and recovery missions fly to the northeast (refer to the Nellis Air Force Base website, http://www.nellis.af.mil/).

4.2.14.1 Sensitive Receptors

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with those uses. Residences, hospitals, schools, guest lodging and libraries are most sensitive to noise intrusion and, therefore, have more stringent noise exposure targets than manufacturing or agricultural uses that are not subject to impacts such as sleep disturbance. Within the Covered Area, the nearest residents are those in the vicinity of Caliente and Alamo.

4.2.15 Land Use, Planning, and Zoning

Lincoln County, which contains 6,816,000 acres, had only 152,634 acres in private ownership as of publication of the Lincoln County Master Plan in 2001. At that time, private land comprised less than three percent of the total land in the county and the remainder was public land administered by the BLM, USFS, Department of Defense (DOD), and the USFWS and a small portion of state and county lands. Recent and proposed land sales totaling approximately 100,000 acres would bring the privately held acres in Lincoln County to approximately 252,634; however, private ownership would still represent less than four percent of the land base in Lincoln County.

The Lincoln County Planning Commission's jurisdiction is for all land outside of the city of Caliente, which is incorporated. It has enacted zoning ordinances and has completed a master plan. The planning commission is comprised of six members and there are three staff persons in the planning department at Lincoln County.

The Caliente Planning Commission's jurisdiction includes the city of Caliente. It has enacted zoning ordinances and has completed a master plan. The planning commission includes seven members, and seven staff are also listed (NDSL 2003).

In 1990, the town of Alamo adopted the Alamo Land Use Plan (Intertech Consultants and Sweetwater Consulting Services 1990). Land use and development in Alamo are therefore governed by the Alamo Land Use Plan and the Lincoln County planning ordinances, which include the county zoning ordinance and building codes. The Alamo Land Use Plan designates medium density residential development at three units per acre (Intertech Consultants and Sweetwater Consulting Services 1990). This is a lower density than that specified in the Lincoln County Master Plan, where the Low density residential units' classification is three to six units per acre (Lincoln County 2001). The proposed residential development component of the Preferred Alternative is anticipated to adhere to the medium density classification under the Alamo Land Use Plan at three units per acre.

4.2.16 Recreational Resources

The large percentage of BLM, United States Forest Service (USFS), and USFWS- administered lands within Lincoln County, along with the existence of five state parks, provides tremendous recreational opportunities. The primary recreation activities within the Covered Area include hunting, camping, sightseeing, fishing, photography, rock hounding and off-road vehicle use. The Desert National Wildlife Range and the Pahranagat National Wildlife Refuge are located south of Alamo, outside of the Covered Area. Historic mining districts, prehistoric sites and vast undeveloped areas exist throughout the County.

Two state parks are located within the Covered Area, Kershaw Ryan State Park, which is located near the city of Caliente and Beaver Dam State Park, which is located along the Utah border off of NV 319.

BLM lands within the Covered Area include two ACECs: Kane Springs and Mormon Mesa. These ACECs allow all non-consumptive recreation use (e.g. camping, hiking, backpacking, casual horseback riding, and bird watching). Casual (non-organized) OHV use is limited to roads and vehicle trails designated for OHV use. These areas are closed to speed competitive OHV use and are closed to organized OHV events from March 15 to June 15 and from August 31 to October 15 (BLM 2000).

Other nearby BLM lands in the Covered Area include the Meadow Valley Range, Mormon Mountain, Delamar Mountains, and Clover Mountains Wilderness Areas. These areas offer wilderness recreational experiences and are closed to mechanized and motorized vehicles. Hunting, fishing, and trapping are allowed according to state of Nevada regulations (BLM No date).

Solitude and wilderness activities such as hiking and backpacking are also available throughout much of the Covered Area, given the large Federal tracts of lands, designated wilderness, and low population.

The 640-acre Section 36 disposal parcel is relatively remote. Traditional use of the area has been by small game bird (quail) and big game hunters during identified seasons. Several bird guzzlers and springs are present west of the area in the East Mormon Mountains. Hunting and trapping of fur bearers also occurs in the area. Seasonal wildflower sighting, bird watching, and primitive camping are springtime recreational activities. The southern and northern ends of the Section 36 disposal parcel are approximately 15 miles from the Logandale Trails System, a multiple use motorized and non-motorized trails play area. The parcel is also approximately 20 miles north of the north arm of Lake Mead. The closest recreation area is Overton Beach on the north arm of the lake. Lake Mead is part of the Lake Mead National Recreation Area, which encompasses Lake Mead, Lake Mohave, and both federal and non-federal land.

The popularity of special use vehicles over the last 20 years has encouraged casual 4- wheel drive exploration of primitive and remote public land areas. Because of the rapid urban expansion of Las Vegas and Clark County and the resultant loss of traditional OHV competitive areas, and air quality management issues, the BLM Las Vegas Field Office expects that areas such as the Tule Desert could potentially be used for competitive and organized OHV events in the future (Forensic Analytical Specialties, Inc. and Aztec Environmental Consulting 2002).

Recreation facilities and activities are available in Alamo and Caliente within the Covered Area. Swimming pools, tennis courts, lighted softball fields, libraries, museums, and off-road vehicle parks are available for use in Lincoln County. There are a number of one-day and weekend special events throughout the year, such as Caliente's Homecoming (Lincoln County 1991).

4.2.17 Public Services and Utilities

4.2.17.1 Public Services

The Lincoln County Sheriff's Department provides police protection to the unincorporated portions of Lincoln County (Lincoln County 2006). The Nevada Highway Patrol is responsible primarily for maintaining the public safety and law enforcement on Lincoln County highways (Lincoln County 2006). Fire protection services in Lincoln County are through volunteer fire departments located in the communities of Pioche, Panaca, Caliente, and Alamo; although, the BLM provides fire protection capabilities for wild land fires (Lincoln County 2006). Primary emergency room services are provided through the Grover C. Dils Medical Center, while patients requiring more advanced treatment are transferred to Las Vegas or St. George, Utah (Lincoln County 2006). Ambulance service is available throughout Lincoln County, although ambulances are only based in Alamo, Caliente, and Panaca (Lincoln County 2006). The Lincoln County School District serves all of Lincoln County. New schools are financed through bonds (Lincoln County 2006).

4.2.17.2 Power

Lincoln County Power District No. 1 operates and maintains a system providing electrical services throughout the county. Electricity is supplied from the Hoover Dam hydroelectrical project. The power district also can purchase electricity from Nevada Power. The district sells the majority of its power to public utilities and power districts throughout the county. These include Alamo Power District No. 3 (APD), Caliente Public Utilities, Pioche Public Utilities, and Panaca Power and Light (Lincoln County 1991, 2006).

The APD has two substations currently in operation. These substations have a combined capacity of 6.25 megavolt ampere (MVA). This capacity could be increased to approximately 7.5 MVA with some upgrades to the existing substations. The APD currently serves 583 residential, 37 commercial and 35 irrigation customers. The APD is a winter peaking system. Over the last several years the peak load has been in the range of 2.8 to 3.0 MVA. Based on a peak demand of 2.8 to 3.0 MVA, the APD has approximately 3.25 MVA of reserve capacity for future demands.

The APD, in conjunction with Lincoln County Power District, has acquired right-of-way easements on the east side of Pahranagat Valley to develop additional distribution capacity in order to provide sufficient energy to the proposed Alamo Industrial Park and Community Expansion Area for the industrial park and residential developments. In addition, the Stewart substation at Crystal Springs is configured to be able to provide three additional primary feeder circuits. Preliminary plans have been made for extending lines from Stewart substation into the Alamo area to provide additional power service for future growth.

4.2.17.3 Telecommunications

In Lincoln County, telephone service is available countywide from Lincoln County Telephone. According to the 2000 U.S. Census, only 4.3 percent of households did not have phones in the county (U.S. Census Bureau 2000).

4.2.17.4 Water and Sewer

Water and sewer is available from Alamo Sewer and Water, Panaca Farmstead, Caliente Public Utilities, and Pioche Utilities. Outside of Alamo, Panaca, Caliente, and Pioche, wells and irrigation districts provide water, and septic systems must be used.

4.2.17.5 Landfills

A landfill located approximately 20 miles east of Panaca at Crestline provides for all of the solid waste needs in Lincoln County (Lincoln County 2006). Several transfer stations are located throughout Lincoln County, including Pioche, Panaca, Caliente, Alamo, Ursine (Eagle Valley), Hiko, and Rachel (Lincoln County 2006).

4.2.18 Socioeconomics

This section describes the existing socioeconomic conditions in Lincoln County, Nevada. The socioeconomic resource topics considered here are: 1) demographic characteristics of the region, including population, race/ethnicity, and potentially affected social groups; 2) housing; 3) economic base of the region based on measures of employment and income; and 4) fiscal resources of local governments.

Lincoln County is the fourth least-populated county of Nevada. Fewer than 3,900 citizens occupy the 10,634 square miles contained within the County. Caliente and Alamo are the major population centers within or near the Covered Area. Lying in the southeast portion of Nevada, Lincoln County is bordered by Clark County to the south, Nye County to the north/northwest, White Pine County to the north, and the Utah and Arizona State lines to the east. Many ranching and farming operations are settled in the Covered Area of southeastern Lincoln County. Livestock grazing occurs on federally-administered lands through BLM grazing allotments. The total County population of 4,165 people is concentrated in the towns of Caliente and Alamo, with 1,204 and 1,096 citizens, respectively (U.S. Census Bureau 2000).

4.2.18.1 Population and Other Demographic Characteristics

Located in the southeast portion of Nevada, Lincoln County is rural and sparsely populated. The current (2005) population in Lincoln County is estimated to be 3,886, making it the third least-populated county in the State of Nevada (Nevada State Demographer 2006). Current population in the County has decreased by about 6.7 percent since 2000 when population stood at 4,165 and is only slightly higher than 1990 levels. Table 4-5 summarizes population trends in Lincoln County since 1990.

Table 4-5 Population and Population Growth in Lincoln County (1990–2005)

	Population			Population Growth (%)	
Area	1990	2000	2005	1990–2000	2000–2005
Lincoln County	3,775	4,165	3,886	10.3%	-6.7%
Caliente	--	1,123	1,015	--	-9.6%
Alamo	--	478	428	--	-10.5%
Panaca	--	632	562	--	-11.1%
Pioche	--	840	698	--	-16.9%

Source: Nevada State Demographers Office, 2006

The only incorporated city in Lincoln County is Caliente, and it represents the major population center within or near the project area. The population in Caliente in 2005 was 1,105, accounting for about 26 percent of the total county population. Unincorporated towns in Lincoln County include Alamo (428 residents), Panaca (562 residents), and Pioche (698 residents). All of these cities/towns have experienced a decrease in population since 2000, mirroring countywide trends.

Future population trends can be influenced by specific events, such as development of the National Nuclear Storage site at Yucca Mountain, the BLM land sale north of Mesquite (referred to in this document as the LCLA lands), and the Coyote Springs planned community (University of Nevada at Reno 2004). Population projections prepared for Nevada counties indicate that the population in Lincoln County is expected to increase to 5,292 by 2024; this represents an average annual growth rate of approximately 1.6 percent between 2005 and 2024 (Nevada State Demographer 2004).

The demographic characteristics of the region's population are presented in Table 4-6. In terms of gender, there is a slightly greater proportion of males to females in Lincoln County, whereas this pattern is reversed in the City of Caliente. The average age in Lincoln County is nearly 39 years old, with 16 percent of the population over the age of 65. Caliente's population is relatively younger, with an average age of 33 years old. Concerns have been raised by Lincoln County residents that their population is aging and that younger people are forced to leave because of lack of economic opportunity (Lincoln County 1991, Gibbons 2004).

Table 4-6 Demographic Statistics for Lincoln County, Nevada (2000)

Subject	Lincoln County		Caliente	
	Number	Percent	Number	Percent
Gender				
Male	2,162	51.9	531	47.3
Female	2,003	48.1	592	52.7
Age				
Median age (years)	38.8	--	33.1	--
18 years and over	2,910	69.9	684	60.9
21 years and over	2,777	66.7	648	57.7
62 years and over	831	20.0	218	19.4
65 years and over	673	16.2	183	16.3
Race				
One race	4,085	98.1	1,084	96.5
White	3,811	91.5	980	87.3
Black or African American	74	1.8	22	2.0
American Indian and Alaska Native	73	1.8	34	3.0
Asian	14	0.3	7	0.6
Native Hawaiian and Other Pacific Islander	1	0.0	1	0.1
Some other race	112	2.7	40	3.6
Two or more races	80	1.9	39	3.5
Hispanic or Latino (of any race)	221	5.3	82	7.3

Source: U.S. Census Bureau 2000

Race (or ethnicity) is an important consideration for evaluating potential environmental justice-related effects of the proposed development. Generally, the predominant racial group in Lincoln County is White/Caucasian, which comprises roughly 92 percent of the population (U.S Census Bureau 2000). Black and American Indian populations account for less than 2 percent of the population. The largest minority group is Hispanics (of any race), which accounts for about 5 percent of the population. The racial makeup in the City of Caliente is slightly more diverse. The White/Caucasian population represents about 87 percent of the population and Hispanics account for over 7 percent.

From a social perspective, the proposed residential developments would introduce new urban uses in a previously rural, undeveloped, and lightly populated region of Nevada. Although limited, the communities and social groups that would be affected by the proposed development are diverse. These range from new residents that would live in the proposed development, to residents and business owners found in the nearby communities of Carp, Elgin, Alamo, Ash Springs and Caliente in Lincoln County, as well as other residents of the greater Las Vegas area, to members of the Moapa Band of Paiute Indians (on the Moapa River Indian Reservation), to visitors who come from a wide-range of locations to recreate in the project area, including visitors to nearby wilderness areas managed by the BLM.

4.2.18.2 Housing

In 2000, there were 2,178 housing units within Lincoln County (U.S. Census Bureau 2000). Of the total housing stock, 1,540 (or nearly 71 percent) were occupied units and 638 (or 29 percent) were vacant. Of the occupied units, approximately 75 percent were owner occupied, leaving 25 percent as renter occupied. Nearly half (47.8 percent) of the vacant units were considered "seasonal, recreational, or occasionally-occupied" units. The average household size in Lincoln County is 2.48.

Census data also show that the housing stock in Lincoln County is relatively old. Approximately 22 percent of homes in the County were built before 1940, which is the second highest value across all Nevada counties and substantially higher than the 1.7 percent value for the State of Nevada as a whole. Further, only about 17 percent of housing units in the County were built in 1990 or later, compared to 42 percent for the State.

The median value of a home in Lincoln County was $80,300 in 2000, and the median gross rent was $328 per month.

4.2.18.3 Employment

Historically, agriculture and mining were consistent employers in the region, but employment in these industries has decreased in recent years (Lincoln County 1991). In total, Lincoln County's employment base in 2004 consisted of 1,946 full- and part-time jobs (Bureau of Economic Analysis 2004a). This represents a decrease of over 19 percent compared to 1990 employment levels when there were 2,416 jobs in the County.

Table 4-7 shows current employment by industry in Lincoln County.[1] Non-farm employment accounts for most of the jobs in Lincoln County (92 percent); farm employment only accounts for about 8 percent of the County's job base. One of the largest sectors is local, state, and federal government, providing 615 jobs and accounting for nearly 32 percent of all employment. This is due in part to the presence of the Nevada Test Site in Lincoln County. Retail trade also plays an important role in the local economy, accounting for 13.3 percent of county employment. Other sources indicate that government and tourism currently account for over 62 percent of employment in Lincoln County (University of Nevada at Reno 2004). In addition, between 1990 and 2000, Lincoln County's population increased by approximately 1 percent while employment opportunities declined at a much greater rate (University of Nevada at Reno 2004).

Unemployment is another measure of the strength of the local economy. In 2005, the labor force in Lincoln County totaled 1,552. Of this total, 1,473 people were employed, resulting in an unemployment rate of 5.1 percent (Nevada Department of Employment, Training & Rehabilitation 2006).

Table 4-7 Lincoln County Employment by Industry (2004)

Category	Jobs	Percentage
Total employment	**1,946**	**100.0**
Farm Employment	**147**	**7.6%**
Non-Farm Employment	**1,799**	**92.4%**
Forestry, fishing, agricultural services	(D)	--
Mining	(D)	--
Utilities	(D)	--
Construction	(D)	--
Manufacturing	(D)	--
Wholesale trade	(D)	--
Retail Trade	258	13.3%
Transportation and warehousing	58	3.0%
Information	(D)	--
Finance and insurance	(D)	--
Real estate and rental and leasing	(D)	--
Professional and technical services	(D)	--
Management of companies and enterprises	(L)	--
Administrative and waste services	38	2.0%
Educational services	(L)	--
Health care and social assistance	50	2.6%
Arts, entertainment, and recreation	(D)	--
Accommodation and food services	(D)	--
Other services, except public administration	(D)	--
Government and government enterprises	615	31.6%

Source: U.S. Department of Commerce, Bureau of Economic Analysis, 2004a.

(D): Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.
(L): Less than 10 jobs, but the estimates for this item are included in the totals.

[1] Based on the small size of Lincoln County's economy, many economic data for specific industries are not disclosed for confidentiality reasons.

4.2.18.4 Income

Total personal income in Lincoln County was $93.0 million in 2004 (Bureau of Economic Analysis, 2004b). About $63.2 million (68 percent) of that total represented earnings by place of work (i.e., wage earnings plus proprietors income). Average earnings per job in Lincoln County in 2003 were $32,494. As expected from the employment figures, Government accounts for a large proportion (47 percent) of earnings countywide.

As derivatives of total personal income, per-capita and median household income and poverty rates represent other economic indicators of social well-being and are discussed below. In 2003, per-capita personal income in Lincoln County was $21,542. At the household level, average median household income in Lincoln County was $31,979 (U.S. Census Bureau 2000). Poverty rates represent the percentage of an area's total population living at or below the poverty threshold established by the U.S. Census Bureau. Based on 2000 Census data (1999 income data), the poverty rate for families in Lincoln County was 11.5 percent.

4.2.18.5 Fiscal Resources

The total operating budget in Lincoln County in Fiscal Year (FY) 2004-2005 was estimated to be $6.8 million (Nevada Department of Taxation 2005a). Tax revenues and intergovernmental transfers represent the largest sources of fiscal revenues in the County. Taxable sales in Lincoln County in FY 2004-05 were $30.0 million, and the sales tax rate is 6.75 percent. In terms of property taxes, the total assessed value of real and personal property in Lincoln County (after exemptions) was $97.2 million in FY 2004-05 (Nevada Department of Taxation 2005b). Projected property tax revenue accruing directly to Lincoln County in FY 2005-06 is $1.5 million (Nevada Department of Taxation 2005c). Lincoln County also receives payments in lieu of taxes (or PILT payments) from the Federal government; in FY 2005-06, these payments totaled $419,800 for over 6.4 million acres of Federal land in the County (Bureau of Land Management 2006).

4.2.19 Hazardous Materials

Based on review of the State of Nevada and federal government records and field reconnaissance, no recognized environmental conditions[2] are present on the lands proposed for development within the southeastern portion of Lincoln County, which would pose an imminent threat or long-term risk to human health and/or the environment.

The primary potential sources for hazardous materials in the area are U.S. Highway 93 and State Route 168 and the UPRR rail line. These highways are exposed to the typical petroleum products associated with automotive and truck traffic.

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[2] The term "recognized environmental conditions" means the presence or likely presence of any hazardous substance or petroleum products on the property under conditions that indicate an existing release, a past release, or a material threat of a release of hazardous substance or petroleum products into structures on the property or into the ground, groundwater, or surface water on the property.

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SECTION 5

Environmental Consequences

Section 5: Environmental Consequences

5.1 INTRODUCTION

This section analyzes both beneficial and adverse impacts that could result from implementing any of the alternatives described in this FEIS. As required by the Council on Environmental Quality (CEQ) regulations for implementing the NEPA, a summary of the environmental consequences of each alternative is provided in the Executive Summary. Each alternative was assessed to determine effects of its actions relative to each resource topic addressed in this FEIS. Steps for assessing impacts to a particular resource included identifying the location of areas likely to be affected by an alternative and identifying the potential changes in the resource from the implementation of the alternative.

The environmental consequences of construction, operation, and maintenance of the Toquop Energy Project on the human and natural environments will be analyzed under a separate NEPA process initiated by the BLM.

5.2 ELEMENTS ANALYZED

The following critical elements of the human environment were not present or will not be affected by implementation of the SLCHCP (hereafter referred to as the Preferred Alternative) and thus will receive no further discussion. A description of why these elements were not addressed in this FEIS is included in Section 1.2.2: Issues Dismissed from Further Analysis.

- Wild and Scenic Rivers and other Unique Natural Resources
- Indian Trust Resources
- Prime and Unique Farmland
- Environmental Justice

The following elements have been analyzed and discussed below for the three alternatives: No Action Alternative, Preferred Alternative, and Alternative A: Additional Federal Lands (hereafter referred to as Alternative A). A description of why these elements were addressed in this FEIS is included in Section 1.2.1: Issues Retained for Further Analysis.

- Biological Resources, including Threatened and Endangered Species, Other Listed and Candidate Species and Species of Concern, Wildlife, and Vegetation
- Hydrology and Water Quality
- Floodplains, Wetlands, and Waters of the United States
- Cultural and Paleontological Resources
- Soils and Geological Resources
- Ecologically Critical Areas
- Visual Resources
- Air Quality
- Transportation and Circulation
- Noise
- Agricultural Resources

- Recreational Resources
- Socioeconomics, including Population and Housing
- Hazardous Materials

5.3 METHODOLOGY

Each alternative was assessed to determine effects of its actions relative to each resource topic addressed in this FEIS. Steps for assessing impacts to a particular resource included identifying the location of areas likely to be affected by an alternative for each critical resource element and identifying the potential changes in the resource from the implementation of the alternative.

Primary data sources included resource inventories, management plans, scientific literature, published technical data, and NEPA documents for the land development activities addressed in each action alternative. Information provided in NEPA documents for BLM land sales associated with the LCLA lands (BLM 2001), Meadow Valley Industrial Park (EDA 2000), and Alamo Industrial Park and Community Expansion Area (BLM 2007a) have been incorporated into the impacts analyses for these areas.

5.3.1 Area of Analysis

Unless stated otherwise for a specific resource topic, the area of extent analyzed for direct effects is the Covered Area, as defined in Section 1.1.1: Description of the Covered Area where incidental take of the Covered Species may occur, as well as the surrounding federal lands administered by BLM where the SLCHCP's conservation and mitigation measures may be implemented. Indirect effects could happen outside of the Covered Area boundary (see Figure 1-1) under all resource topics. The extent of indirect effects will be defined in the respective resource topic section.

5.3.2 Analysis of the No Action Alternative

Because the purpose of the No Action Alternative is to serve as a baseline against which to analyze the action alternatives, this analysis will assume that development activities will not occur under the No Action Alternative. Any future development activities that would occur within the Covered Area that could affect threatened and endangered species would need separate incidental take permits, which would require additional NEPA documentation. Therefore, there is no need to analyze unknown future development within the context of the No Action Alternative.

5.4 BIOLOGICAL RESOURCES

5.4.1 No Action Alternative

Under the No Action Alternative, no incidental take permit would be issued. This would result in no new development, recreational resources, utilities, water development, flood control projects, or conservation measures in areas where take of listed species may occur. Landowners would be required to obtain their own individual Section 10 permits for activities that would result in take of a listed species.

5.4.1.1 Threatened and Endangered Species

5.4.1.1.1 Direct Effects

Lincoln County roads and UPRR railway would continue to pose a source of mortality for the desert tortoise. Paved roads impose a direct threat of mortality by motor vehicles. The construction of tortoise-proof fencing and other avoidance and minimization measures along paved roads is often recommended as a way to abate this threat. Boarman and Sazaki (1996) found fewer tortoise carcasses along a fenced section of highway than along an unfenced section. Hoff and Marlow (2002) inferred negative effects of roads from a paucity of tortoise signs near roads. However, unequal sampling at different distances from the road could have biased

the results of their analysis. A meta-analysis of the Hoff and Marlow's data and those from an unpublished dataset by Baephler et al. in 1994 focused on data from equal sampling in relation to distance from roads (C.R. Tracy et al. 2004). This meta-analysis confirmed that the amount of tortoise sign is consistently lower near nine paved roads and highways, but that there was no reduction in tortoise sign near Interstate 15.

Road maintenance, railroad activities, and flood control activities may result in temporary or permanently altering patches of southwestern willow flycatcher habitat along the Meadow Valley Wash and Clover Creek. For activities that require permits under the CWA, the USACE would be required to minimize potential effects to tortoises and flycatchers under Section 7 of the ESA. Development is not likely to have a significant effect on flycatcher habitat, because there are no existing plans for development in the floodplain of the Meadow Valley Wash or Clover Creek.

The BLM would continue implementing their land use plan as funding and staffing is available. The BLM would be required to implement the Reasonable and Prudent Measures and Terms and Conditions of the biological opinion issued for their land use plan on BLM-administered lands in Lincoln County, which would include measures to minimize effects to both the tortoise and the flycatcher from activities funded, authorized, or carried out by the BLM. BLM would also minimize and mitigate effects to species of concern along the Meadow Valley Wash (yellow-billed cuckoo, Meadow Valley Wash desert sucker, Meadow Valley Wash speckled dace, and Arizona toad) and upland areas (three-cornered milkvetch, sticky wild buckwheat, and Las Vegas buckwheat) consistent with their land use plan, and as funding and staffing levels allow.

With the No Action Alternative, current agricultural land uses would continue on the approximately 7,104 acres of private land along the Meadow Valley Wash and Clover Creek. Within the 7,104 acres of private land, 2,256 acres currently provide habitat for desert tortoises. The conversion of existing, previously undisturbed agricultural or grazing land containing suitable desert tortoise habitat to urban use or irrigated and/or cultivated agricultural fields within the Covered Area would result in a loss of habitat. Further, these activities could injure or kill tortoises if burrows were crushed or if equipment encountered tortoises.

5.4.1.1.2 Indirect Effects

Indirect effects to the tortoise and the flycatcher would include the ability for invasive species to invade southwestern willow flycatcher and desert tortoise habitat along the railroad and road rights-of-way (and further upland for desert tortoise) as a result of maintenance activities. Existing BMPs would reduce these potential indirect effects, refer to Section 3.2.2.3.1 in this FEIS. In addition, pursuant to Lincoln County Code, Title 14, Appendix E – Weed Management Plan, every developer must have a County approved plan in place to control invasive species prior to the onset of development.

The Virgin River species (woundfin, Virgin River chub, and Yuma clapper rail) would continue to be susceptible to effects from existing threats, such as urban development activities in the City of Mesquite. The Pahranagat Valley species (White River springfish, Hiko White River springfish, Pahranagat roundtail chub, bald eagle, and southwestern willow flycatcher) would also continue to be exposed to effects from ongoing agricultural activities such as water diversion for irrigation purposes and vegetation clearing along ditches. Existing efforts to conserve and manage the Virgin River and Pahranagat Valley species, such as red shiner control and riparian and aquatic habitat restoration, would continue. The Virgin River Habitat Conservation and Recovery Program (VRHCRP) is being developed for the Virgin River species, and a Safe Harbor Agreement is being developed for the Pahranagat Valley species. Implementation of these plans would contribute to the conservation and recovery of the Virgin River and Pahranagat Valley species.

5.4.1.2 Other Listed and Candidate Species and Species of Concern

5.4.1.2.1 Direct and Indirect Effects

Lincoln County road maintenance and UPRR railway activities may temporarily or permanently modify habitat for the Meadow Valley Wash desert sucker, Meadow Valley Wash speckled dace, and Arizona toad. Habitat for these species has been previously disturbed from road and railroad construction and maintenance activities and periodic flooding. The latest surveys conducted for the desert sucker and speckled dace indicate

that populations of these species are persisting in the Meadow Valley Wash, despite past disturbances. The status of the Arizona toad along the Meadow Valley Wash is unknown, but anecdotal observations of the species continue to be reported. Indirect effects from weed invasions would be similar to those for threatened and endangered species.

Small populations of threecorner milkvetch, sticky wild buckwheat, and Las Vegas buckwheat are known to occur in the vicinity of the LCLA lands and the 640-acre Section 36 disposal parcel. The milkvetch and sticky wild buckwheat are protected by the State of Nevada, and a permit must be obtained from the Nevada Division of Forestry before plants may be removed. The only known occurrences of these plants in Lincoln County are on BLM-administered land adjacent to the northeastern boundary of the LCLA lands, and falls within the boundaries of the Beaver Dam Slope ACEC. Land use restrictions for the ACEC are described in the Final BLM Ely District RMP/EIS (2008) for the desert tortoise, and would contribute to protection of the plants that occur within the ACEC.

5.4.1.3 Wildlife

5.4.1.3.1 Direct Effects

Lincoln County road maintenance and UPRR railway activities may temporarily or permanently modify habitats of some fish and wildlife species. However, the railway and some of the roads already traverse alongside riparian habitat with naturally high edge to interior ratios. Roads can alter drainage and flow patterns along the Meadow Valley Wash. This can affect water quality for fish and aquatic invertebrate species. However, water quality data from Meadow Valley Wash demonstrates good water quality for these surface waters. Temporary events could result in detectable changes in water quality, through increases in suspended solids and, possibly, contaminants, which could affect the ability of fish and other aquatic species to navigate through these waters. On a local level, habitat could be altered through increased sediments being deposited on the streambed's substrate. These effects occurring to individual fishes and aquatic invertebrates would be unlikely to result in mortality and would not affect those species at the population level.

Terrestrial habitats have already been modified by the road and railroad's initial construction. Temporary disturbances such as noise could also adversely affect individual animals. Modifications to the streambed to protect railroad tracks and roads from flood damage may result in loss of individual fish species. Prior to streambed modifications, the project proponent must acquire a Section 404 permit under the CWA from the USACE. Before issuance of the permit, the USACE must consult with the project proponent to avoid or minimize effects to the WOUS that would decrease the value or function of the system.

The use of maintained roads and railroads by vehicles would continue to result in direct mortality of some bird, reptile, and mammal species. Due to the rural nature of Lincoln County and low population density (less than one person per square mile); however, traffic levels are relatively low, thus limiting the potential for vehicle/wildlife conflicts.

The conversion of private lands from previously undisturbed agricultural or grazing land to urban use or from grazing land to irrigated and/or cultivated agricultural fields within the Covered Area would be similar to those described for threatened and endangered species.

5.4.1.3.2 Indirect Effects

Indirect effects to other wildlife species would be similar to those described for threatened and endangered species.

5.4.1.4 Vegetation

5.4.1.4.1 Direct Effects

Current maintenance of roads and UPRR rail line would continue to affect vegetation along these areas through mowing, trimming, and other activities that keep vegetation off the roads, railroad tracks, and rights-

of-way. Removal of debris in ditches associated with railbeds would temporarily remove vegetation in these areas.

Effects from road maintenance and railway activities on vegetation resources would result in localized, short-term effects, as the level of impact and the total area affected would be minimal and primarily limited to alongside roads, railroads, and ditches.

5.4.1.4.2 Indirect Effects

Ground disturbance from road maintenance and railway activities could allow invasive species to expand along riparian corridors, roadways, railbeds, and elsewhere on non-federal lands within the Covered Area. The BMPs for road maintenance and railway activities would minimize the expansion of invasive species in these areas (refer to Section 3.3 herein). This expansion of non-native vegetation in the Covered Area would not be likely to substantially alter vegetation resources overall.

5.4.2 Preferred Alternative

5.4.2.1 Threatened and Endangered Species

5.4.2.1.1 Direct Effects

Habitats for Pahranagat roundtail chub, Hiko White River springfish, White River springfish, woundfin, Virgin River chub, Yuma clapper rail, and yellow-billed cuckoo do not occur within the Covered Area. Therefore, no direct effects to these species are anticipated. Indirect effects to these species from the Preferred Alternative are presented in Section 5.4.2.1.3.

DESERT TORTOISE

LAND DEVELOPMENT AND UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

BLM relinquishes discretion over activities occurring on federally-administered lands upon the issuance of patents related to the sale of the land. To date, approximately 13,500 acres within the LCLA lands have been transferred to private ownership. BLM will eventually issue patents for 855 acres of land within the Alamo Industrial Park and Community Expansion Area. In addition, 3,461 acres of desert tortoise habitat on BLM lands in the Alamo area have been identified for future potential disposal as well as the 640-acre Section 36 disposal parcel, at which time management of those lands would be conveyed to private interests and subject to County permits and other local ordinances. Activities associated with the Meadow Valley Industrial Park would not affect desert tortoise, as no habitat for the species occurs there.

Land development activities would eliminate up to approximately 18,476 acres of potential desert tortoise habitat within the Covered Area. This loss would be the result of conversion of land from Mojave Desert scrub to human residential, commercial, recreational and light industrial use, and buildings, roads, and landscaping would replace desert tortoise habitat.

Of the 769,428 acres of desert tortoise potential habitat within the Covered Area, 728,747 acres (95 percent) are administered by BLM. Of the 40,681 acres of potential desert tortoise habitat on private lands within the Covered Area, land development activities are proposed to occur on the 13,500-acre parcel disposed of by BLM under the provisions of the LCLA and the 855-acre parcel known as the Alamo Industrial Park and Community Expansion Area. The LCLA parcel and Alamo Industrial Park and Community Expansion Area are each expected to be fully developed for residential, commercial, and/or municipal uses.

During construction activities, the potential for direct mortality of desert tortoises exists from encounters with heavy equipment. This could occur on up to 18,476 acres comprising the Covered Area, which are not designated as critical habitat.

The Covered Area is within the Northeastern Mojave Desert Tortoise Recovery Unit, which encompasses approximately 1.8 million acres of designated desert tortoise critical habitat with ACEC designations; 1.2 million acres of which are in Nevada. Most critical habitat acres within the Covered Area are also

designated as ACECs by the BLM, where the desert tortoise receives special management attention; a total of 194,496 acres are designated as ACECs within the Covered Area. The Covered Area contains portions of the USFWS-designated Mormon Mesa and Beaver Dam Slope Critical Habitat Units established for the recovery of the desert tortoise.

The Beaver Dam Slope Critical Habitat Unit and designated ACEC are adjacent to and directly north and west of the LCLA parcel. Adjacent to and south of the LCLA parcel is the City of Mesquite, which continues to expand. The 640- acre Section 36 disposal parcel is adjacent to the Mormon Mesa Critical Habitat Unit and ACEC to the south and the Beaver Dam Slope Critical Habitat Unit and ACEC to the east (see Figure 4-5). The Alamo Industrial Park and Community Expansion Area is not within or adjacent to specially designated tortoise conservation lands but is near urban development associated with the town of Alamo.

With low tortoise densities throughout most of the Northeastern Mojave Recovery Unit, and due to the large-scale impacts of fire in the recovery unit, large expanses of habitat are necessary to support a self-sustaining desert tortoise population. The consequences of the loss of tortoise habitat from private lands in the Covered Area are ameliorated by the relatively small acreage in comparison to surrounding BLM managed tortoise habitat, and the location of most of these lands adjacent to existing urbanized areas. The loss of 19,840 acres of desert tortoise habitat on private lands under the Preferred Alternative represents less than 0.4 percent of the 4.5 million acres of desert tortoise habitat available in Nevada. The total area of these private parcels represents approximately 10 percent of the land area permanently protected as designated ACECs within the Covered Area. Approximately, 246 acres of private lands addressed in the Preferred Alternative are within designated desert tortoise critical habitat (located along the Meadow Valley Wash just north of the Clark/Lincoln County line); however, there are no known plans for changing the current land use within these parcels. Furthermore, no critical habitat or land within desert tortoise ACECs is identified for future disposal by BLM under the SLCHCP.

Construction and maintenance of utilities result in impacts similar to land development and maintenance activities described above. Urban development in the Covered Area will require the establishment of solid waste disposal facilities. Expansion of existing landfills or development of one or more new landfills will not occur in the LCLA area. The City of Mesquite landfill currently within the LCLA area will not be used to dispose of LCLA solid waste. Rather, solid waste generated within the LCLA area will be taken to one or more transfer stations located in the LCLA area and then transported for disposal at an existing landfill in Lincoln County at Crestline (located outside of the Covered Area west of U.S. Highway 93).

OTHER ACTIVITIES ON PRIVATE LANDS WITHIN THE COVERED AREA

FLOOD CONTROL ACTIVITIES

Flood control activities within the City of Caliente would have no direct effect on the desert tortoise, because the desert tortoise does not occur in this area. Flood control structures for the LCLA lands and 640-acre Section 36 disposal parcel could affect individual tortoises by changing flow patterns through these parcels, but injury or mortality of tortoises from flood control construction activities should be minor, since tortoises will be cleared from construction sites prior to the initiation of ground disturbing activities. Flood control activities could result in injury and mortality of tortoises, if individuals or eggs were missed during clearance surveys.

ROADWAY IMPROVEMENTS AND MAINTENANCE ACTIVITIES

U.S. Highway 93 and state and county roads all traverse the Covered Area. Portions of the private parcels as well as the roadways are within highly fragmented habitat. Roads and highways in desert tortoise habitat have a depressive effect on populations of the tortoise due to traffic impacts. Impacts to populations from road kill mortality are discernable from 1.6 km to more than 4.5 km from the edges of roads, depending on traffic levels and the amount of time the road has been present. Road-generated habitat fragmentation affects species negatively by limiting access to food sources, reproductive opportunities, and genetic exchange between populations (TNC 2003).

Currently, there are approximately 400 acres of Lincoln County roads and rights-of-way that contain desert tortoise habitat within the Covered Area. Paved roads impose a direct threat of mortality by

motor vehicles. The construction of tortoise-proof fencing along paved roads is often recommended as a way to abate this threat. Boarman and Sazaki (1996) did find fewer tortoise carcasses along a fenced section of highway than they found along an unfenced section. Hoff and Marlow (2002) inferred negative effects of roads from a paucity of tortoise sign near roads. However, unequal sampling at different distances from the road could have biased the results of their analysis. A meta-analysis of the Hoff and Marlow's data and those from an unpublished dataset (Baepler et al. 1994) focused on data that include only those from equal sampling in relation to distance from roads (Tracy et al. 2004). This meta-analysis confirmed that the amount of tortoise sign is consistently lower near nine paved roads and highways, but that there was no reduction in sign near Interstate 15.

UPRR ACTIVITIES

The presence of railroads can have similar adverse effects to the presence of roads described above. Desert tortoise can be caught between the tracks, overheat, and die. They also can be crushed on the tracks by trains (USFWS 1994). Desert tortoise populations adjacent to railroads are likely diminished, similar to populations adjacent to well-used roads (USFWS 1994). In a 2002 review of threats to desert tortoise, Boarman found no published studies that looked at tortoise mortality along extensive sections of railroad tracks, but he cited an observation of 8 carcasses found between the rails along 100 km of tracks in the eastern Mojave (Ron Marlow, pers. comm. as cited in Boarman 2002b). In the Covered Area, 1,542 acres of railroad rights-of-way occur within desert tortoise habitat of which 2 miles of UPRR's right-of-way traverses designated critical habitat within the Mormon Mesa Critical Habitat Unit; UPRR activities have the potential to disturb up to 800 acres of previously undisturbed suitable desert tortoise habitat over the 30-year permit term.

Railroads also may be an obstacle to tortoise movements (Boarman and Sazaki 1996). This can result in and contribute to fragmentation of habitats, which can reduce population sizes and thus population sustainability (Boarman 2002a). However, benefits to desert tortoise are also provided by railroad presence, because tortoises regularly build burrows in railroad berms not covered with gravel (Boarman 2002b).

OTHER PRIVATELY-OWNED LANDS SUBJECT TO LAND CONVERSION ACTIVITIES

Of the approximately 7,104 acres of other private lands along the Meadow Valley Wash within the Covered Area of the proposed action, 2,256 acres currently provide habitat for desert tortoises. Under this alternative, up to 564 acres of existing private lands could be converted from previously undisturbed agricultural or grazing land to urban use or from grazing land to irrigated and/or cultivated agricultural fields, resulting in a loss of up to 564 acres of tortoise habitat. Additionally, increased urban use could lead to indirect effects to desert tortoise such as increased predation by ravens and domestic animals, disturbance of adjacent habitat due to increased human use and invasive weeds, and increased probability of unauthorized collection for pets and other uses.

SUMMARY

Results of the Potential Effects analysis show that approximately 19,840 acres of desert tortoise suitable habitat have the potential to be affected by the Covered Activities within the Covered Area of the SLCHCP. Land development and maintenance activities including utility and infrastructure development and maintenance-related activities have the largest potential impact, estimated at 18,476 acres (93 percent). UPRR Covered Activities have a much smaller potential effect, estimated at 800 acres. Desert tortoise suitable habitat occurs along the Meadow Valley Wash in Lincoln County with the northern edge of habitat at the confluence of Cottonwood Canyon and Meadow Valley Wash near UPRR's Railroad Mile Post 431.6. Flood control and other construction and maintenance activities conducted by UPRR have the potential to result in injury or mortality to tortoises along the Meadow Valley Wash, but these effects would be minimized by training UPRR staff on how to avoid harming tortoises if one is encountered during their activities, and implementing other BMPs described for the Preferred Alternative.

To offset the loss of 19,840 acres of potential desert tortoise habitat, a one-time per-acre mitigation fee would be paid by those permittees disturbing suitable habitat. The funds generated from the mitigation fees collected would then be used to implement the mitigation measures that will offset the effects to desert tortoise as

presented in the description of the Preferred Alternative. Also, implementation of such avoidance and minimization measures described for the Preferred Alternative (refer to Section 3.3 herein) will further reduce the likelihood of actual mortality of tortoises from Covered Activities.

SOUTHWESTERN WILLOW FLYCATCHER

LAND DEVELOPMENT AND UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

No direct effects to southwestern willow flycatchers or their habitat would result from future development activities associated with the Meadow Valley Industrial Park due to activities being contained within the area of effect, which does not include the Meadow Valley Wash or its riparian area. The LCLA parcel does not occur in southwestern willow flycatcher habitat. Flycatcher habitat does not occur within the Alamo Industrial Park and Community Expansion Area, the proposed BLM disposal lands around the Alamo area or on the 640-acre Section 36 disposal parcel; therefore, direct effects to the southwestern willow flycatcher and its habitat are unlikely to occur as a result of development activities at these sites (see Figure 4-3 in the SLCHCP).

In general, utility construction and maintenance on non-Federal land is not a major threat to the southwestern willow flycatcher within the Covered Area, because these areas are already developed or significantly disturbed and do not provide habitat. Significant utilities construction and maintenance along the Meadow Valley Wash would require Federal land access and Section 7 consultation.

OTHER ACTIVITIES ON PRIVATE LANDS WITHIN THE COVERED AREA

FLOOD CONTROL ACTIVITIES

Flood control activities proposed by the City of Caliente would result in the removal of most of the riparian vegetation in the bottom of the Meadow Valley Wash between the north and south bridges that allow U.S. Highway 93 to cross the wash. Removal of vegetation between these two bridges would result in the loss of 8.3 acres of suitable southwestern willow flycatcher habitat, which represents less than one percent of the total amount of suitable habitat in the Meadow Valley Wash (see Figure 4-6 of the SLCHCP). These flood control activities would impact the normal stream function and the dynamic nature of the riparian corridor.

As mature riparian vegetation returns to the reach after flood control activities are implemented, future flood events would be less likely to adversely affect the vegetation, resulting in more stable habitat in the long term. However, it would be years before mature woody vegetation would return to the site. Additionally, until the City of Caliente determines the type and design of their flood control project, it is assumed that this area will no longer be capable of supporting suitable flycatcher habitat. However, the City of Caliente will mitigate for any residual effects associated with the removal of the 8.3 acres of suitable flycatcher habitat by contributing funds ($12,000 per acre) to enhance or reestablish habitat elsewhere along Meadow Valley Wash, through the establishment of a habitat bank on private or public land and/or conservation easements on private land.

ROADWAY IMPROVEMENTS AND MAINTENANCE ACTIVITIES

Lincoln County roadway upgrades and maintenance activities (i.e., bridge and culvert maintenance activities) require vegetation removal and trimming over time which could impact suitable southwestern willow flycatcher habitat. However, the implementation of the general mitigation measures described in Section 3.3 herein combined with the specific avoidance and minimization measures for upgrades and maintenance activities described in Section 3.2.2.3.4 of this FEIS would minimize and mitigate effects to the flycatcher from roadway activities.

UPRR ACTIVITIES

Railroad operations, maintenance and urgent response activities could result in disturbance to approximately 54 acres of suitable southwestern willow flycatcher habitat within the Meadow Valley Wash (see Figure 5-4 in the SLCHCP). Vegetation on the edges of flycatcher habitat could also be removed as a result of UPRR's activities.

If UPRR's activities occur during the flycatcher breeding season, there is only a minor chance that these activities would result in disturbing nesting flycatchers, as the flycatcher population in the Meadow Valley Wash is very low. To further minimize the risk of disturbance, UPRR will use qualified biologists to conduct one-time surveys in a few areas of suitable southwestern willow flycatcher of up to 3 to 4 acres in the vicinity of mile post markers 447 to 452 and between mile post markers 395 and 396 as delineated by the USFWS (see Figure 5-4, maps 2 and 8 in the SLCHCP). If individuals and/or their nests are discovered within proposed maintenance or construction areas, then the individuals will be avoided to the extent possible but will not preclude or suspend the Covered Activities. However, UPRR has agreed to contribute $12,000 per acre to offset potential effects from their activities on the removal of 54 acres of suitable flycatcher habitat within their rights-of-way.

OTHER PRIVATELY-OWNED LANDS SUBJECT TO LAND CONVERSION ACTIVITIES

In the Covered Area, agricultural lands have been highly disturbed and do not provide optimal habitat for flycatchers. However, the conversion of existing private lands along the Meadow Valley Wash from previously undisturbed agricultural or grazing land to urban use or from grazing land to irrigated and/or cultivated agricultural fields would result in direct effects to southwestern willow flycatcher habitat. The modification or reduction of riparian habitat could adversely affect approximately 84.3 acres of suitable southwestern willow flycatcher habitat. Lincoln County is requesting take coverage on up to 22 acres of suitable flycatcher habitat over the 30-year permit term. To mitigate for the loss of suitable flycatcher habitat, Lincoln County will work with the private landowners who wish to participate in the SLCHCP to ensure that the same avoidance, minimization and mitigation measures proposed for flood control, roadway improvements and maintenance activities, and UPRR activities are implemented to minimize effects to southwestern willow flycatcher and/or its habitat from this activity. The landowners would be required to either pay $12,000 per acre of suitable habitat removed to be used toward restoration and habitat replacement purposes or replace the loss of native habitat disturbed at a 2:1 ratio and the loss of non-native suitable flycatcher habitat with native habitat at a 1:1 ratio directly, as part of their obligations upon signing the participation agreement with Lincoln County.

5.4.2.1.2 Indirect Effects

DESERT TORTOISE

Due to indirect effects arising from increased human presence, conversion of the land to human uses in the Covered Area could adversely impact desert tortoise and reduce the quality of critical habitat adjacent to the Covered Area. The extent of critical habitat surrounding the Covered Area that may be affected by indirect effects is not readily quantifiable. It should be noted that the adjacent lands are managed by BLM as ACECs and, therefore, are subject to activity restrictions.

LAND DEVELOPMENT AND UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

Habitat fragmentation from development likely would impede movement of desert tortoise through the Covered Area. Habitat fragmentation is a major contributor to population declines of the desert tortoise (Berry and Burge 1984, Berry and Nicholson 1984). Individual desert tortoise may require more than 1.5 square miles of habitat and may make forays of more than 7 miles at a time (Berry 1986). In drought years, desert tortoise forage over even larger areas. Roads and urban areas form barriers to movement and tend to create small, local populations which are more susceptible to extinction than large, connected ones (Wilcox and Murphy 1985).

Trash disposal in areas to be developed within the Covered Area could adversely affect nearby desert tortoises. Unauthorized and authorized deposition of refuse occurs close to towns, cities, and settlements in remote, inaccessible areas. Tortoises are known to eat foreign objects, such as rocks, balloons, plastic, and other garbage (John Behler, Chairman of the Freshwater Turtle and Tortoise Group, Species Survival Commission, International Union for the Conservation of Nature, and New York Zoological Society, pers. comm.; Karen Bjorndabl, pers. comm., as cited in the Desert Tortoise Recovery Plan, USFWS 1994). Such objects can become lodged in the gastrointestinal tract or entangle heads and legs, causing death. Objects such as metal foil

and glass chips have been found in wild desert tortoise scat and tortoise entanglement with rubber bands and string has been observed Burge (1989).

The number of dogs could increase with an increase in human presence; thus, the incidence of unrestrained domestic and/or feral dogs in tortoise habitat in and adjacent to the Covered Area may subsequently increase. Dog attacks or predation on tortoises has been identified by the USFWS as an emerging problem that warrants attention (59 FR 5820, Boarman 2002a). Preliminary results from a study in the Mojave Desert of California indicate a significantly higher percentage of tortoises with moderate to severe canid-like shell trauma within approximately two miles of settlements than tortoises at more remote sites (Demmon and Berry 2005). Others have also reported a higher incidence of canid-like shell damage at sites with feral dogs and dog packs (Bjurlin and Bissonette 2001, cited in Boarman 2002a).

Anticipated increases in human use and habitation of the Covered Area may attract and concentrate predators such as ravens, coyotes, and kit fox, resulting in increased predation of desert tortoises. Predators are more likely to be attracted to the area if trash or other anthropogenic resources are present. Natural predation in undisturbed, healthy ecosystems is generally not a threat to the continued existence of the desert tortoise. However, predation rates may be altered when natural habitats are disturbed or modified.

The most important predators of desert tortoises at this time are the common raven (*Corvus corax*) and the coyote (*Canis latrans*). The best-documented predator is the raven. Raven population increases seem to be due to increased food supplies, (e.g. roadkills, landfills, trash, garbage dumps, agricultural developments). Because ravens make frequent use of food, water, and nest-site subsidies provided by humans, their population increases have been tied to an increase in food and water sources, such as landfills and septic ponds (Boarman and Berry 1995, USFWS 1994). Additionally, new sites for perches and nests (e.g. fence posts, power poles and towers, signs, buildings, bridges) may increase potential mortality of tortoises due to increased foraging advantages.

The collection of desert tortoise for pets, food, or use in cultural observances may increase on lands adjacent to and within the Covered Area. Illegal collection is a major factor in the decline of the desert tortoise. People illegally collect desert tortoise for pets, food, and commercial trade. Some collect for medicinal or other cultural purposes (USFWS 1994). Almost one-half of tortoise with radio transmitters have been documented as poached or suspected of being poached from research sites (Berry 1990 as amended, Stewart 1991).

Pet tortoises, both desert and exotic, kept by future residents of the planned communities within the Covered Area may also be intentionally or unintentionally released into surrounding areas. Well-meaning citizens may capture, transport, and release tortoises they find and perceive to be in harm's way. In addition to loss through capture, increased handling could contribute to the loss of unique, local characteristics through interbreeding and genetic mixing.

Upper respiratory diseases in tortoises living in and near the Covered Area could increase. Capture and release of tortoises could contribute to the spread of diseases such as upper respiratory tract disease (URTD). By the early 1990s, NDOW had documented several cases of URTD in tortoises inhabiting the areas proposed for inclusion in the Coyote Spring and Mormon Mesa ACECs (USFWS 1994); and URTD has been documented in both the Coyote Springs and Mormon Mesa permanent study plots (BLM 1998). URTD appears to be spreading and may have been introduced to wild tortoise populations through the release or escape of diseased, captive tortoises (Jacobson 1994, cited in USFWS 1994), something that is more likely to occur near an urban area (Boarman 2002). A high or increased prevalence of URTD in tortoise populations adjacent to urbanized areas or within suburban areas has been documented in several regions such as the Cecil Field/Brannon Mitigation Park in Florida (gopher tortoises, Brown et al. 2005) and Tucson, Arizona (Sonoran population, desert tortoise; Jones et al. 2005). While evidence indicates a correlation between high rates of tortoise mortality/population decline and URTD incidence, a direct cause-effect relationship has not been established (Boarman 2002a).

Development activities within the Covered Area that create ground disturbance could cause the dispersion of non-native plant species both inside and outside the Covered Area. Non- native plant species such as red brome (*Bromus rubens*), filaree (*Erodium cicutarium*), and split grass (*Schismus arabicus*) have been introduced as a result of grazing, and can spread from disturbance by OHV activities and ground disturbance associated with development. These species have become widely established in the Mojave Desert. Land

managers and field scientists identified 116 species of alien plants in the Mojave and Colorado deserts (Brooks and Esque 2002). Desert tortoises have been found to prefer native vegetation over non-native vegetation (Jennings 1993). Non-native annual plants in desert tortoise critical habitat in the western Mojave Desert were found to compose greater than 60 percent of the annual biomass (Brooks 1998). The reduction in quantity and quality of forage may stress tortoises and make them more susceptible to drought- and disease-related mortality (Jacobson et al. 1991, Brown et al. 1994).

In the Mojave Desert, the proliferation of non-native plant species has also contributed to an increase in fire frequency in desert tortoise habitat by providing sufficient fuel to carry fires, especially in the intershrub spaces that are mostly devoid of native vegetation (USFWS 1994, Brooks 1998, Brown and Minnich 1986). Over 500,500 acres of desert tortoise habitat burned within the Northeastern Mojave Recovery Unit in 2005 and 2006. Thus, the potential for the dispersion of non-native plant species from ground disturbance activities within the Covered Area could also result in increases in fire frequency in surrounding desert tortoise habitat.

Changes in plant communities caused by recurrent fire may negatively impact tortoises and tortoise populations through direct mortality and injury (e.g. Woodbury and Hardy 1948), as well as loss of forage species and shrubs that provide shelter and fragmentation of habitat (Brooks and Esque 2002, Esque et al. 2003).

Creosote bush is slow to re-sprout and germinate following intense fire (Brown and Minnich 1986). Loss of these shrubs and other vegetation, even temporarily, may change the thermal environment and increase exposure of tortoises to temperature extremes (Esque and Schwalbe 2002). Loss of forage, water, or shelter sites can result in nutritional deficiencies and decreased reproductive rates.

Utilities such as powerlines, water and gas pipelines, and fiber optic cables would likely be constructed across the federal lands to provide services to the developments in Lincoln County. Primary threats from construction of utilities include habitat removal during construction and rights-of-way maintenance, vehicle and equipment encounters with tortoises, and the potential spread of weeds by construction or maintenance vehicles. In addition, power lines, fence posts, or signs may be used for perching by the common raven and predation of juvenile tortoises may increase. BLM would be required to minimize effects to tortoises from these activities under Section 7 of the ESA. Construction and maintenance of utilities on the private lands, such as wastewater, water, and electricity, would be unlikely to create indirect effects on the desert tortoise beyond those already described for residential and commercial development activities above. If nest substrates are not already present in the area, introduction of transmission towers or other tall objects can increase common ravens in the area (Boarman 2002b). Increased traffic from these activities would be undetectable above normal levels.

Transfer stations could also increase ravens, coyotes, and other predators of the desert tortoise (Boarman 2002b), as they are increasingly used in the LCLA parcel. Creation of transfer stations could encourage predators to frequent an area where they are not currently present. Improperly managed transfer stations can offer ravens a concentrated feeding ground and when located in tortoise habitat may give rise to a higher incidence of juvenile predation by the raven. Predation could potentially increase with the development of the LCLA lands as urban areas expand.

OTHER ACTIVITIES ON PRIVATE LANDS WITHIN THE COVERED AREA

ROAD IMPROVEMENTS AND MAINTENANCE ACTIVITIES

Roads may result in indirect impacts to tortoise populations by increasing opportunities for human access, such as the collection (poaching) of tortoises for pets, food, or sport; release of diseased, captive tortoises into wild populations and the subsequent spread of disease; littering and illegal dumping; increased chance and incidence of human-caused fire in tortoise habitat; and the spread of non-native, invasive weeds (Boarman 2002a). As private lands are developed, an increase in recreational use of the adjacent Federal lands is anticipated, which may increase the likelihood of tortoise mortality and injury from vehicle encounters and result in unauthorized road incursions which could disturb tortoise habitat and surrounding vegetation.

Noise from traffic may also negatively affect tortoise populations due to disruption of communication, change in behavior, and damage to the auditory system. Background noise has been shown to mask vocal signals essential for individual survival and reproductive success in other animals (e.g. Bailey

and Morris 1986, Ehret and Gerhardt 1980). Desert tortoises are known to have hierarchical social interactions (Brattstrom 1974), are capable of hearing (Adrian et al. 1938; Patterson 1971, 1976), and communicate vocally (Campbell and Evans 1967, Patterson 1971, 1976). The masking effect of these sounds may significantly alter an individual's ability to effectively communicate or respond in appropriate ways. The same holds true for incidental sounds made by approaching predators; masking of these sounds may reduce a desert tortoise's ability to avoid capture by a predator.

UPRR ACTIVITIES

Indirect effects such as increased noise and/or vibration from passing trains may also affect tortoises living near railroads due to disruption of communication, change in behavior, and damage to the auditory system. Background noise has been shown to mask vocal signals essential for individual survival and reproductive success in other animals (e.g. Bailey and Morris 1986, Ehret and Gerhardt 1980). Desert tortoises are known to have hierarchical social interactions (Brattstrom 1974), are capable of hearing (Adrian et al. 1938; Patterson 1971, 1976), and communicate vocally (Campbell and Evans 1967; Patterson 1971, 1976). The masking effect of these sounds may significantly alter an individual's ability to effectively communicate or respond in appropriate ways. The same holds true for incidental sounds made by approaching predators; masking of these sounds may reduce a desert tortoise's ability to avoid capture by a predator. Railroad rights-of-way are also likely to attract and concentrate tortoise predators, such as the common raven (*Corvus corax*), which is a major cause of juvenile tortoise mortality.

OTHER PRIVATELY-OWNED LANDS SUBJECT TO LAND CONVERSION ACTIVITIES

Due to indirect effects arising from increased human presence, conversion of previously undisturbed agricultural or grazing land to urban use or grazing land to irrigated and/or cultivated agricultural lands along the Meadow Valley Wash in the Covered Area could adversely impact desert tortoise. Land conversion activities on up to approximately 564 acres of agricultural and grazing lands, containing suitable desert tortoise habitat, along the Meadow Valley Wash within the Covered Area could result in an increase of non-native plants both inside and outside the newly developable area.

To offset the indirect effects to the desert tortoise from all the Covered Activities described above, a combination of general and activity specific avoidance and minimization measures will be implemented to compensate for disturbance of desert tortoise habitat. The general mitigation measures to be implemented for all the Covered Activities are addressed in Section 3.3 herein. The activity specific avoidance and minimization measures to be implemented to offset any indirect effects to the desert tortoise are described in Sections 3.2.2.3.1 (land development and maintenance activities), 3.2.2.3.2 (utility and infrastructure development and maintenance activities), 3.2.2.3.4 (roadway improvements and maintenance activities), 3.2.2.3.5 (UPRR activities), and 3.2.2.3.6 (land conversion activities) respectively. The conservation measures identified in Section 3.2.2.3 herein would compensate for effects that could not be offset by the avoidance and minimization measures.

SOUTHWESTERN WILLOW FLYCATCHER

LAND DEVELOPMENT AND UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

Indirect effects arising from increased human presence could result from development activities associated with the 103-acre Meadow Valley Industrial Park, which in turn could reduce the quality of flycatcher habitat within the Meadow Valley Wash. However, the implementation of the general mitigation measures described in Section 3.3 herein would minimize and mitigate potential effects to the flycatcher from these small-scale development activities.

The development of this site could lead to future development pressures. If these future development pressures were to affect southwestern willow flycatcher, then either an amendment to the SLCHCP or a separate Section 10 permit would need to be obtained.

Development of the 13,500-acre LCLA parcel could alter drainage patterns and flows of the ephemeral washes that feed into the Virgin River. However, habitat for the southwestern willow flycatcher along the Virgin River in Clark County, outside of the Covered Area, is not likely to be affected, because the small size of these

changes in sediment regimes and flows would not be large enough to affect riparian vegetation, and best management practices would be implemented to ensure effects to flycatchers occurring in downstream habitats are insignificant or discountable. Furthermore, alteration of some of the drainages may entail obtaining permits under Section 404 of the CWA, which will require that the project proponent modify drainages designated as WOUS in a manner that preserves the function and value of the drainage system. If the ACOE determines that modifications may affect a federally-listed species, they will be required to consult with the USFWS under Section 7 of the ESA to minimize potential effects to listed species.

Stormwater flows (further detail provided in the Hydrology and Water Quality section below) that enter the Virgin River from the LCLA parcel and the 640-acre Section 36 disposal parcel would not be any greater than what currently exists. Thus, no change to southwestern willow flycatcher habitat along the Virgin River would occur as a result of stormwater management in the Covered Area. Indirect effects from Covered Activities in the Covered Area could include increased sedimentation to the Meadow Valley Wash from flood control related activities and vehicle noise disturbance to nearby southwestern willow flycatcher habitat.

OTHER ACTIVITIES ON PRIVATE LANDS WITHIN THE COVERED AREA

FLOOD CONTROL ACTIVITIES

Implementation of flood control projects in Meadow Valley Wash by the City of Caliente may result in changes to channel structure above and below this reach. This could result in long-term changes to riparian habitats near this reach, depending upon how the flood control projects are designed.

UPRR ACTIVITIES

UPRR and its contractors carry out a number of flood control activities within its rights-of-way such as maintaining drainage and other water carrying facilities, keeping them free from obstruction and accommodate expected water flow. Specific operation and maintenance activities include erosion and flood control actions such as removing eroded soils, sediment and debris from ditches, culverts and bridges. Urgent response actions include repairs of flood damage, removal of debris from culverts and bridges, and the possible placement of materials such as riprap to protect existing infrastructure such as culverts, embankments, and bridges, and to repair or replace damaged facilities (such as bridge abutments or footings) to allow their continued safe use or to restore them to safe use. Sedimentation of aquatic/riparian habitat in the Meadow Valley Wash could occur from sediment entering the Meadow Valley Wash as a result of these flood control activities. However, the additional sediment load contributed by UPRR activities may not be detectable in comparison with the sediment load from the entire Meadow Valley Wash system. With the implementation of specific avoidance and minimization measures for UPRR Covered Activities described in Section 3.2.2.3.5 of this FEIS, these potential indirect effects would be limited in scale.

OTHER PRIVATELY-OWNED LANDS SUBJECT TO LAND CONVERSION ACTIVITIES

The conversion of up to 22 acres of suitable flycatcher habitat along the Meadow Valley Wash from previously undisturbed agricultural or grazing land to urban use or from grazing land to irrigated and/or cultivated agricultural fields would be limited in scale due to the implementation of avoidance and minimization measures described in Section 3.2.2.3.6 herein.

Thus, to offset the indirect effects to the southwestern willow flycatcher from the Covered Activities, a combination of general and activity specific avoidance and minimization measures will be implemented to compensate for disturbance to flycatcher habitat. The general mitigation measures to be implemented for all the Covered Activities are addressed in Section 3.3 of this FEIS. The activity specific avoidance and minimization measures to be implemented to offset any indirect effects to the flycatcher are described in Sections 3.2.2.3.3 (flood control activities), 3.2.2.3.4 (roadway improvements and maintenance activities), 3.2.2.3.5 (UPRR activities), and 3.2.2.3.6 (land conversion activities), respectively. The mitigation measures identified in these sections would compensate for effects that could not be offset by the avoidance and minimization measures.

5.4.2.1.3 Other Listed and Candidate Species and Species of Concern

PAHRANAGAT VALLEY SPECIES

The White River springfish and Hiko White River springfish occur in spring heads and quiet waters along outflows in Pahranagat Valley. White River springfish occur at Ash Spring, approximately 7 miles north of the proposed Alamo project site. The Hiko White River springfish occurs at Crystal Springs, approximately 9 miles from the proposed Alamo project site. The Pahranagat roundtail chub is restricted to Pahranagat Creek south of the town of Ash Springs, which is approximately 7 miles north of the proposed Alamo project site. Demand for water to support development within the Alamo area may affect water availability in the Pahranagat Creek, associated springs, and lakes within the Pahranagat NWR, which could impact the fishes that rely on this water. As a condition of their permit to pump water to support development of the proposed Alamo project, Lincoln County is required to monitor and report the quantity of water diverted on at least a quarterly basis, and the results of the monitoring be provided to the USFWS. Regular monitoring and reporting should ensure that the USFWS's senior water rights for the refuge are protected, and that habitat for the fishes is maintained. These measures should also ensure habitat is maintained for southwestern willow flycatchers and yellow-billed cuckoos that breed in Pahranagat Valley.

Wintering bald eagles are known to frequent the areas surrounding the town of Alamo (Environsciences 2006), and may possibly use the land within the proposed Alamo project site for hunting prey. Development of this site may reduce the prey base available to wintering bald eagles; however, the amount of habitat that would be altered would be very small in comparison to the overall undeveloped land available to wintering bald eagles in Pahranagat Valley. No bald eagle nests or roosts are known to occur within the boundaries of the proposed development. Demand for water to support development within the Alamo area may affect water availability in the Pahranagat Creek, associated springs, and lakes within the Pahranagat NWR, which could indirectly impact bald eagles if reduced water availability leads to loss of cottonwood and willow trees used by eagles for roosting. However, as described above, groundwater monitoring and submission of quarterly reports to the USFWS should protect senior water rights for the refuge and ensure that water flow is sufficient to support roosting habitat for the eagle.

VIRGIN RIVER SPECIES

Development of the LCLA lands will require construction of flood control structures in the drainages that flow throughout the LCLA area. These drainages flow south and terminate in the Virgin River, where woundfin, Virgin River chub, southwestern willow flycatcher, Yuma clapper rail, and yellow-billed cuckoo are known to occur. Manipulation of natural drainages may result in reducing the amount of allochthonous material transported to the river, which is needed for nutrient input into a system naturally low in nutrients. Re-engineering of drainages may also cause water to flow faster than normal, resulting in erosion of streambanks. Non-point source pollution from urban runoff may also enter drainages and flow down to the river.

As described for the flycatcher in the previous section, avoidance and minimization measures would be implemented to ensure effects to listed species in downstream habitats are insignificant or discountable. Furthermore, alteration of some of the drainages may entail obtaining permits under Section 404 of the CWA, which will require that the project proponent modify drainages designated as WOUS in a manner that preserves the function and value of the drainage system. If the USACE determines that modifications may affect a federally-listed species, they will be required to consult with the USFWS under Section 7 of the ESA to minimize potential effects to listed species.

MEADOW VALLEY WASH SPECIES

Railroad construction, maintenance, and urgent response activities, as well as flood control activities to protect the railroad and City of Caliente, may affect the Meadow Valley Wash desert sucker, Meadow Valley Wash speckled dace, and Arizona toad. Construction, maintenance, and flood control activities requiring the movement of sediment, realignment of the channel, or diversion of water may all lead to mortality of fish and toads. Avoidance and minimization measures would be implemented under the SLCHCP (also described in Section 3.2.2.3 in this FEIS) to ensure effects to listed species in the Meadow Valley Wash are insignificant or discountable. The conservation measures, identified in Section 3.2.2.3 herein, to be implemented to offset

potential effects to desert tortoise and southwestern willow flycatcher from the proposed Covered Activities will also benefit the Meadow Valley Wash species (i.e., dace, sucker, Arizona toad).

RARE AND STATE LISTED PLANTS

Threecorner milkvetch, sticky wild buckwheat, and Las Vegas buckwheat occur within the southeastern corner of Lincoln County, in close proximity to the LCLA lands. Plants within the LCLA lands would be replaced by development, and plants occurring on lands adjacent to the LCLA lands may be subject to disturbance and competition from invasive species from increased recreational and other human uses. Threecorner milkvetch and sticky wild buckwheat are protected by the State of Nevada, and developers would be required to obtain a permit from the Nevada Division of Forestry prior to removal of either of these species. Also, these plants are considered species of concern by the BLM, and plants occurring on BLM-administered land would be managed in accordance with BLM's policies for protection of species of concern. The status of these two species within the LCLA lands is unknown, although surveys for these species have been conducted for other projects adjacent to or near the LCLA lands (e.g. 640-acre Section 36 disposal parcel) and have not found them. These species have been found in the Beaver Dam Slope area close to the extreme northeastern corner of the LCLA boundary.

The location of these two species in Lincoln County represents the extreme northern extent of their distribution. Most of the known populations of these two species occur in Clark County. All known occurrences of these species occur outside the boundary of the LCLA lands. Avoidance and minimization measures would be implemented under the SLCHCP (refer to Section 3.2.2.3) to ensure effects to listed plant species are insignificant or discountable.

The Las Vegas buckwheat also occurs in Lincoln County but is known to occur only on mining claims in the vicinity of the 640-acre Section 36 disposal parcel within the Covered Area. It is not known to occur on any non-federal lands covered under the SLCHCP. Recent surveys conducted in Lincoln County by the BLM in October 2007 found no evidence of this species other than the mining claim population. Mining is not a Covered Activity in the SLCHCP; therefore, avoidance and minimization measures would be implemented under the SLCHCP (refer to Section 3.2.2.3) to ensure effects to the buckwheat are insignificant or discountable.

5.4.2.2 Wildlife

5.4.2.2.1 Direct Effects

Development of parcels would result in the loss or alteration of up to 30,674 acres of wildlife habitat. However, development design and the implementation of the avoidance and minimization measures identified in Section 3.3 of this FEIS for the Covered Species would limit impacts to wildlife habitat.

LAND DEVELOPMENT AND UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

LCLA LANDS

The development of the planned communities and associated infrastructure (i.e., utility lines and other utility structures) would result in permanent adverse effects to wildlife habitat through direct loss, change in vegetation, and conversion to landscaped areas.

Roads constructed on LCLA lands and the traffic on these lands would adversely affect wildlife by creating the opportunity for road mortality. Construction of roads in the LCLA lands would include culverts that would allow for wildlife to pass under the roads, thereby limiting this mortality. Through the cooperative local government approval process between the City of Mesquite and Lincoln County, new development would be required to conduct appropriate traffic impact analyses, identify mitigation measures, construct adjacent roadway facilities, and participate in funding off-site transportation improvements. Each of the developers is required to prepare a comprehensive transportation study for the Master Planned community (BLM 2001).

In addition, the developers will implement the "LCLA Road, Fence, and Trail Plan" to discourage unauthorized vehicle access to protect wildlife and habitat within the adjacent ACECs.

MEADOW VALLEY INDUSTRIAL PARK

Increased traffic in certain localized areas would also occur from future development activity of the Meadow Valley Industrial Park. This would slightly increase the likelihood of road mortality of certain wildlife species. Because travel would occur primarily during business hours during daylight when most wildlife species are less active, road mortality would still remain relatively low.

ALAMO INDUSTRIAL PARK AND COMMUNITY EXPANSION AREA

Construction and building activities associated with the Alamo Industrial Park and Community Expansion Area would result in the disturbance of approximately 855 acres. Impacts to wildlife resulting from these development activities would consist of habitat loss, displacement resulting from removal of vegetative cover, loss of forage for wildlife and nesting habitat for shrub and ground nesting birds, collisions with road and off-road vehicles, illegal shooting, unlawful collection, noise pollution, and introduction of domestic animals. Large acreages of habitat similar to this site are available in the surrounding regions; therefore, no native wildlife species would be eliminated as a result of development of the Alamo Industrial Park and Community Expansion Area.

Increased traffic in certain localized areas would also occur from the development of the Alamo Industrial Park and Community Expansion Area, which would increase the likelihood of road mortality.

FUTURE BLM LANDS IDENTIFIED FOR DISPOSAL

Under the Preferred Alternative, if an additional 4,101 acres of BLM disposal lands are developed within the Covered Area which includes the 640-acre Section 36 disposal parcel plus the 3,461 acres around Alamo, the effects from construction and increased traffic on wildlife would occur across a greater area. However, implementation of the avoidance and minimization measures identified in Section 3.3 of this FEIS for the Covered Species would limit these impacts to wildlife habitat.

OTHER ACTIVITIES ON PRIVATE LANDS WITHIN THE COVERED AREA

Under the Preferred Alternative, the City of Caliente would periodically clear debris and fill from the Meadow Valley Wash section that runs through the City and construct a linear park and other pedestrian access along the Wash. These activities would result in the periodic, temporary disturbance of wildlife habitat along a portion of the Meadow Valley Wash, as well as the potential for permanent alteration of the riparian corridor along one bank of the Wash.

To offset the localized effects of these activities in the City of Caliente, habitat restoration would occur in the impacted area, as well as other areas along the Meadow Valley Wash. In addition, a long-term conservation strategy would be implemented through the combined efforts of Lincoln County, City of Caliente, BLM, and USFWS, which would result in improved habitat conditions for the flycatcher along the length of Meadow Valley Wash. Habitat restoration projects for the southwestern willow flycatcher are also expected to be beneficial for other fish and wildlife species.

The conservation and mitigation measures to be implemented under the SLCHCP (also described in Section 3.2.2.3 herein) to offset the potential impacts to the Covered Species from the Covered Activities will also minimize effects to other wildlife species. The general mitigation measures to be implemented for all the Covered Activities (refer to Section 3.3) would limit loss or harm of individuals. Habitat loss would not result in removal of sensitive areas or rare habitat types. Furthermore, Lincoln County Code, Title 14, Appendix E - Weed Management Plan requires every developer to have a County approved plan in place to control invasive plants. In addition, an approved plant list in Appendix D of the same Code for the planting of native species entails a mixture of native plants established in cooperation with University of Nevada biologists. Therefore, the localized adverse effects on wildlife species would not substantially affect species at a population level, and effects would not be considered significant.

Effects from road maintenance and railway activities on other wildlife species would be similar to those described for the No Action Alternative, although conservation measures for the Covered Species under the Preferred Alternative, implementation of the SLCHCP, would further reduce the potential for sedimentation and contamination of waters and the extent of disturbance to habitats within these rights-of-way. The conversion of existing private lands along the Meadow Valley Wash from previously undisturbed agricultural

or grazing land to urban use or from grazing land to irrigated and/or cultivated agricultural fields could result in increased sedimentation and contamination of the Meadow Valley Wash, although the conservation measures identified in Section 3.2.2.3 herein for the Covered Species would also limit impacts to wildlife habitat.

5.4.2.2.2 Indirect Effects

Best management practices would be used to limit sediment entering the Meadow Valley Wash from flood control activities, although the potential for adverse effects to fish, aquatic invertebrates, and their habitat would exist. Other indirect impacts to wildlife species would result from increased public access and project maintenance from the proposed land development projects. Increased OHV use on surrounding lands through increased access and an increased population in Lincoln County could result in effects to wildlife species. Indirect effects as a result of increased human activity could result in avoidance behavior of the area by more solitary species and increases in secondary predators such as ravens and foxes. This could result in adverse effects to species preyed upon by these species. However, implementation of the avoidance and minimization measures described in Section 3.2.2.3.1 herein would reduce the level of indirect effects to wildlife inhabiting the Covered Area.

5.4.2.3 Vegetation

5.4.2.3.1 Direct Effects

Development of the LCLA lands and Alamo Industrial Park and Community Expansion Area and future development of the Meadow Valley Industrial Park and BLM lands identified for future disposal would result in the loss of up to 30,674 acres of native vegetation within the Covered Area. However, the avoidance and minimization measures implemented under the SLCHCP (also described in Section 3.2.2.3 herein) to offset the potential impacts to the Covered Species from the Covered Activities would limit impacts to vegetation within the Covered Area.

LAND DEVELOPMENT AND UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

LCLA LANDS

The 13,500 acres of LCLA lands would be developed for residential, commercial, and public uses. Aside from the open space lands, native vegetation would be permanently removed in this area. For instance, recreation lands developed into parks would result in the permanent alteration and/or loss of vegetation communities, through converting native vegetation into parks, ball fields, and other recreational areas. Similarly, construction of utility lines and other utility structures would result in permanent adverse effects to vegetation through direct loss and conversion to landscaped areas. Flood control structures on LCLA lands would cause ground disturbance and alter drainage patterns in combination with increased impervious surfaces from development. These changes in water movement over the ground surface and infiltration, along with ground disturbance, would have the potential to alter vegetation communities in localized areas.

Impacts to native vegetation on the LCLA lands from development would be minimized through the use of BMPs (e.g. silt fences and straw bales, refer to Section 3.2.2.3.1) and adherence to Lincoln County Code, Title 14 which requires that every developer have a County approved "Weed Management Plan" in place to control invasive species prior to development.

MEADOW VALLEY INDUSTRIAL PARK

The construction of the industrial park resulted in the permanent loss of vegetation on a portion of the 103-acre site. Vegetation surrounding the industrial park has previously been disturbed. Should future development associated with the 103- acre parcel occur then implementation of the BMPs and mitigation measures described in Section 3.3 herein would minimize temporary disturbances to vegetation in other areas of the site to prevent any adverse effects.

ALAMO INDUSTRIAL PARK AND COMMUNITY EXPANSION AREA

Construction of industrial buildings and residential areas associated with the Alamo Industrial Park and Community Expansion Area would result in the disturbance of approximately 855 acres of vegetation. Although the structure of the vegetation communities would be modified, the industrial and residential developments and open space/parks and other landscaped areas would be expected to produce adequate cover to stabilize the site and provide vegetated areas for wildlife and aesthetics. Impacts to vegetation from development would be minimized through the implementation of BMPs (e.g. silt fences and straw bales, refer to Section 3.2.2.3.1 herein) and adherence to County building codes and ordinances described above under the LCLA Lands.

FUTURE BLM LANDS IDENTIFIED FOR DISPOSAL

Under the Preferred Alternative, if an additional 4,101 acres of BLM disposal lands are developed within the Covered Area which includes the 640-acre Section 36 disposal parcel plus the 3,461 acres around Alamo, the effects from construction and development activities on vegetation would occur across a greater area. Most of the proposed development activities would take place within the southern desert shrub community, which is the vegetation type abundant within these two sites. Joshua trees, plains prickly pears, beavertail prickly pears, and silver cholla are also found around the Alamo area, and their commercial harvest is regulated by Nevada Revised Statute 527.060-.120 Protection of Christmas Trees, Cacti and Yucca. These species of yucca and cacti are abundant in the surrounding region; therefore, no native plant communities would be eliminated as a result of construction activities. Furthermore, implementation of the avoidance and minimization measures identified in Section 3.3 of this FEIS for the Covered Species would limit impacts to the vegetation communities.

OTHER ACTIVITIES ON PRIVATE LANDS WITHIN THE COVERED AREA

Flood control activities in the portion of the Meadow Valley Wash that runs through the City of Caliente will result in the removal of approximately 18 acres of riparian vegetation in the bottom of the Wash, of which 8.3 acres is currently considered to be suitable for breeding flycatchers. Mitigation measures would ensure that flood control activities near the City of Caliente would not remove mature riparian vegetation if possible and would replace disturbed vegetation with native riparian vegetation. However, because the proposed flood control project would alter the floodplain of the stream segment, riparian vegetation would change as a result of reduced water levels in the stream's current floodplain. Temporary disturbance of vegetation would also occur.

Impacts of road maintenance and railway activities would be similar to those described under the No Action alternative, although mitigation measures would reduce impacts to mature riparian vegetation. The conversion of existing private lands along the Meadow Valley Wash from previously undisturbed agricultural or grazing land to urban use or from grazing land to irrigated and/or cultivated agricultural fields would result in the loss of vegetation.

Overall, vegetation lost or modified as a result of development activities on LCLA lands, Alamo Industrial Park and Community Expansion Area and future BLM lands identified for disposal and modified through Lincoln County road maintenance and UPRR railway activities and/or the possible conversion of existing private lands from one land use to another land use would be a small percentage of total vegetation within the Covered Area (less than one percent of the total). Sensitive vegetation areas would be avoided, with only minimal effects to these areas from flood control activities. Therefore, direct adverse effects would not be substantial.

5.4.2.3.2 Indirect Effects

Ground disturbance from maintenance activities for roads, railways, and the possible conversion of existing private lands from one land use to another land use would allow invasive species to expand along riparian corridors, roadways, railbeds, and elsewhere on non-federal lands in the Covered Area. Noxious weeds could also spread via vehicles and soil disturbance activities during construction of development projects. Best management practices for road maintenance and railway activities (refer to Sections 6.61 and 6.71, respectively in the SLCHCP) would minimize the expansion of invasive species in these areas. Invasive plant

control actions implemented under the SLCHCP would reduce the overall amount of invasive plants within the Covered Area, resulting in a beneficial effect to vegetation in the area.

Public access to currently undeveloped areas would increase and could result in trampling of vegetation, proliferation of road incursions, and spread of invasive weeds by foot and vehicles. Improved access to the area may also encourage increased OHV use and related impacts on vegetation. Development of the LCLA Fencing and Trail Plan will help offset impacts to vegetation from increasingly easy public access, as well as the adherence to County building codes and ordinances described above under the LCLA Lands.

5.4.3 Alternative A

5.4.3.1 Threatened and Endangered Species and Species of Concern

5.4.3.1.1 Direct Effects

Effects from development of the LCLA lands and Alamo Industrial Park and Community Expansion Area and future development of the Meadow Valley Industrial Park and future BLM lands identified for disposal would be the same as described for the Preferred Alternative. Potential increases in additional development along the Pahranagat Wash from Alamo to Hiko could result in further loss or alteration of habitat for threatened and endangered species, as up to 7,456 acres of land could be altered through this additional development and 2,544 acres of additional private land near Carp and Elgin could be affected by land conversation activities. However, the same conservation and mitigation measures that applied under the Preferred Alternative would limit adverse effects where possible.

The development of an additional 7,456 acres of land from Alamo to Hiko would result in the loss or alteration of additional acres of potential desert tortoise habitat. The riparian portions of this additional land include habitat for the southwestern willow flycatcher, yellow-billed cuckoo, Yuma clapper rail, Pahranagat roundtail chub, White River springfish, and Hiko White River springfish. If riparian habitats were to be developed or modified for flood control activities related to development, then these species could be adversely affected. No critical habitat for desert tortoise or southwestern willow flycatcher has been designated within this area, although critical habitat for the White River springfish and Hiko White River springfish do occur in this area. Effects to this critical habitat could occur, although specific plans for development would deliberately avoid these areas. Therefore, no direct effects to White River springfish, Hiko White River springfish, or Pahranagat roundtail chub would be expected under this alternative.

Effects to the desert tortoise on these additional acres of land would be the same as described under the Preferred Alternative. Also, the increased population would result in increased vehicles on the roads and highways of the Covered Area, which could increase road mortality of desert tortoise.

Increased private lands included in this Alternative around Carp (1,372 acres) and Elgin (1,172 acres) could result in the conversion of existing private lands from previously undisturbed agricultural land to urban use or grazing land to agricultural use, which would result in habitat loss for southwestern willow flycatcher, although conservation measures for southwestern willow flycatcher on riparian habitats in the Covered Area would minimize and mitigate alterations of this habitat. Effects to desert tortoise from potential land conversion activities would be the same as described for the Preferred Alternative.

Wintering bald eagles are known to frequent the areas surrounding the town of Alamo (Envirosciences 2006). Development of these additional lands would reduce the amount of habitat available to wintering bald eagles; however, the amount of habitat that would be altered would be very small in comparison to the overall undeveloped land available to wintering bald eagles in Lincoln County, which is approximately 6.8 million acres. Also, no surface waters occur on these lands to provide foraging habitat for the bald eagle.

The conservation and mitigation measures to be implemented under the SLCHCP (refer to Section 3.3 herein) to offset the effects to the Covered Species from implementation of the Covered Activities would also minimize effects to the Virgin River species (i.e., woundfin, Virgin River chub, etc.), Meadow Valley Wash species (i.e., Meadow Valley Wash desert sucker, Meadow Valley Wash speckled dace, and Arizona toad), and any rare plant species (i.e., threecorner milkvetch, sticky wild buckwheat, and Las Vegas buckwheat).

5.4.3.1.2 Indirect Effects

Because much of the increased acreage proposed for development under this Alternative would occur around the area of Alamo up through Hiko, the potential for sedimentation and erosion to effect the Pahranagat roundtail chub, Hiko White River springfish, and White River springfish which occur in the Pahranagat Wash, would increase. These effects could potentially affect critical habitat for Hiko White River springfish and White River springfish, which are located at springs that connect with the Pahranagat Wash/White River. However, conservation and mitigation measures such as best management practices for erosion and sedimentation control would minimize these effects.

If development on existing private lands around Carp and Elgin were to occur, the potential for sedimentation and contamination of the Meadow Valley Wash would exist. However, conservation measures would minimize the potential to the Meadow Valley Wash species where possible.

Indirect effects to the other listed and candidate species and species of concern within the Covered Area under Alternative A would be the same as described for the Preferred Alternative but at a slightly greater scale as the potential acreage to be disturbed is greater than under the Preferred Alternative. Such indirect effects include the spread of invasive species as a result of construction and maintenance activities, modification of habitat, and removal of vegetation. However, the general avoidance and minimization measures described in Section 3.3 herein combined with existing conservation and management programs for the Virgin River and Pahranagat Valley species would minimize the potential indirect effects to these species.

5.4.3.2 Wildlife

5.4.3.2.1 Direct Effects

Effects from development of the LCLA and Alamo parcels and future development of the Meadow Valley Industrial Park and future BLM lands identified for disposal would be the same as described for the Preferred Alternative. Potential increases in additional development could result in further loss or alteration of wildlife habitat on up to 44, 135 acres. However, the same conservation and mitigation measures that applied under the Preferred Alternative would limit adverse effects to wildlife where possible.

The increased population also would result in increased vehicles on the roads and highways of the Covered Area, which could increase road mortality of terrestrial wildlife. The conversion of existing private lands around Carp (1,372 acres) and Elgin (1,172 acres) from previously undisturbed agricultural or grazing land to urban use or from grazing land to irrigated and/or cultivated agricultural fields could result in habitat loss for upland and riparian species, although the conservation measures proposed for the flycatcher under the SLCHCP would minimize alterations of this habitat.

5.4.3.2.2 Indirect Effects

Indirect effects would be similar to those described for the Preferred Alternative, although at a somewhat greater magnitude. An increase in developed land for residential purposes would result in an increase in indirect potential impacts to fish and wildlife and their habitat through increased recreation in the Covered Area.

5.4.3.3 Vegetation

5.4.3.3.1 Direct Effects

Effects from development of the LCLA and Alamo parcels and future development of the Meadow Valley Industrial Park, future BLM lands identified for disposal, and additional private lands proposed for development would be the same as described for the Preferred Alternative. Potential increases from additional development could result in further direct loss of vegetation on up to 44, 135 acres. However, the same conservation and mitigation measures that applied under the Preferred Alternative would limit adverse effects to vegetation where possible.

The conversion of existing private lands around Carp (1,372 acres) and Elgin (1,172 acres) from previously undisturbed agricultural or grazing land to urban use or from grazing land to irrigated and/or cultivated agricultural fields could result in vegetation loss and modification. Again, the implementation of the general avoidance and minimization measures described in Section 3.3 herein would minimize adverse effects from ground disturbance activities to native vegetation where possible.

5.4.3.3.2 Indirect Effects

Indirect effects would be similar to those described for the Preferred Alternative, although an increase in developed land for residential purposes would result in an increase in potential impacts to vegetation through increased recreation in the Covered Area.

5.5 HYDROLOGY AND WATER QUALITY

5.5.1 No Action Alternative

5.5.1.1.1 Direct Effects

Under the No Action Alternative, no development of the LCLA lands and Alamo Industrial Park and Community Expansion Area or future development of the Meadow Valley Industrial Park and future BLM lands identified for disposal would occur. Therefore, no associated effects to hydrology or water quality would occur.

Maintenance of roads and railway activities could result in sediments and hydrocarbon contaminants entering the surface waters of the Covered Area, through activities occurring adjacent to the Meadow Valley Wash. Best management practices are currently being used by Lincoln County and UPRR to minimize the potential for sedimentation and contamination of surface waters; however, temporary degradation of surface water quality is still a possibility.

Because no increases in population would occur, no increases in demand for water would be likely to occur. Therefore, no effects to groundwater would be expected and surface water flows would be expected to remain as they are currently.

5.5.1.1.2 Indirect Effects

No indirect effects to hydrology or water quality would be anticipated under the No Action Alternative.

5.5.2 Preferred Alternative

5.5.2.1 Hydrology

5.5.2.1.1 Direct Effects

Under the Preferred Alternative, potential direct effects to hydrology could occur as a result of land development and flood control activities.

LAND DEVELOPMENT AND UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

LCLA LANDS

Development activities on LCLA lands could result in the alteration of sheet flow and surface flows through the creation of impervious surfaces and alterations in localized elevations. Implementation of mitigation measure such as buffers along all major ephemeral washes would limit affects to these surface waters and thereon downstream, but alteration of minor ephemeral washes could alter localized flows.

An estimated 44,500 housing units could be developed over the course of the incidental take permit under this alternative. Based on an estimated need for 1 acre foot of water per dwelling unit per year, 21,377 afy would be needed after 20 years (Swainston 2001 as cited in BLM 2001). An administrative draft for the Lincoln County Land Act Groundwater Development and Utility Right-of-Way Project is currently being developed. The permitted groundwater rights filed with the Nevada State Engineer's Office for the Tule Desert HA from which water will be extracted to supply the LCLA lands are currently limited to the Tule Desert well (with an annual duty of 3.62 afy) and one LCWD well (with an annual duty of 2,100 afy). Pending water well applications for the Tule Desert HA include one LCWD and three VVWD applications. Diversion rates for these applications vary between 6 and 10 cfs and are associated with municipal or quasi-municipal use. An additional six applications for a total of 30 cfs filed by LCWD in March 2007 are also still pending (NDWR 2007). An application for an additional 7,240 afy is being held in abeyance until further data is collected and submitted to the Nevada State Engineer.

Issuance of the water rights permit to LCWD for groundwater extraction in the Tule Desert HA required the development and implementation of a hydrological study to determine and monitor groundwater status in the Tule Desert basin. The outcome of this study will be used to base future decisions by the State Engineer to appropriate additional groundwater to LCWD and VVWD.

Other potential effects to hydrology, including the construction of detention basins for flood control and modification of drainage channels to serve the new communities, are being addressed in subsequent NEPA documents for the LCLA Groundwater Development and Utility Right-of-Way Project.

In addition, as part of the terms and conditions of the LCLA of 2000 Phase I Implementation Environmental Assessment (BLM 2001), the developers will prepare a Storm Water Pollution Prevention Plan (SWPPP) that provides best management practices (BMPs) for controlling erosion and sedimentation during construction. The SWPPP will be prepared to obtain coverage under the general storm water permit program administered by the Bureau of Water Pollution Control, Nevada Division of Environmental Protection (NDEP). Coverage under the general permit will be required for ground disturbing activities greater than 5 acres in extent. The BMPs will include, but are not limited to, silt fences, water bars, staked straw bales, and detention basins. The SWPPP must be approved by NDEP prior to construction. In addition to the SWPPP, the developers will prepare a comprehensive drainage study for the community that contains an analysis of on-site and off-site drainage and the necessary improvements that will meet the requirements of the Nevada Drainage law and will comply with the National Pollutant Discharge Elimination System. Also, a draft Hydrology Monitoring and Mitigation Plan (HMMP) has been developed for the Lower Virgin River Basin in Nevada to monitor changes in groundwater supply sources and river flow to anticipate future changes that could modify threatened and endangered species habitat within the Virgin River floodplain. The BLM is committed to assist with implementation of the HMMP using proceeds from the LCLA land sales.

MEADOW VALLEY INDUSTRIAL PARK

The Meadow Valley Industrial Park is situated in the Meadow Valley Hydrologic Area. Groundwater in this area flows from recharge areas in the uplands to discharge areas along streams that drain the mountains. There are no municipal wells located in the vicinity of the proposed Meadow Valley Industrial Park; however, sufficient water production capacity exists to meet anticipated demands of the Meadow Valley Industrial Park (average consumption rate of 52,200 gallons of water per day). The small localized changes in hydrology from the Industrial Park would not be expected to affect surface water hydrology in this area.

ALAMO INDUSTRIAL PARK AND COMMUNITY EXPANSION AREA

The Alamo Industrial Park and Community Expansion Area is located within the Pahranagat Valley Hydrographic Basin (Basin 209) (State of Nevada 1991). Based on records filed with the Nevada State Engineer, the nearest developed municipal public water supply well is located near the intersection of Main Street and 1st South Street, Alamo, which is approximately 2,500 feet west of the Alamo Industrial Park and Community Expansion Area. Water supply to the town of Alamo is provided by the Alamo Sewer and Water General Improvement District (ASWGID), which has been granted 284.65 million gallons (Mg) of domestic water use annually by the State Engineer.

The Nevada State Engineer has approved 215.5 acre-feet of water rights for the proposed industrial park development. The 215.5 acre-feet of water equates to 192,400 gallons per day (gpd), which was identified as the maximum water demand for the proposed industrial park (Consulting Engineering Services, Inc. 1999). An extension of time to complete water system improvements was approved by the Nevada State Engineer to preserve the 215.5 acre-feet of groundwater rights held by Lincoln County for the proposed industrial park development.

Development of the Alamo Industrial Park and Community Expansion Area would impact the water supply and quality in this area. The Alamo Industrial Park Well No. 1 Construction and Testing Report estimated a maximum water demand at build out of the industrial park to be 192,400 gallons per day (Consulting Engineering Services, Inc. 1999). This estimate only considered the demand from the industrial park and did not analyze the demands created by the associated residential development. In addition to the 215.5 acre feet of water rights approved by the Nevada State Engineer, the ASWGID has approximately 179.15 Mg available each year for future development.

The ASWGID water system is at 65 percent of capacity with 392 water hookups, of which 308 are active. Also, based on current service levels of 308 active hookups using 105.5 mg of water annually, the available appropriation of 179.15 mg would not be sufficient to service an additional 1,800 residential hookups created at buildout of the Community Expansion Area. Thus, the Project Proponent would develop Well AIP-1 within the Project Area to provide water service to the industrial park and residential development. Water from AIP-1 would be pumped to the existing ASWGID tank located on the bluff on the west side of U.S. 93. A second water tank could also be developed on the hillside near the eastern boundary of the Project Area within Section 9. In addition, the ASWGID could elect to transfer the point of diversion from existing water rights at wells in the valley bottom to AIP-1 site and increase pumping from the well. Nevertheless, additional water rights would need to be secured and additional water resources developed in order to meet the needs of the Project at final buildout.

Lincoln County has acquired a permit from the State Engineer to pump approximately 215 acre-feet of water annually in the Pahranagat Valley to support development of the Alamo Industrial Park. As a condition of the permit, Lincoln County is required to monitor and report the quantity of water pumped and provide results of the monitoring to the USFWS. This will ensure that senior water rights held by the USFWS for the Pahranagat NWR are not affected by water development for the industrial park.

FUTURE BLM LANDS IDENTIFIED FOR DISPOSAL

Under the Preferred Alternative, if an additional 4,101 acres of BLM disposal lands are developed within the Covered Area which includes the 640-acre Section 36 disposal parcel plus the 3,461 acres around Alamo, then the development of these parcels could impact the water supply and quality in these areas.

Locally high-intensity rainfall events could cause the local washes in or near the 640-acre Section 36 disposal parcel to carry high volumes of runoff for short periods of time. The flooding potential of this area results mainly from flows in the smaller local washes and not from flows in either the Toquop Wash or the South Fork Toquop Wash; the two principal surface water drainage features in this area. This conclusion is based on the fact that each of these larger washes has cut deep canyons or arroyos within the Covered Area that are anticipated to contain flows that correspond to a maximum 100-year return interval runoff events. Future development of this parcel could create areas that are impervious (covered by impermeable surfaces such as roofs, roads, parking areas), which could increase the amount and rate of flow of runoff from local storms. It is recognized that the lack of complete information in these areas may lead to differences of professional scientific opinion on the degree of potential environmental consequences both to groundwater resources and to flows in the Virgin River within the lower Virgin River Valley, as a result of development of the 640-acre Section 36 disposal parcel. In addition, inasmuch as the groundwater resources of the Tule Desert have not been developed to date, the potential groundwater level declines and possible changes in water quality resulting from development of this parcel can only be estimated. Moreover, the combination of incomplete information, coupled with different available approaches in making these estimates, may lead to differences of opinion as to what the potential water level declines are likely to be.

Future development of the disposal lands around Alamo could result in the alteration of sheet flow through the creation of impervious surfaces and alterations in localized elevations. Furthermore, flood control structures in

the area would likely be necessary to address changes in peak flows in the Pahranagat Wash from increases in impervious surfaces across 3,461 additional acres of non-level terrain.

OTHER ACTIVITIES ON PRIVATE LANDS WITHIN THE COVERED AREA

City of Caliente's flood control operations inherent with the proposed expansion of the Meadow Valley Wash floodplain and levee construction within the City's limits have the potential to alter stream flow and sediment transport. These effects would be considered adverse but would not be significant due to the limited changes in hydrology anticipated to the total system and because of project design. Effects of road maintenance and railway activities and the potential conversion of existing private lands along the Meadow Valley Wash from previously undisturbed agricultural or grazing land to urban use or from grazing land to irrigated and/or cultivated agricultural fields would be similar to those described under the No Action Alternative. Riparian restoration efforts proposed by the SLCHCP along the Meadow Valley Wash (refer to Section 3.2.2.3 herein) would offset these effects and would have beneficial effects to the hydrology of the Wash.

5.5.2.1.2 Indirect Effects

No indirect effects to surface water would be expected from increases in impervious surfaces.

5.5.2.2 Water Quality

5.5.2.2.1 Direct Effects

For each of the development projects, a SWPPP would be developed to obtain coverage under general storm water permit program administered by the Bureau of Water Pollution Control, Nevada Division of Environmental Protection (NDEP). This would minimize the potential for storm water to contribute to reduced water quality.

LAND DEVELOPMENT AND UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

LCLA LANDS

No perennial surface waters occur in the LCLA lands. During construction, earthmoving activities could increase the potential for erosion from precipitation, which could in turn contribute additional suspended solids (sediment load) to the runoff in the local washes. However, best management practices described in the SWPPP would be used to minimize the amount of sedimentation. Based upon the nature of development and the depths to groundwater, proposed development on the LCLA lands would not affect the quality of drinking water for Mesquite and nearby Bunkerville, which receive well water from deep aquifers. No long-term adverse effects to water quality would occur as a result of the development of the LCLA lands.

MEADOW VALLEY INDUSTRIAL PARK

No long-term adverse effects to water quality would occur as a result of the constructed Meadow Valley Industrial Park building or site.

ALAMO INDUSTRIAL PARK AND COMMUNITY EXPANSION AREA

During the construction phase, development of the Industrial Park and Community Expansion Area could impact water quality. However, a stormwater permit would be obtained for the Project and implemented to minimize impacts to surface and groundwater quality associated with increased sedimentation and stormwater runoff. In addition, the ASWGID would address additional sewer treatment demands and wastewater discharges to meet permit limits. Therefore, any impacts to water quality as a result of this project would be minimal.

In addition, the ASWGID would address additional sewer treatment demands, and wastewater discharges would be treated to meet permit limits. Therefore, any impacts to water quality would be minimal.

FUTURE BLM LANDS IDENTIFIED FOR DISPOSAL

Future development of the BLM lands identified for disposal under the Preferred Alternative, specifically during the construction phase, could have impacts on water quality from sedimentation and stormwater runoff. However, an SWPPP would need to be developed prior to development of either of the disposal lands to minimize the potential for storm water and increased sedimentation to contribute to reduced water quality.

OTHER ACTIVITIES ON PRIVATE LANDS WITHIN THE COVERED AREA

Effects to water quality from road and railroad maintenance activities, utility construction, and flood control activities would be minimized with the implementation of BMPs discussed in Section 3.3 herein. BMPs such as silt fences, gravel berms, earthen perimeter dikes, sediment traps and other barriers would minimize temporary and long-term increases in sedimentation of ephemeral washes and downstream streams and rivers. To prevent contamination from fuel and other spills, a waste management program would be in place at construction sites, making contamination unlikely or quickly contained.

The conversion of existing private lands along the Meadow Valley Wash from previously undisturbed agricultural or grazing land to urban use or from grazing lands to irrigated and/or cultivated agricultural fields could reduce some types of non-point source pollution and increase others. However, effects of ground disturbance to riparian areas would be reduced by the conservation and mitigation measures to be implemented under the SLCHCP (refer to Section 3.2.2.3 of this FEIS). This would result in improved water quality to the Meadow Valley Wash through the potential reduction in fecal matter and improved filtering effects of increased riparian areas in the future.

5.5.2.2.2 Indirect Effects

As discussed in the Direct Effects section, the implementation of BMPs would manage stormwater pollutants concurrent with an increase in the numbers of urban source that generate pollutants and reduce the sedimentation levels potentially entering the washes to low levels.

5.5.3 Alternative A

5.5.3.1 Hydrology

5.5.3.1.1 Direct Effects

Effects to hydrology would be similar to those described for the Preferred Alternative. Additional development in the Covered Area could occur in areas adjacent to surface waters, which could result in further increases in impervious surfaces and alterations of peak flows in the Pahranagat Wash. Flood control structures for these areas would be necessary to comply with Lincoln County regulations, which would offset potential increases in peak flows.

Water sources would need to be developed for additional residential developments, which could result in adverse effects to the water supply, depending upon where water would be obtained. However, placement of new water wells and waterlines across lands managed by BLM to serve future development will be subject to consultation under Section 7 of the ESA.

5.5.3.1.2 Indirect Effects

Indirect effects would be similar to those described for the Preferred Alternative.

5.5.3.2 Water Quality

5.5.3.2.1 Direct Effects

Increased development surrounding the Pahranagat Wash would result in an increase of impervious surfaces from the development of additional lands around the Alamo area as well as around Elgin and Carp. Implementation of the avoidance and minimization measures described in Section 3.3 herein would likely reduce the increased sedimentation potentially entering the ephemeral and perennial streams to undetectable levels.

5.5.3.2.2 Indirect Effects

Indirect effects would be similar to those described for the Preferred Alternative.

5.6 FLOODPLAINS, WETLANDS AND WATERS OF THE UNITED STATES

5.6.1 No Action Alternative

5.6.1.1.1 Direct and Indirect Effects

Under the No Action Alternative, no activities would occur that would alter floodplains of perennial streams, wetlands, or WOUS in Lincoln County.

5.6.2 Preferred Alternative

5.6.2.1.1 Direct Effects

LAND DEVELOPMENT AND UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

LCLA LANDS

Based on a reconnaissance survey (BLM 2001), no FEMA-designated wetlands would be affected by development of the LCLA lands, as they do not occur within the site. No surface waters occur on the LCLA lands. However, unnamed and named ephemeral washes could be adversely affected by development activities. Upon further evaluation, should the ephemeral washes on LCLA lands be classified as jurisdictional WOUS, a separate Section 404 permit and accompanying NEPA compliance document with USACE would address potential effects to these ephemeral washes from development of these lands.

MEADOW VALLEY INDUSTRIAL PARK

No part of the industrial park's footprint occurs within the floodplain of the Meadow Valley Wash, and no wetlands or WOUS are associated with this area. Thus, no effects to floodplains, wetlands, or WOUS would occur to this area under the Preferred Alternative.

ALAMO INDUSTRIAL PARK AND COMMUNITY EXPANSION AREA

There are no known perennial drainages, streams, or creeks or wetland/riparian areas that exist within the Alamo Industrial Park and Community Expansion Area; therefore, no effects to floodplains, wetlands or WOUS would occur as a result of activities conducted at this site.

FUTURE BLM LANDS IDENTIFIED FOR DISPOSAL

The future development of the 640-acre Section 36 disposal parcel would not affect wetlands as they do not occur in this area. Development of the Section 36 parcel could affect a number of named and unnamed ephemeral washes (i.e., Halfway Wash, Toquop Wash, South Fork Toquop Wash, and Sam's Camp Wash). With the implementation of BMPs during construction, impacts on WOUS, including ephemeral washes,

would be minor; however, the developer would have to undergo Section 404 consultation with the USACE separate from this NEPA process.

OTHER ACTIVITIES ON PRIVATE LANDS WITHIN THE COVERED AREA

Maintenance of roads and railway activities would occur within the floodplains of the Meadow Valley Wash. Up to 84.3 acres of riparian vegetation could be disturbed by the Covered Activities. A description of the routine maintenance activities conducted by the Lincoln County Road Department within their rights-of-way are discussed in Section 3.2.2.3 of this FEIS. The activities routinely conducted by UPRR within the Meadow Valley Wash area involve construction and maintenance of drainages and other water carrying facilities as discussed in Section 3.2.2.2.4 herein. These types of activities could result in adverse effects to floodplains, wetlands, or WOUS; however, the implementation of the general mitigation measures described in Section 3.3 herein would reduce these potential direct effects. Also, under the SLCHCP, the contribution of funds collected from the applicants whose activities affect riparian habitat along the Meadow Valley Wash will help to enhance or restore riparian habitat elsewhere along the Wash; a direct benefit to the Wash's floodplains and associated wetlands.

It is not the intent of the SLCHCP to provide a mechanism to cover actions by the applicants that may result in potentially significant effects to wetlands and WOUS. These actions would need to be covered under an individual project 404 permit application process. As such, a separate ESA compliance (Section 7 consultation) and NEPA compliance would be required in addition to the USACE permitting process. However, as discussed in Section 2.2 herein, it is the intent of the SLCHCP to streamline Section 7 consultations associated with such permits where the activities and the impacts to endangered species are within the scope of the SLCHCP.

5.6.2.1.2 Indirect Effects

Increased impervious surfaces outside of the floodplains in the areas proposed for development (i.e., LCLA, around Alamo, BLM disposal lands) could increase runoff into floodplains and surface waters during precipitation events. However, with flood control structures in place for each of these areas, the potential for indirect effects would be reduced to insignificant or negligible effects.

5.6.3 Alternative A

5.6.3.1.1 Direct and Indirect Effects

Activities under Alternative A would result in greater potential effects to floodplains, wetlands, and other WOUS than under the Preferred Alternative, because the additional lands considered occur in the Pahranagat Wash floodplain containing wetlands and jurisdictional WOUS. If the development of additional private lands along the Pahranagat Wash between Alamo and Hiko were to occur, then the Pahranagat Wash's floodplains and associated wetlands could be potentially affected. Additional permitting through Section 404 of the CWA would likely be required, which would help offset adverse effects to wetlands and WOUS. Floodplain values could still be adversely affected if construction were to occur in the floodplain.

5.7 CULTURAL AND PALEONTOLOGICAL RESOURCES

5.7.1 No Action Alternative

5.7.1.1.1 Direct and Indirect Effects

Under the No Action Alternative, no activities would occur that would affect cultural or paleontological resources. Road maintenance and railway activities would continue to occur on previously disturbed lands. These activities would have a negligible potential for impacts to cultural or paleontological resources, because if resources were present, they would have already been adversely affected.

5.7.2 Preferred Alternative

5.7.2.1.1 Direct Effects

LAND DEVELOPMENT AND UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

LCLA LANDS

Under the Preferred Alternative, 13,500 acres of land in the very southeastern corner of Lincoln County would be developed for residential housing. Any development agreement for this site would be coordinated with the Nevada State Museum, because important paleontological resources have been previously discovered in the area. The DA would include best management practices and mitigation measures for monitoring construction activities in fossil-rich deposits, recovering important fossil materials encountered, and developing an informational brochure to inform the public about these important fossil resources, and encouraging colleges and universities to assist in assessing, monitoring, and recovering exposed fossil materials (BLM 2001).

If resources were discovered during construction and maintenance activities, mitigation measures described in associated development agreements would require stop-work provisions, avoidance of known or discovered cultural and paleontological resource sites, and appropriate handling of newly discovered materials. These mitigation measures would reduce the level of impact these activities could potentially have on these resources to a point where they would not be substantial under any circumstance.

As part of the development agreement, if any traditional cultural properties were to be identified on LCLA lands, these properties would receive consideration for treatment in accordance with cultural resources protection plans to be prepared by the developer(s).

The purpose of archeological surveys described in the affected environment were to recover and preserve all scientifically valuable cultural resources. The potential for undiscovered cultural resources, such as deeply or shallowly buried cultural materials, does exist despite the archaeological investigations carried out by Albion (2001). Human remains, in particular, may have been missed in the course of field surveys. The BLM would be available at the request of Lincoln County to provide technical expertise and recommendations for any cultural materials found, including human remains.

In the event of an unanticipated discovery of archeological materials or human remains during construction, the DA requires the disposition of these materials follow the procedures contained in the Cultural Resource Protection Plan. Information developed by the BLM for education of construction workers and the public concerning cultural resources would reduce, but not eliminate informal collections or inadvertent damage to these resources. BMPs for confining soil erosion would prevent the exposure and damage of cultural resources from uncontrolled surface runoff events.

A paleontological field reconnaissance of the LCLA lands was conducted on April 23 to April 26, 2001 (Livingston 2001, as cited in BLM 2001). The purpose of the survey was to determine the kinds of landforms and exposures that exist within the project area and assess the potential for discovering significant concentrations of vertebrate fossils. Prior to the 4-day examination, the project area was divided into four different landform types based on visibility of exposures likely to reveal vertebrate fossils. These landform types include stable to accretional surfaces, extremely steep faces, cutbanks, and Badlands. Of the four landforms, the Badlands have the highest potential for exposed vertebrate fossils.

Fossil-bearing rocks are abundant in the project area, occurring as lenses of siltstone with mudcrack impressions and fragmented clay shale with lithified algal balls and tufa-coated rocks. Although these lenses of rocks are the mostly likely place for vertebrate fossils to be found, no such fossils were found during the survey. In addition, no deposits were found that are of such significance that long-term protection is merited, nor were any deposits found that have fossil specimens that merit any intensive recovery program.

Badland areas show the highest vertebrate fossil potential and are the least likely to be developed for residential and commercial development because of steep slopes. In the event that scientifically valuable fossils are encountered during construction, the development agreement would require developer(s) to identify

and protect high value paleontological resources through implementation of a paleontological resources recovery plan approved by the County.

MEADOW VALLEY INDUSTRIAL PARK

In a letter dated November 21, 2000 the Nevada State Historic Preservation Office (SHPO) reviewed the proposed project and determined that, "no historic properties are likely to be found within the area of potential effect for the subject undertaking." Thus, no effect to cultural resources would occur on this site, as none are known to exist (see Section 4.2.7 herein). Paleontological resources are unassessed at this site; however, much of the ground has already been disturbed.

ALAMO INDUSTRIAL PARK AND COMMUNITY EXPANSION AREA

Of the four archaeological sites recorded in the Alamo area, two were recommended eligible for the NRHP. The BLM (2007a) would reserve access to any NRHP eligible sites. In addition, these sites would be avoided by all future development and surface disturbing activities.

FUTURE BLM LANDS IDENTIFIED FOR DISPOSAL

Under the Preferred Alternative, if the additional 3,461 acres of BLM lands identified for disposal around the Alamo area were to be developed in the future, then cultural and paleontological resources would undergo separate Section 106 consultation and NEPA processes prior to land disposal and development.

Cultural resource inventories were conducted to identify archaeological and historical resources on the 640-acre Section 36 disposal parcel. In summary, 19 cultural resources are situated in or near this area. Seven prehistoric rock alignments are recommended as eligible for nomination to the National Register of Historic Places, while 12 sites are recommended as ineligible. Disturbance to resources eligible for the NRHP would be managed in accordance with the Cultural Resources Programmatic Agreement between the BLM and Nevada SHPO for the disposal of these lands. This Programmatic Agreement (PA) contains stipulations to ensure that historic and prehistoric properties eligible for the NRHP would be treated to avoid or mitigate construction-related effects to the extent practicable and to satisfy BLM's Section 106 responsibilities.

OTHER ACTIVITIES ON PRIVATE LANDS WITHIN THE COVERED AREA

The floodplain of the Meadow Valley Wash is comprised of alluvium, or a deep layer of sands which are constantly shifting. Over time, erosion by water would have exposed, transported, and/or degraded any cultural resources in the site. No rock material exists in the area in which to find fossils or other paleontological resources.

No activities on new rights-of-way would occur with respect to road maintenance or railway activities. Cultural or paleontological analysis of effects has already been addressed for sites which already have been disturbed. Therefore, no effects would occur to cultural and paleontological resources as a result of road and railway maintenance activities within the Covered Area under the Preferred Alternative.

The conversion of existing private lands along the Meadow Valley Wash from previously undisturbed agricultural or grazing land to urban use or from grazing land to irrigated and/or agricultural fields would be unlikely to affect cultural and paleontological resources, because these resources would be unlikely to occur in these areas and, if present, are likely to already have been disturbed.

5.7.2.1.2 Indirect Effects

Increases in both surface activities and number of workers during development of these parcels combined with the additional residential population could increase the potential for indirect impacts at archeological and paleontological sites. Indirect impacts are difficult to quantify and control, but they can include increased erosion/sedimentation rates which could damage subsurface cultural materials and also may include illegal collecting within or adjacent to the LCLA lands, which would result in the loss of their research potential.

Development of the LCLA lands and Alamo Industrial Park would be likely to encourage additional development to occur nearby. If cultural resources were present on nearby lands, then such resources could potentially be affected by this increased development pressure.

5.7.3 Alternative A

5.7.3.1.1 Direct and Indirect Effects

Under Alternative A, the potential for increased effects to cultural and paleontological resources could occur from additional development of approximately 7,456 acres beyond those described for the Preferred Alternative. However, until the lands were surveyed for cultural and/or paleontological resources, potential effects would be unknown. Development would not be likely to occur until Section 106 consultation was completed. As described for the Preferred Alternative, if resources were discovered as occurring, mitigation measures could include stop-work provisions, avoidance of known or discovered cultural and paleontological resource sites, and appropriate handling of newly discovered materials. These mitigation measures would reduce the level of impact that activities could potentially have on these resources to a point where they would not be substantial under any circumstance.

The potential conversion of existing private lands near Elgin and Carp to another land use (i.e., urban use) would be unlikely to affect cultural or paleontological resources, as previously described under the Preferred Alternative.

5.8 SOILS AND GEOLOGICAL RESOURCES

5.8.1 No Action Alternative

5.8.1.1 Direct and Indirect Effects

Under the No Action Alternative, no activities would occur that would directly or indirectly affect soils or geological resources. However, County road maintenance and UPRR railway activities could result in localized soil disturbances.

5.8.2 Preferred Alternative

5.8.2.1 Direct Effects

Under the Preferred Alternative, development activities on the LCLA lands and Alamo Industrial Park and Community Expansion Area, and future development associated with the Meadow Valley Industrial Park and BLM lands identified for disposal would result in large amounts of ground disturbance. Soil disturbance would be kept to a minimum and sequential development measures would minimize soil loss to wind erosion. Other best management practices would ensure soils and sediments would not be loss from the area through flooding and/or erosion. Although soils would be superficially disturbed over a larger area (potentially 20,427.3 acres), avoidance, minimization and mitigation measures would minimize soil loss and disturbance. Long-term adverse effects would result from the development of impervious surfaces on top of soils, as this would effectively limit the fertility of these soils through diminishing aerobic microbial processes. Other areas would eventually return to normal productivity and fertility through revegetation with native plants. Across the entire Covered Area, these soil disturbances would occur on less than one percent of the land. Geological resources would not be affected beyond small areas where wells would be placed for drinking water and monitoring.

LAND DEVELOPMENT AND UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

LCLA LANDS

Of the three soil types in the LCLA lands discussed in Section 4.2.8 herein, the badlands soil is highly erosive. However, because slopes are also 15 to 50 percent, it is highly unlikely any development would occur on these lands. As a result, construction would be likely to occur on low to moderately erosive soils. The

implementation of the general mitigation measures (including BMPs) described in Section 3.3 of this FEIS would minimize potential impacts to soils from water and wind erosion. No geologic features or resources would be affected by the Preferred Alternative.

MEADOW VALLEY INDUSTRIAL PARK

If further construction, such as grading activities, was to occur on the 103-acre parcel, then the implementation of the general mitigation measures (including BMPs) described in Section 3.3 of this FEIS would minimize potential impacts to soils from increased runoff and water and wind erosion.

ALAMO INDUSTRIAL PARK AND COMMUNITY EXPANSION AREA

Under the Preferred Alternative, development of the Alamo Industrial Park and Community Expansion Area would impact up to 855 acres of soils. The potential for wind and water erosion of disturbed soils would increase until construction was completed. Potential impacts to soils would be reduced by measures incorporated in the development designs and construction methods, such as the use of BMPs (refer to Section 3.3 herein) and the creation of open space/parks where grass, trees, and shrubs would be planted. Following disturbance-related construction, soil loss would be minimal. No geologic features or resources would be affected by the Preferred Alternative.

FUTURE BLM LANDS IDENTIFIED FOR DISPOSAL

Under the Preferred Alternative, if the BLM disposal lands are developed within the Covered Area which includes the 640-acre Section 36 disposal parcel and 90 percent of the 3,461 acres (approximately 3,115 acres) around Alamo, then up to 3,755 acres of soils could be impacted. Every effort will be made by the developers to minimize the acreage of soils disturbed on these two lands, and implementation of the general mitigation measures (including BMPs) described in Section 3.3 of this FEIS would minimize potential impacts to soils. No geologic features or resources within these areas would be affected by the Preferred Alternative.

OTHER ACTIVITIES ON PRIVATE LANDS WITHIN THE COVERED AREA

Maintenance of roads and railway activities would result in localized soil disturbances at various places along their rights-of-way at different points in time. Additional fill and rock could be placed as needed. BMPs would minimize erosion and soil loss, resulting in minimal adverse effects (refer to Sections 3.2.2.3.4 and 3.2.2.3.5 herein). No effects to geology would occur, as these activities would only occur near the ground surface.

The conversion of existing private lands along the Meadow Valley Wash from previously undisturbed agricultural or grazing land to urban use or from grazing land to irrigated and/or cultivated agricultural fields could disturb up to 586 acres soils. However, the implementation of the general mitigation measures (including BMPs) described in Section 3.3 of this FEIS would minimize potential impacts to soils from water and wind erosion. No geologic features or resources would be affected by the Preferred Alternative.

5.8.2.2 Indirect Effects

Aside from development activities encouraging other development activities, which could also adversely affect soils at a localized scale, no other indirect effects would be likely to occur.

5.8.3 Alternative A

5.8.3.1 Direct and Indirect Effects

Direct and indirect effects to soils and geological resources would be similar to the Preferred Alternative, although the magnitude would be greater as development would occur across a greater area (up to 44,135 acres). However, overall future development in Lincoln County would disturb very little of the approximately 6.8 million acres of land. Any resulting adverse effects would not be substantial or significant. No geologic features or resources would be affected by this Alternative.

5.9 ECOLOGICALLY CRITICAL AREAS

The Covered Area is located within the Northeastern Mojave Desert Tortoise Recovery Unit, which encompasses approximately 1.8 million acres of designated desert tortoise critical habitat with ACEC designations; 1.2 million acres of which are in Nevada. Most critical habitat acres within the Covered Area are also designated as ACECs by the BLM where the desert tortoise receives special management attention; a total of 194,496 acres are designated as ACECs within the Covered Area. The Covered Area contains portions of the USFWS-designated Mormon Mesa and Beaver Dam Slope Critical Habitat Units and BLM-designated Mormon Mesa and Beaver Dam Slope ACECs and the Kane Springs ACEC established for the recovery of the desert tortoise (refer to Section 3.2 of the SLCHCP). Under the Final BLM Ely District RMP/EIS (BLM 2008), the Lower Meadow Valley Wash, situated within the Covered Area of the SLCHCP, was designated as an ACEC. The Meadow Valley Wash hosts a plethora of federally endangered, threatened, and candidate species, as well as Nevada State protected species and BLM Sensitive species. Some of the more prominent terrestrial and aquatic species include the southwestern willow flycatcher (endangered), desert tortoise (threatened), yellow-billed cuckoo (candidate), Meadow Valley Wash desert sucker and speckled dace (sensitive), Arizona toad (sensitive), and chuckwalla (sensitive).

5.9.1 No Action Alternative

5.9.1.1 Direct and Indirect Effects

Because no activities would occur on lands within the Covered Area without issuance of an incidental take permit, no effects to ecologically critical areas would occur. The BLM would continue to manage the desert tortoise ACECs consistent with their land use plan and the Desert Tortoise Recovery Plan.

5.9.2 Preferred Alternative

5.9.2.1 Direct Effects

In the Covered Area for the Preferred Alternative, there are 246 acres of private lands within the Mormon Mesa Critical Habitat Unit for desert tortoise. The existing habitat condition on these parcels was estimated using digital black and white orthophoto quadrangles (DOQs) published between 1994 and 1997. Within the 246 acres, there are 24 acres of heavily fragmented land, 182 acres of moderately fragmented land, and 40 acres of lightly fragmented land. The heavily fragmented parcel contains multiple parallel and perpendicular frequently used roads as well as the railroad bordering the western edge of the parcels. The moderately fragmented parcels contain at least one heavily used county road as well as the railroad. The lightly fragmented parcel contains a narrow two-track road. There are no known plans for changing the current land use within these parcels under the Preferred Alternative except for up to 60 acres, which could potentially be disturbed by UPRR activities. Within the 60 acres or approximately 2 miles of UPRR's right-of-way that traverses designated desert tortoise critical habitat within the Mormon Mesa Critical Habitat Unit, 36 acres are previously disturbed; leaving only 24 acres that are relatively disturbed. No critical habitat for the southwestern willow flycatcher occurs within the Covered Area of the SLCHCP.

The conservation measures to be implemented as part of the proposed action will have direct beneficial effects on the desert tortoise ACECs and the Lower Meadow Valley Wash ACEC. To offset the disturbance of 19,840 acres of desert tortoise habitat on non-Federal property under the Preferred Alternative, the applicants will pay a per-acre disturbance fee to fund mitigation measures (i.e., habitat restoration, assistance with the Head Start Program for the desert tortoise which includes translocation efforts, research, public education and outreach, implementation of the LCLA Road, Fence and Trail Plan, and predator monitoring control) for the residual impacts associated with these activities. During the first year of implementation of the SLCHCP, the USFWS DTRO will work with the IMC to develop a strategy for the design, timing and implementation of the proposed conservation efforts, including restoration of fire-affected Mojave Desert scrub vegetation on public lands, funding research for the ecological implications of fire or studying the effectiveness of a particular management action on nearby BLM land, and/or investigating aspects of disease in resident or translocated tortoises. To offset the potential disturbance of up to 84.3 acres of suitable southwestern willow flycatcher habitat, the responsible party will either contribute $12,000 per acre loss of suitable flycatcher habitat or

replace the loss of native suitable habitat at a 2:1 ratio and the loss of non-native suitable flycatcher habitat with native habitat at a 1:1 ratio. In both cases, funds generated through the SLCHCP will be used for flycatcher habitat creation, enhancement, monitoring, maintenance, and protection. Cumulatively, these conservation efforts will improve the environmental baseline of these ACECs.

5.9.2.2 Indirect Effects

LAND DEVELOPMENT AND UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

LCLA LANDS AND ALAMO INDUSTRIAL PARK AND COMMUNITY EXPANSION AREA

Development of the LCLA lands will have indirect effects to the Beaver Dam Slope and Mormon Mesa ACECs for desert tortoise. The development of the Alamo Industrial Park and Community Expansion Area could have indirect effects on the Key Pittman Wildlife Management Area, although minimal in nature. Indirect effects from development activities in these two areas include alteration of wildlife habitat from vehicles and off-highway vehicle use, increased predation rates due to habitat fragmentation and increased predator abundance and distribution from human activity and actions, and the potential spread of invasive species in nearby habitat (BLM 2005).

It is unknown at this time the extent of infrastructure facilities needed to accommodate the population growth anticipated for the LCLA lands and neighboring City of Mesquite. Impacts caused from use of water and associated linear facilities will be analyzed in future environmental documents completed for Federal actions regarding rights-of-way for wells, pipelines and/or other facilities. Future development of infrastructure would be guided by the terms and conditions stipulated in the DA between Lincoln County and the individual developer(s). These guidelines provide for increased organized recreation opportunities and the ability of local communities to accommodate growth in southern Nevada and critical public infrastructure needs. These measures would help ensure that growth is managed and land use changes occur in an organized and controlled pattern that will maintain the quality of life and character of the area.

To offset the potential of indirect effects to these ecologically critical areas from development, the developers will implement the conservation measures discussed in Section 3.2.2.3.1 herein. Also, to protect neighboring ACECs from potential adverse indirect effects, the LCLA developers would employ the following: 1) access control with the development of the road/fence/trail system to limit the kind of uses within the ACECs; 2) public education such as the posting of signs and educational materials at entry points to the ACECs; and 3) law enforcement.

FUTURE BLM LANDS IDENTIFIED FOR DISPOSAL

The additional 4,101 acres of BLM disposal lands (640-acre Section 36 disposal parcel and 3,461 acres around Alamo) proposed for development under the Preferred Alternative are located adjacent to ACECs or in close proximity to a Wildlife Management Area. The 640-acre Section 36 disposal parcel is adjacent to the Beaver Dam Slope and Mormon Mesa ACECs. The 3,460 acres of BLM disposal lands around Alamo are near the Key Pittman Wildlife Management Area. Similarly, indirect effects from development activities in these two areas include alteration of wildlife habitat from vehicles and off-highway vehicle use, increased predation rates due to habitat fragmentation and increased predator abundance and distribution from human activity and actions, and the potential spread of invasive species in nearby habitat (BLM 2005). To offset the potential for indirect effects to these areas, the same conservation measures described above for development of the LCLA Lands and Alamo Industrial Park and Community Expansion Area would be implemented.

OTHER ACTIVITIES ON PRIVATE LANDS WITHIN THE COVERED AREA

Indirect effects associated with road maintenance and railway activities and land conversion activities on private lands along the Meadow Valley Wash (increased human population) could include increased recreational use, dumping, introduction of non-native species, and increased fire risk on the adjacent ACECs (i.e., Kane Springs, Mormon Mesa, and Lower Meadow Valley Wash) for desert tortoise and riparian species. Overall, the indirect effects, described above, to the ecologically critical areas from the Covered Activities under the Preferred Alternative would be minimized and offset by the suite of conservation measures to be implemented under the SLCHCP.

5.9.3 Alternative A

5.9.3.1 Direct and Indirect Effects

Direct and indirect effects to ecologically critical areas would be similar to those described for the Preferred Alternative, although further recreational demand on ACECs, Wildlife Areas, and Wildlife Management Areas could occur from even greater numbers of residents in the area. Development of up to 44,135 acres of private land (increased human population) within the Covered Area under this Alternative could include increased recreational use, dumping, collection of tortoises, introduction of non-native species, and increased fire risk on the adjacent ACECs. The development of an additional 7,456 acres of BLM disposal land from Alamo to Hiko could result in increase usage of the Wildlife Areas and to a greater degree the Key Pittman Wildlife Management Area under Alternative A.

5.10 VISUAL RESOURCES

5.10.1 No Action Alternative

5.10.1.1 Direct and Indirect Effects

Under the No Action Alternative, no activities would occur that would affect visual resources. The viewshed of Lincoln County would remain essentially unchanged.

5.10.2 Preferred Alternative

5.10.2.1 Direct Effects

Under the Preferred Alternative, the only direct changes to occur to the viewshed of Lincoln County would be due to additional development projects.

LCLA LANDS

The LCLA parcel would be developed in the very southeastern corner of Lincoln County, where currently a landfill and a water tank exists. While this would be a dramatic change for this area, it would not be out of context with the current growth occurring around the City of Mesquite, located in neighboring Clark County. The LCLA lands would not connect to other areas of Lincoln County; therefore, the development would not affect the visual resources of the remainder 6.8 million acres in Lincoln County.

MEADOW VALLEY INDUSTRIAL PARK

This site is located near existing development, although on the edge of town. Additional development near to this site could occur as a result of the increased economic resources these areas would bring to these towns. However, the construction of any subsequent development would not be out of character with the small town nature of Caliente, resulting in nearly undetectable effects.

ALAMO INDUSTRIAL PARK AND COMMUNITY EXPANSION AREA

Construction of the Alamo Industrial Park and Community Expansion Area would result in visual impacts affecting the visual elements of line, form, color, and texture from the construction of industrial and residential developments and the associated infrastructure. However, the development of this area will be consistent with development of land parcels with highway frontage and proximity to a town center. In addition, the design and visual impacts of the developments would be regulated by local and county regulations and ordinances as well as the building codes.[1]

[1] The regulations that will apply to the SLCHCP are the 2006 International Codes, all sections, as adopted by the County, the County Code of Lincoln County, including Section 11, Building Regulations, and Section 13, Planning & Development Code.

FUTURE BLM LANDS IDENTIFIED FOR DISPOSAL

Development of future BLM lands identified for disposal around Alamo (approximately 3,461 acres) could result in visual impacts affecting the visual elements of line, form, color, and texture from the construction of industrial and residential developments and the associated infrastructure. Similar to the Alamo Industrial Park and Community Expansion Area, the development of this area will be consistent with development of land parcels with highway frontage and proximity to a town center. In addition, the design and visual impacts of the developments would be regulated by local and county regulations and ordinances as well as the building codes. Similar to the LCLA lands, development of the 640-acre Section 36 disposal parcel would not connect to other areas of Lincoln County; therefore, the development would not affect the visual resources of the remainder 6.8 million acres in Lincoln County.

5.10.2.2 Indirect Effects

Development of the LCLA lands could encourage further development activities to occur near these areas and near the City of Mesquite. However, because of zoning already in place by the City of Mesquite, it is unlikely that any effects to visual resources would be out of place as compared to the current growth occurring around the City of Mesquite. The development of the industrial park in Alamo could increase development and thus the human population in this area. The Lincoln County regulations and ordinances would ensure any additional development within the Covered Area would be compatible with desired growth in the area.

5.10.3 Alternative A

5.10.3.1 Direct and Indirect Effects

Under this Alternative, development of up to 7,456 acres from Alamo to Hiko could occur beyond what is planned under the Preferred Alternative. However, given the limited private lands in Lincoln County, the spread out, rural nature of the county, and distances of greater than 100 miles from any population center to Las Vegas, extensive development would be unlikely. Development activities would also need to be in conformance with the Lincoln County regulations and ordinances, which has established visual resource criteria for other large development projects in the county. Effects to visual resources would not be expected to be substantial.

5.11 AGRICULTURAL RESOURCES

5.11.1 No Action Alternative

5.11.1.1 Direct and Indirect Effects

Under the No Action Alternative, no activities would occur that would affect agricultural resources. The farm and ranchlands of Lincoln County would remain essentially unchanged.

5.11.2 Preferred Alternative

5.11.2.1 Direct Effects

There are approximately 7,104 acres of private lands along the Meadow Valley Wash within the Covered Area currently used for agricultural and grazing purposes. Under the Preferred Alternative, up to 586 acres of existing private agricultural or grazing land along the Meadow Valley Wash could be disturbed or converted to another use. Additionally, the conservation measures to be implemented as part of the proposed action (i.e., restoring riparian or Mojave scrub habitat through a habitat bank or conservation easement on private land) could have direct, negative effects on agricultural production within this region. However, these activities would not substantially reduce farm acreage in Lincoln County, nor interfere with the viability of farm and ranchlands in Lincoln County.

5.11.2.2 Indirect Effects

Increased economic drivers from the proposed industrial park that would be developed outside of Alamo would provide alternative economic resources to agriculture in Lincoln County. However, given that the average age of principle farmers in Lincoln County is in the upper 50s, according to the 2002 U.S. Agricultural Census, the trend of agriculture playing a reduced economic role in Lincoln County is already evident. Also, the additional development proposed under the SLCHCP would not substantially affect farm size or acreage in Lincoln County.

5.11.3 Alternative A

5.11.3.1 Direct and Indirect Effects

The additional development of up to 7,456 acres from Alamo to Hiko under this Alternative could occur on a portion of existing farms and ranchlands. However, because economic opportunities are limited in Lincoln County (Section 4.2.18: Socioeconomics herein), it is unlikely that large-scale development would occur on private lands where farms and ranches occur. Therefore, it is unlikely that farm acreage and/or size would be affected as a result.

5.12 AIR QUALITY

5.12.1 No Action Alternative

5.12.1.1 Direct Effects

Under the No Action Alternative, air quality would remain the same as current conditions. Given the rural landscape and mining history of Lincoln County, it is likely that a potential source of air quality concerns could be the tailings associated with abandoned mines. While no air quality measurements exist for Lincoln County, similar sites in Nevada show no exceedance of particulate matter. Therefore, it is unlikely that air quality in Lincoln County is currently in exceedance of particulate matter, or other contaminants, given its rural nature with limited industry.

Localized fugitive dust creation could occur from road maintenance and railway activities, although the standard BMPs used by Lincoln County and UPRR would minimize dust creation as much as possible. For disturbances greater than five acres, Surface Area Disturbance (SAD) permits would be required from the Bureau of Air Pollution Control (BAPC). Natural Resources Conservation Service (NRCS) also encourages the implementation of BMPs that reduce fugitive dust creation. As a result, effects on air quality would be localized and minimal.

5.12.1.2 Indirect Effects

Indirect effects to air quality from the use of existing roads include the creation of localized fugitive dust during the use of dirt roads maintained by Lincoln County.

5.12.2 Preferred Alternative

5.12.2.1 Direct Effects

LAND DEVELOPMENT AND UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

LCLA LANDS, ALAMO INDUSTRIAL PARK AND COMMUNITY EXPANSION AREA AND FUTURE BLM LANDS IDENTIFIED FOR DISPOSAL

Development as a result of the Preferred Alternative would result in residential and commercial construction in the southeastern corner of Lincoln County and the industrial park and proposed community expansion area in Alamo as well as the future BLM lands identified for disposal. All new construction would be built to code and

would be unlikely to emit any contaminants. Should the industrial parks potentially release pollutants, then all local, state, and national criteria would be met to limit the amount of emissions into the air. Paving the access road to the LCLA lands would reduce fugitive dust emissions in the area. Therefore, in the long term, substantial effects to air quality would not occur.

Temporarily, during construction activities, particulate matter could be released into the air as a result of soil disturbance and other dust-causing activities. A mitigation measure to sequence development would limit the amount of unvegetated soil at one time, thereby reducing the amount of potential fugitive dust. Heavy equipment exhaust would also impact air quality during the construction phase, although best management practices regarding conservative use of engines would reduce the level of impact (refer to Section 3.3 herein). Fugitive dust plans prepared by the developer for each development would ensure that dust emissions would be reduced to the maximum level possible. As a result, temporary increases in fugitive dust would occur over the 30-year incidental take permit.

After construction is completed, native vegetation would be planted on exposed soils to reduce soil loss and airborne particulate matter. In the long-term, there would be a net decrease in fugitive dust through revegetation and paved and impervious surfaces.

After full buildout of the light industrial projects (i.e., Meadow Valley Industrial Park and Alamo Industrial Park), air quality would be impacted by the operations at the industrial facilities. These emissions would be controlled and/or regulated through the BAPC's permitting program. These measures would reduce the impacts of these activities on air resources to levels that are consistent with the ambient air quality standards.

OTHER ACTIVITIES ON PRIVATE LANDS WITHIN THE COVERED AREA

Effects of road maintenance and railway activities would result in the same effects to those described under the No Action Alternative. Potential effects to air quality from the conversion of existing private lands along the Meadow Valley Wash from previously undisturbed agricultural or grazing land to urban use or from grazing land to irrigated and/or cultivated agricultural fields would be the same as described for other development activities described above.

5.12.2.2 Indirect Effects

If development activities under the Preferred Alternative were to encourage additional development in Lincoln County, the potential for additional fugitive dust creation would exist. However, development agreements between Lincoln County and the developer would likely be made to include provisions for managing fugitive dust. Therefore, only minimal indirect effects to air quality would be expected from implementation of the Preferred Alternative.

Development of residential units on the LCLA lands and the Alamo Community Expansion Area would result in increased traffic and vehicle numbers from the increased population. Increased vehicle emissions would decrease local air quality. Because the terrain surrounding the LCLA lands is open and allows for air movement, it is unlikely that attainment of the Mesquite area, near which the LCLA lands are located, would be lost as a result of increased vehicle use.

5.12.3 Alternative A

5.12.3.1 Direct Effects

Under this Alternative, direct effects would be similar to those described for the Preferred Alternative, although additional development of up to 7,456 acres would have the potential to occur between Alamo and Hiko along the Pahranagat Wash. However, the same mitigation measures would apply, confining the level of effects to temporary and less than substantial.

5.12.3.2 Indirect Effects

Indirect effects would be similar to those described for the Preferred Alternative, although additional residential development could increase vehicle usage in the Covered Area by 22,368 (approximately one per

residential unit) or more vehicles. Tailpipe emission standards for the vehicles and the disparate locations of these additional vehicles in a currently rural environment would prevent significant increases in vehicle emissions (Univ. of California Center for Occupational Health 2004).

5.13 TRANSPORTATION AND CIRCULATION

5.13.1 No Action Alternative

5.13.1.1 Direct and Indirect Effects

No long term effects to transportation and circulation would occur under the No Action Alternative, as no changes in roads, railroads, or development would occur. Maintenance of roads could result in localized, temporary rerouting of traffic.

5.13.2 Preferred Alternative

5.13.2.1 Direct Effects

LAND DEVELOPMENT AND UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

LCLA LANDS

Under the Preferred Alternative, transportation would dramatically increase in the southeastern corner of Lincoln County, as currently the only purposes for traveling to this site are a landfill and recreational opportunities. Under the Preferred Alternative, up to 44,550 housing units would be developed over the course of the 30-year permit, creating the need for access to and from this area. Essentially, this area would become part of the greater growth area of the City of Mesquite. Zoning ordinances and development codes created by Lincoln County would work in concert with the City of Mesquite to create an effective road network for the expected numbers of people who would move to this area. No conflicts would arise with the rest of Lincoln County's transportation systems, as there would be no direct link to the rest of Lincoln County.

Only minimal short-term adverse effects to circulation would be expected due to construction activities, because the only current need to access the area is for trucks traveling to the Mesquite landfill.

ALAMO INDUSTRIAL PARK AND COMMUNITY EXPANSION AREA

In the long term, development of the Alamo Industrial Park and Community Expansion Area would alter transportation patterns during work hours to and from this area. Increased car trips in and out of Alamo would occur, and changed transportation patterns would occur during certain hours within the Town of Alamo. However, given the relatively low population density in Alamo and the locations of the industrial park along state highways built to carry traffic greater than traffic for Alamo alone, it is expected that effects would be detectable, but would not result in adverse effects to transportation and/or circulation.

In the short term, some rerouting of traffic would be necessary during construction, which could disrupt localized traffic patterns. However, the effects to transportation and circulation would not be significant.

FUTURE BLM LANDS IDENTIFIED FOR DISPOSAL

Under the Preferred Alternative, if the 3,461 acres of BLM disposal lands adjacent to the Alamo Community Expansion Area were to be developed, localized traffic would be noticeable, but state highway traffic would not likely be affected. If the 640-acre Section 36 disposal parcel, situated northwest of the LCLA lands, was to be developed under the Preferred Alternative, then construction of the proposed development could result in a temporary increase in average daily traffic (ADT) on Interstate-15 near the East Mesa Interchange (Exit 109) by construction workforce and equipment/material deliveries. Because Interstate-15 was constructed to handle interstate traffic, it has been designed to handle the loads of semi-trucks and trailers. Therefore, development of this land parcel would not affect existing roadway condition. Prior to project construction, the existing access road to the 640-acre Section 36 disposal parcel would most likely need to be improved to accommodate

materials delivery vehicles, equipment, and construction worker transport vehicles. Perhaps, portions of the road would need to be widened to two lanes and straightened where necessary, and the entire length of the access road from Interstate-15 to the 640-acre Section 36 disposal parcel would need to be paved.

5.13.2.2 Indirect Effects

If additional development were to occur as a result of increased demand from economic growth in the Covered Area, then temporary and long term increases in traffic would be likely to occur along major roads within the Covered Area. However, any large developments would require development agreements with Lincoln County, which would address long-term traffic management.

5.13.3 Alternative A

5.13.3.1 Direct and Indirect Effects

Under Alternative A, direct and indirect effects would be greater than those described for the Preferred Alternative, as additional development between Hiko and Alamo could increase localized traffic, including along stretches of U.S. Highway 93. However, this increase in development would require development agreements with Lincoln County, which would address long-term traffic management.

5.14 NOISE

5.14.1 No Action Alternative

5.14.1.1 Direct and Indirect Effects

Noise effects would not occur under the No Action Alternative, as noise levels would not change from continuing existing road and railroad maintenance activities.

5.14.2 Preferred Alternative

5.14.2.1 Direct Effects

LAND DEVELOPMENT AND UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

LCLA LANDS, ALAMO INDUSTRIAL PARK AND COMMUNITY EXPANSION AREA, AND FUTURE BLM LANDS IDENTIFIED FOR DISPOSAL

Development of the LCLA lands, Alamo Industrial Park and Community Expansion Area, and future development of an additional 4,101 acres of BLM disposal lands (the 640-acre Section 36 disposal parcel and the 3,461 acres around Alamo) would result in long-term increased noise levels in these areas. Buildings, light traffic, and increased human activity would especially increase noise levels within the Town of Alamo. Because the Alamo Industrial Park is located near existing population centers, additional noise sources (e.g. building utilities, vehicles) would be at the same decibel levels as existing noise sources. Thus, cumulative noise levels for these areas are not expected to increase.

The development of the LCLA lands and BLM lands identified for disposal under the Preferred Alternative currently have no sources of human noise, aside from infrequent vehicle use of the area. Development of the LCLA lands and future disposal lands would result in long-term noise levels equivalent to quiet residential areas (40 to 50 dB, LHH No date). There is no baseline soundscape data for the Covered Area; environmental sources of wind and animal sounds would likely be the main contributors of natural sounds. While noise levels would increase, these levels would not be considered substantial, as they would be no greater than noise levels present elsewhere in Lincoln County.

Development of the LCLA lands would also result in increased use of OHVs on nearby public lands. OHVs can contribute noise levels of up to 100 dB for short distances (less than a mile) from the vehicle itself.

Because the OHVs would operate under the existing Resource Management Plan for the BLM Ely District, noise levels would be properly managed and would not be considered substantial.

Short term increases in noise levels would result from the use of heavy equipment during construction efforts associated with the LCLA lands, Alamo Industrial Park and Community Expansion Area, and future BLM lands identified for disposal. Noise levels generated by construction equipment generally range from 85 to 98 dBA at 50 feet (CH2M HILL 2001), but because sound levels diminish with distance, noise levels would be only somewhat elevated near current population centers (LHH No date).

OTHER ACTIVITIES ON PRIVATE LANDS WITHIN THE COVERED AREA

Noise associated with County road maintenance and UPRR railway activities would occur for short time periods of time in localized areas of the Covered Area. Noise levels generated by construction equipment generally range from 85 to 98 dBA at 50 feet (CH2M HILL 2001), in comparison to typical highway noise of up to 70 dB (LLH No date). Because these increases in noise levels from construction and road and railroad maintenance activities would be localized in nature and would only occur on a temporary or short-term basis, effects would not be considered substantial.

5.14.2.2 Indirect Effects

Increased demand for OHV use in the lands surrounding the Alamo Community Expansion Area, LCLA lands, and possibly the future BLM lands identified for disposal could result in increased noise levels in some BLM lands with recreational uses; although access from these lands to BLM lands adjacent to these areas will be restricted. Noise levels of approximately 96 to 100 dB (Lenhert 2005) would typically be limited to short durations (e.g. a few hours) and would occur more frequently on the weekends. Guidelines for the BLM Ely District establish where and when OHVs may be used on BLM lands, including ACECs. Increased demand has been addressed in the recent Final RMP/EIS (BLM 2008).

5.14.3 Alternative A

5.14.3.1 Direct and Indirect Effects

Under Alternative A, effects of noise would be expected to be similar in nature to those described for the Preferred Alternative, although the potential for additional development would mean that changes in noise could occur across a greater distance. Noise levels would be expected to be at the same decibel levels as described above and thus not considered to be substantial.

5.15 LAND USE, PLANNING, AND ZONING

The effects of land disposals for the LCLA lands, Meadow Valley Industrial Park, and Alamo Industrial Park and Community Expansion Area are not components of the Preferred Alternative and, therefore, will not be analyzed here.

5.15.1 No Action Alternative

5.15.1.1 Direct and Indirect Effects

Without issuance of the incidental take permit and implementation of the SLCHCP, timely development in Lincoln County, consistent with local plans, would not be possible. No effects to land use, plans, or zoning would occur as a result of the No Action Alternative, because no changes to land use would occur.

5.15.2 Preferred Alternative

5.15.2.1 Direct Effects

LAND DEVELOPMENT AND UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

LCLA LANDS

The City of Mesquite and Lincoln County have been planning cooperatively for the development of the LCLA lands. Lincoln County has adopted a development code for the area that is generally consistent with the City of Mesquite Unified Development Code. Therefore, development of the LCLA lands would not be in conflict with land use plans or zoning of either Lincoln County or the City of Mesquite.

MEADOW VALLEY INDUSTRIAL PARK

The land use changes for construction of the Meadow Valley Industrial Park were previously addressed in the NEPA documents for the land sale associated with the Industrial Park (EDA 2000); therefore, no effects to land use, planning, and zoning would occur from implementation of the Preferred Alternative.

ALAMO INDUSTRIAL PARK AND COMMUNITY EXPANSION AREA

Development of the Alamo Industrial Park and Community Expansion Area and surrounding BLM disposal lands would alter the existing land use within the project site. Land use changes would be notable as the rural, vacant lands would be modified to developed parcels characterized by industrial, commercial, and residential uses. However, these proposed land uses are keeping within local and county plans and are consistent with development of land parcels with highway frontage and ready access to public services and amenities provided in the town of Alamo. Therefore, no significant effects to land use, planning, and zoning are expected.

Parks and community recreation facilities would need to be increased to meet the demands of development and the associated increase in population; however, this issue could be addressed as a condition of project design and approval and would be required to meet local building codes and ordinances. The creation of additional community-focused recreation opportunities would benefit all Pahranagat Valley residents. Although land use alterations as a result of development would be significant, the overall impacts to land use, access, and recreation would be moderate and could be beneficial to the community.

FUTURE BLM LANDS IDENTIFIED FOR DISPOSAL

Under the Preferred Alternative, development of the 3,461 acres of BLM disposal lands around Alamo would alter the existing land use within area proposed for development. Land use changes would be notable as the rural, vacant lands would be modified to developed parcels characterized by industrial, commercial, and residential uses. However, these proposed land uses are keeping within local and Lincoln County plans and are consistent with development of land parcels with highway frontage and ready access to public services and amenities provided in the town of Alamo. Because the land adjacent to the 640-acre Section 36 disposal parcel is primarily undeveloped, with some power production facilities located nearby, development of this area would not be incompatible with existing adjacent land uses. This area is not considered prime or unique farmland, thus no impacts on those land types would occur. Furthermore, since the 640-acre Section 36 disposal parcel is currently owned by the BLM, any actions that would occur on these lands would occur with the permission of the BLM. Therefore, no significant effects to land use, planning, and zoning from future development of these parcels are expected.

OTHER ACTIVITIES ON PRIVATE LANDS WITHIN THE COVERED AREA

Flood protection measures implemented by the City of Caliente would occur within the floodplain, which is not developable. These flood protection measures would protect adjacent land uses and would not violate any planning or zoning regulations. Thus, no effect to land use, planning, or zoning would occur as a result.

Lincoln County and UPRR hold rights-of-way on or adjacent to BLM lands within the Covered Area that allow for roads and railroads to cross through public lands in Lincoln County. No change to these rights-of-way would occur under the Preferred Alternative.

The conversion of existing private lands along the Meadow Valley Wash from previously undisturbed agricultural or grazing land to urban use or from grazing land to irrigated and/or cultivated agricultural fields may require alteration of Lincoln County zoning for those areas prior to commencement of activities. However, no adverse effects to planning and zoning would be expected as a result of these potential conversion activities.

5.15.2.2 Indirect Effects

Increased economic activity in Lincoln County as a result of the Preferred Alternative could result in additional changes in land uses, which would require rezoning by Lincoln County before additional activities could occur.

5.15.3 Alternative A

5.15.3.1 Direct and Indirect Effects

Similar to the Preferred Alternative, direct and indirect effects to land use, planning, or zoning would result from implementation of this Alternative. Development of the additional disposal lands prescribed under this alternative would require alteration of Lincoln County zoning for those areas in consultation with BLM prior to commencement of activities.

5.16 RECREATION RESOURCES

Public opportunities for recreational activities were reduced when the Alamo Industrial Park and LCLA parcels were transferred from BLM to private hands. The effects of these land disposals are not components of the Preferred Alternative and, therefore, will not be analyzed here.

5.16.1 No Action Alternative

5.16.1.1 Direct and Indirect Effects

No effects to recreation resources would occur under the No Action Alternative, because no changes to recreation opportunities or levels would occur.

5.16.2 Preferred Alternative

5.16.2.1 Direct Effects

The popularity of special uses vehicles over the last 20 years has encouraged OHV exploration of primitive and remote public land areas, including ACECs.

LAND DEVELOPMENT AND UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

LCLA LANDS

The development of the LCLA lands would have beneficial effects on recreation resources in southeastern Lincoln County. The LCLA developers, pursuant to Lincoln County Code Section 14-4-12(G), must set aside a trail system for the increased population in this region and provide an overall open system that includes: 1) a comprehensive trail system along all major arterials and to residential areas, connecting all parks and recreation facilities and schools; 2) any such trail system should connect with any adopted trail plans for the City of Mesquite and conform to Lincoln County trail standards; and 3) split use trail systems shall be provided for both non-motorized and motorized uses. In addition, other recreational facilities such as golf courses, parks, sports fields, and walking trails will be constructed as part of development of the LCLA lands. These recreational resources would provide for the varied interests of the future residents of the LCLA lands, and would result in long-term recreational benefits. Thus, no direct effects to recreational resources would be expected from implementation of the SLCHCP.

MEADOW VALLEY INDUSTRIAL PARK

The constructed Meadow Valley Industrial Park would result in a slight increase in population to this area; however, the potential effects to nearby recreational resources (i.e., within Caliente or Kershaw-Ryan State Park) due to this increased population are expected to be insignificant or negligible.

ALAMO INDUSTRIAL PARK AND COMMUNITY EXPANSION AREA AND FUTURE BLM LANDS IDENTIFIED FOR DISPOSAL

Development of the Alamo Community Expansion Area and future BLM lands identified for disposal (640-acre Section 36 disposal parcel and the additional 3,461 acres around Alamo) would result in an increased population but also afford greater protection of existing open space by limiting access and offering other recreational opportunities throughout the development of trails and parks, which would provide localized access to community recreational areas.

OTHER ACTIVITIES ON PRIVATE LANDS WITHIN THE COVERED AREA

No effects to recreational resources would be affected by road maintenance and railway activities, the conversion of existing private lands from one land use to another land use (i.e., previously undisturbed agricultural or grazing land to urban use or grazing land to irrigated and/or cultivated agricultural fields), or implementation of flood control projects within the Covered Area, aside from maintenance of roads ensuring access to recreational sites.

5.16.2.2 Indirect Effects

Under the Preferred Alternative, indirect effects to existing recreational resources within southeastern Lincoln County could occur from the increased use of OHVs on remote public land areas or within ACECs as a result of future development. Currently, casual (non-organized) OHV use is limited to roads and vehicle trails designated for OHV use by BLM within the Kane Springs and Mormon Mesa ACECs. These areas are also closed to speed competitive OHV use and organized OHV events from March 15 to June 15 and from August 31 to October 15. Also, conservation and mitigation measures associated with the Preferred Alternative would ensure that adequate education would be implemented to address potential problems associated with increased use, such as creation of social trails, illegal dumping, and vandalism. Plus, pursuant to Lincoln County Code Section 14-5-12 (G) –Trail System, common open space must be set aside for the use and benefit of the residents and owners and shall be linked to existing and planned public open space areas to provide an overall open space system. Thus, no indirect effects to recreational resources would be expected from implementation of the SLCHCP.

5.16.3 Alternative A

5.16.3.1 Direct and Indirect Effects

Direct and indirect effects to recreational resources would be similar to those described under the Preferred Alternative, although because of the increase in the number of residents in Lincoln County by development of up to 22,368 additional residential units (7,456 acres at approximately 3 units/acre), levels of recreational use to nearby Wildlife Areas, Pahranagat National Wildlife Refuge and Key Pittman Wildlife Management Area could be notably higher. However, the potential development of these areas could also afford greater protection of existing open space by limiting access and offering other recreational opportunities throughout the development of trails and parks, which would provide localized access to community recreational areas.

5.17 PUBLIC SERVICES AND UTILITIES

5.17.1 No Action Alternative

5.17.1.1 Direct and Indirect Effects

Without an incidental take permit, the City of Caliente would be unable to implement flood control projects to protect the City from future flooding. The flood of 2005, equivalent to a 100-year flood, caused $9.4 million in

damage in Lincoln County (Manning 2005). Because the City of Caliente is located along the Meadow Valley Wash, the extent of flooding is likely to reoccur without flood protection measures in the future causing further damage. No additional effects to public services and utilities would occur as a result of the No Action Alternative, because no additional revenues, utilities, or increases in population and demand for services would occur.

5.17.2 Preferred Alternative

5.17.2.1 Direct Effects

LAND DEVELOPMENT AND UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

LCLA LANDS

No direct impacts on existing public infrastructure and services would result from the Preferred Alternative. Due to the site's remoteness from existing Lincoln County facilities, growth related demands would require development of an entire array of new public infrastructure and services. Water, wastewater treatment, telephone, power, and other utilities would be extended to serve the area.

Future residential development of the LCLA lands would also impact the Lincoln County School District. The district operates nine schools, including one operated for the Nevada Department of Prisons, and has a total enrollment of about 1,020 students (Nevada Department of Education 2001). At build-out, more than 10,000 school age children could reside in the LCLA area. Depending on the district's student capacity standards for schools, as many as 28 new schools may be required to accommodate this level of enrollment (Howell 2001). Land dedications for public schools are required by each development agreement between the County and developer(s), but the district's burden to finance facility construction remains.

Public entities would need to expand their staffing to meet demands, indirectly resulting from development proposed under the Preferred Alternative. In the short term, development would require planning, engineering and building inspection services. Over the long term, the greatest demand would be for educators and administrators in the Lincoln County School District and public safety officials.

MEADOW VALLEY INDUSTRIAL PARK

Development of industrial buildings within the Meadow Valley Industrial Park would result in the use of existing water and sewer systems in the City of Caliente, which have been updated in order to accommodate the industrial park's needs. Up to 52,200 gallons per day are the estimated demand. The City of Caliente's current water system is capable of meeting this demand. The City of Caliente has implemented upgrades so that its sewer system could handle 52,200 additional gallons per day.

ALAMO INDUSTRIAL PARK AND COMMUNITY EXPANSION AREA AND BLM LANDS IDENTIFIED FOR DISPOSAL

Full development of the area may exceed existing water supplies and rights. The Alamo Industrial Park Well No. 1 Construction and Testing Report estimated a maximum water demand of the industrial park at 192,400 gallons per day at full buildout (Consulting Engineering Services, Inc. 1999, as cited in BLM 2007a). The Nevada State Engineer has approved water rights of 215.5 acre feet, which is equivalent to 192,400 gallons per day. However, this estimate of water demand only considered the demand from the industrial park; it did not analyze the demands created by the associated residential development. However, 179.15 Mg per year is available through the ASWGID for the town of Alamo beyond what is currently being used. Assuming up to three residential units would be developed on the 640 acres of the Community Expansion Area, an additional 1,920 residential units could occur. The ASWGID currently services the entire Pahranagat Valley, which includes 900 residents (Lincoln County Chamber of Commerce 2006, as cited in BLM 2007a), which in 2005 used 105.5 mg of water. At full buildout of the Community Expansion Area, water demands from the Community Expansion Area could be 225 mg of water per year or higher, depending upon the number of residents per unit. Prior to full buildout, alternative water sources would need to be explored or additional water rights obtained, in order to avoid water supply shortages.

Development would include the construction of sewer lines to service the industrial park and 1,800 proposed residences. The impact on the sewer system and treatment facility would be significant. The Alamo Industrial Park Preliminary Design Report estimated wastewater flow from the proposed industrial park development at 193,200 gpd (Agra Infrastructure, Inc. 2000, as cited in BLM 2007a). This estimate does not consider the wastewater flow from the proposed residential development. Current sewer service with 246 active hookups totals 44,000 gpd, and the system has a design capacity of 77,000 gpd. Increased flows from the industrial and residential lines would exceed the capacity of the existing facility. The ASWGID and Lincoln County would determine how to address the increased sewer demand either through the expansion of existing treatment facilities or the construction of new facilities. The sewer system appears to have the capacity to handle approximately 185 additional active hookups, giving the ASWGID and Lincoln County time to address expansion requirements. The expansion or construction of additional treatment facilities to handle the additional flows would minimize impacts. Additional demands from 22,638 potential additional residential units in the nearby future BLM lands identified for disposal would require improvements to the sewer system to accommodate the increase in demand.

Development would create an increased demand for power to service the industrial and residential units, as well as community infrastructure. The existing Alamo Power District (ADP) No. 3 substations have approximately 3.25 MVA of reserve capacity. The APD is also working to develop additional distribution capacity with a right-of-way on the east side of Pahranagat Valley, and plans have been made to extend lines from the Stewart Substation at Crystal Springs to provide additional power service to Alamo and the surrounding areas. Plans to develop additional power sources should address the increased power demands from project development and impacts would be minimal.

According to Wendy Rudder, manager of the PVFD, the district is currently in need of additional equipment (pers. comm., June 20, 2006). The Preferred Alternative would put increased demand on the PVFD and even greater pressure on their existing capabilities, from the addition of 1,800 homes and the correlative population increase. The Preferred Alternative would also put increased pressure on the Lincoln County Sheriffs' Department. However, the cost to provide additional Lincoln County services and hire additional staff should be offset by increased tax revenues generated within Lincoln County. In addition, as a 474 District, the PVFD would have a greater property tax base and should be able to generate the funds necessary to obtain additional equipment and expand needed operations.

The proposed development in and around Alamo calls for an estimate of 1,800 homes with 75 percent single family and 25 percent multiple family units, or 1,350 and 450 units, respectively. Table 5-1 outlines the estimated increase in school enrollment at final buildout of the project development utilizing the Lincoln County School District (LCSD) formulas for planning enrollment projections.

Table 5-1 Estimated Increase in School Enrollment from Project Development

Type of School	Single Family Households Formula for Enrollment	Multiple Family Households Formula for Enrollment	Total Projected Increased Enrollment
Elementary	0.23 x 1,350 = 311	0.149 x 450 = 67	378
Middle	0.119 x 1,350 = 161	0.064 x 450 = 29	190
High	0.139 x 1,350 = 188	0.061 x 450 = 27	215

Based on the school design capacities, both the Pahranagat Valley Middle School and High School would be able to absorb the projected increased enrollment. The Pahranagat Valley Elementary School, however, has a design capacity for 232 students and would not be able to handle an enrollment of 378. Growth in and around the Alamo area and the construction of an additional elementary school was identified in the Lincoln County Master Plan (Lincoln County 2006); therefore, Lincoln County is aware of this need and plans to address it in the future. In the meantime, there is currently excess capacity at the elementary school for 127 students, which would be sufficient to service students in the initial phases of development of the Alamo Community Expansion Area, as final buildout is anticipated to take 20 years.

If the 640-acre Section 36 disposal parcel was to be developed, then the additional residents would put a strain on Lincoln County's existing public services. Additional school capacity would be required in the Clark/Lincoln County area to accommodate the additional students expected to enroll in the local schools.

Water to serve the new community would have to be obtained from deep wells in the Tule Desert. Water rights to serve this area have been jointly applied for by Vidler Water Company, Inc. (a sister company of Nevada Land and Resource Company) and Lincoln County. Therefore, there would be no impact on existing local water purveyors. The remoteness of the site would also put a strain on Lincoln County's public services such as medical, fire and police protection, and communication. The method implemented to reduce the strain on Lincoln County's existing public services from a new community in this area would be developed in consultation with and approved by Lincoln County.

5.17.2.2 Indirect Effects

Increased economic growth in Lincoln County has the potential to increase demand for housing and other development in the County, which could strain existing public services.

5.17.3 Alternative A

5.17.3.1 Direct and Indirect Effects

Under this Alternative, effects to Lincoln County's existing public services and utilities would be similar to the Preferred Alternative, although the area developed and in need of public services would be larger. For instance, if an additional 7,456 acres of BLM disposal lands were to be developed for residences, increasing housing by 22,638 units, additional schools would be necessary to address the increase in school enrollment. Development agreements between developers and Lincoln County for additional lands to be developed would ensure that public services for Lincoln County would be adequately met.

5.18 SOCIOECONOMICS

5.18.1 No Action Alternative

5.18.1.1 Direct and Indirect Effects

Because no activities would occur on lands within the Covered Area without issuance of incidental take permits by the USFWS to individual developers and/or landowners, existing socioeconomic conditions in Lincoln County would continue. Demographic trends of reduced numbers of children and young adults would continue and likely increase. Also, income opportunities have become reduced in recent years and the trend would be likely to continue with a continuance of current conditions. These trends are slow to occur, but over the course of 30 years, the length of time considered in this FEIS, demographics and income levels could become additionally skewed when compared to other areas of Nevada or the United States as a whole.

5.18.2 Preferred Alternative

5.18.2.1 Demographics

No effects are expected from road, railway, or flood control activities outside of the proposed parcels to be developed or the future development of the BLM disposal lands, as they are either of very small scale or already occurring.

5.18.2.1.1 Direct Effects

LAND DEVELOPMENT AND UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

LCLA LANDS

Based on the allowable density of residential development, the Preferred Alternative would indirectly facilitate a build-out population growth of as many as 111,375 additional residents in Lincoln County, assuming a

3.3-unit-per-acre development rate and a household of 2.5 people. It is possible that within 5 years new developments in Lincoln County would surpass the current County population (Lincoln County 2006).

The demographic makeup of Lincoln County is also likely to shift, as younger people would be likely to move into Lincoln County due to increased economic opportunities.

MEADOW VALLEY INDUSTRIAL PARK

The buildout of the Meadow Valley Industrial Park could slightly shift the demographics in the City of Caliente to an increased level of younger adults (18-40) through increased employment opportunities.

ALAMO INDUSTRIAL PARK AND COMMUNITY EXPANSION AREA

Based on the allowable density of residential development, the Preferred Alternative would indirectly facilitate a buildout population growth of as many as 30,743 additional residents to Lincoln County, assuming a 3-unit-per-acre development rate and a household of 2.5 people for the Alamo Community Expansion Area.

FUTURE BLM LANDS IDENTIFIED FOR DISPOSAL AND OTHER ACTIVITIES ON PRIVATE LANDS WITHIN THE COVERED AREA

Proposed development activities on other private lands and potentially the BLM lands identified for disposal may result in a change of demographics, as new housing could occur if the existing land use (i.e., agricultural/grazing lands or undisturbed land) is converted to urban use.

5.18.2.1.2 Indirect Effects

Indirect effects to demographics from the Preferred Alternative could include low levels of demographic change as a result of secondary economies created in Lincoln County due to the development of the land parcels for residential, power, and commercial purposes.

5.18.2.2 Income and Employment

5.18.2.2.1 Direct Effects

Only negligible effects to income and employment are expected from road, railway, or flood control activities outside of the proposed development areas, as they either are very small in scale or they are already occurring.

LAND DEVELOPMENT AND UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

LCLA LANDS

No direct road connects the LCLA lands to any towns in Lincoln County. Social and economic impacts of this development, aside from tax dollars, would be more detectable in and around the City of Mesquite, located to the south of the LCLA lands in Clark County, Nevada.

Direct impacts that would occur include both short- and long-term gains in employment, income, and economic activity. The short-term indirect gains would be primarily in construction and the building trades as, first, the infrastructure, and then, residential, commercial, and recreational development proceeds. The long-term indirect gains would stimulate induced economic impacts, primarily in the retail trade and services industries and would be concentrated in the Mesquite area.

Long-term gains in employment and income would occur as the population base grows to support on-site commercial development and public sector job opportunities increase. Depending on the nonresidential acreage and the types of development approved for the area, over 24,000 jobs could be supported within the boundaries of the affected LCLA lands.

The added job opportunities and associated wages and salaries represent a major economic expansion for Lincoln County, including higher employment and rising per capita incomes.

MEADOW VALLEY INDUSTRIAL PARK

The buildout of the Meadow Valley Industrial Park would result in increased employment opportunities for current residents in Lincoln County, particularly those inhabiting the City of Caliente, where the industrial park is located. Income levels and the number of jobs created would depend upon the businesses that would occupy the industrial park.

ALAMO INDUSTRIAL PARK AND COMMUNITY EXPANSION AREA

Development of the Alamo area would also have beneficial impacts to socioeconomics in Lincoln County through the development of an industrial park and the associated creation of employment in the Alamo area. The industrial and residential developments would also lead to the increased demand for retail and community services and employment in these sectors. The cost to provide additional County services and hire additional staff should be offset by increased tax revenues generated within Lincoln County.

FUTURE BLM LANDS IDENTIFIED FOR DISPOSAL AND OTHER ACTIVITIES ON PRIVATE LANDS WITHIN THE COVERED AREA

Proposed development activities on other private lands and potentially the BLM lands identified for disposal would result in changes to the distribution of employment types. Income levels and the number of jobs created would depend upon the businesses, if any, that would occupy these areas.

5.18.2.2.2 Indirect Effects

Increased job opportunities as a result of developing the LCLA lands and the Alamo Industrial Park and Community Expansion Area and BLM disposal lands around Alamo would likely produce a multiplier effect, thereby generating additional jobs in service sectors to support the increased population. However, not all Lincoln County residents would be affected equally. The isolation of the LCLA area and the 640-acre Section 36 disposal parcel from the remainder of the County could limit and induce indirect effects elsewhere in Lincoln County.

5.18.2.3 Local Government

5.18.2.3.1 Direct Effects

Only negligible effects to local government are expected from road, railway, or flood control activities outside of the proposed development areas, as they either are very small in scale or they are already occurring.

LAND DEVELOPMENT AND UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

LCLA LANDS

Tax dollars in property taxes from the development of approximately 44,550 housing units on the LCLA lands would greatly assist in funding for public infrastructure, schools, and other public programs managed by Lincoln County. At buildout, development could expand Lincoln County's current tax roll by a factor of ten or more. However, County expenditures would also increase as a result of increased demand for infrastructure.

MEADOW VALLEY INDUSTRIAL PARK

Tax dollars in property taxes from the buildout of the Meadow Valley Industrial Park would assist in funding for infrastructure managed by the City of Caliente.

ALAMO INDUSTRIAL PARK AND COMMUNITY EXPANSION AREA

Under the Preferred Alternative, the development of the industrial park and community expansion area would impact socioeconomics from the loss of payments in lieu of taxes (PILT) now paid to Lincoln County by the BLM. Property tax assessments on the bare land could offset the PILT, but if the lands were developed for residential and industrial uses as proposed, the valuation of the property, and therefore, the property taxes, would be increased and would more than offset the loss of the annual PILT payment made by the BLM.

5.18.2.3.2 Indirect Effects

Indirect effects to local government from the Preferred Alternatives would not occur.

5.18.3 Alternative A

5.18.3.1 Direct and Indirect Effects

Social and economic trends that would occur as a result of residential and commercial development under the Preferred Alternative would also be likely to occur under Alternative A. Additional residential development could alter demographic trends of the County, and additional revenues to Lincoln County would result from implementation of this Alternative. The increase in income and employment, demographics, and local government taxes would be greater than described for the Preferred Alternative.

5.19 HAZARDOUS MATERIALS

5.19.1 No Action Alternative

5.19.1.1 Direct and Indirect Effects

Current activities that are components of the No Action Alternative could result in hydrocarbon spills through maintenance of roads and railways. Best management practices in place for hazardous materials would limit the likelihood of spills and would ensure proper cleanup procedures should spills occur.

5.19.2 Preferred Alternative

5.19.2.1 Direct Effects

Construction and ongoing industrial and residential uses would generate solid waste. Such waste would be disposed of as required by local or state laws and regulations.

There is potential for the creation of hazardous wastes associated with the operations of industrial or manufacturing facilities on the LCLA Lands, Meadow Valley Industrial Park, and Alamo Industrial Park and Community Expansion Area parcels. The management and disposal of these wastes would be required to comply with NRS 444 and NRS 459, thus minimizing the potential for any spills or contamination of hazardous materials as a result of implementation of the Preferred Alternative. Effects of ongoing activities would be the same as described for the No Action Alternative.

5.19.2.2 Indirect Effects

No indirect effects would be expected as a result of implementing the Preferred Alternative.

5.19.3 Alternative A

5.19.3.1 Direct and Indirect Effects

Effects would be the same as described for the Preferred Alternative, although activities would occur over a greater amount of land.

5.20 SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

NEPA requires consideration of "the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity" (40 CFR 1502.16). As declared by Congress, this includes using all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and

nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans (NEPA Section 101).

The implementation of the SLCHCP, Preferred Alternative, will provide financial resources otherwise not available for use in implementing conservation measures that will minimize and mitigate effects of the proposed Covered Activities on the threatened desert tortoise and endangered southwestern willow flycatcher.

The proposed SLCHCP and Section 10(a)(1)(B) permits are an attempt to balance the short-term development of private lands within Lincoln County's natural environment with the relatively long-term (30 years) funding for new and existing actions to conserve species and their habitats (i.e., desert tortoise and southwestern willow flycatcher) throughout the private lands of southeastern Lincoln County, Nevada. The SLCHCP identifies those actions necessary to maintain/enhance the viability of natural habitats in Lincoln County for desert tortoise and southwestern willow flycatcher. By addressing the habitat needs of these Covered Species, the SLCHCP also benefits other species occupying the same habitats.

The short-term loss of sensitive habitat is more than offset by the long-term benefits of implementation of the SLCHCP. The conservation actions of the proposed SLCHCP have been designed to serve both short-term and long-term needs. They include public information and education, adaptive management, and conservation actions. The conservation actions include habitat restoration and enhancement measures, research towards addressing large-scale habitat quality issues for desert tortoise such as increased fire frequency, and best management practices for particular activities. While the initial measures to be funded by the SLCHCP would be effective to conserve both habitat types and the Covered Species, conditions within Lincoln County, the status of habitats, and the overall conditions of individual species over time would change. In addition, it is quite likely that additional and different conservation measures, not contained within the SLCHCP, might be suggested and proven to be effective during the term of the SLCHCP. The Adaptive Management Program portion of the SLCHCP would address this through monitoring and appropriate adjustments of conservation measures over the course of the 30-year permit.

None of the alternatives, including the Preferred Alternative, suggest substantial loss of natural resources or ecosystems in southeastern Lincoln County as a consequence of their implementation. In the short-term, the Preferred Alternative would trade off natural resources for the development of economic opportunities and housing; however, mitigation measures would compensate for the effects of these tradeoffs on threatened and endangered species and their habitats and would reduce the effects to other wildlife, vegetation, soils, and soundscape. Over the long-term, the economic base of Lincoln County would become larger and more able to compete with the modernized economy of the United States, yet Lincoln County would remain primarily rural with healthy waters, ecosystems, and habitats.

5.21 UNAVOIDABLE ADVERSE EFFECTS

Unavoidable adverse impacts are those environmental consequences of an action that cannot be avoided, either by changing the nature of the action or through mitigation if the action is taken. Therefore, they would remain throughout the duration of the action.

Once development activities commence under the Preferred Alternative, some unavoidable adverse impacts would occur, although conservation and other mitigation measures would minimize these impacts wherever possible. Unavoidable adverse effects to the desert tortoise and southwestern willow flycatcher would be mitigated through the collection of fees for development of lands or funding provided by the permittees to cover the costs of replacing riparian habitat removed.

Unavoidable adverse impacts would occur through the loss of habitat for wildlife and special-status species, soil and vegetation loss on lands proposed for development, an increase in long-term noise levels in the vicinity of the LCLA lands, Meadow Valley Industrial Park, and the Alamo Industrial Park and Community Expansion Area, temporary alteration of the Meadow Valley Wash floodplain through vegetation removal along a two-mile stretch, loss of groundwater from the carbonate aquifer for drinking water and for industrial activities, and a change in the viewshed near the LCLA lands.

5.22 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Irreversible commitments of resources are those that cannot be regained, such as the extinction of a species or the removal of mined ore. Irretrievable commitments are those that are lost for a period of time, such as the temporary loss of vegetation kept clear from power line rights-of-way or roads.

The Preferred Alternative is the issuance of three incidental take permits under Section 10(a)(1)(B) of the ESA to authorize the incidental taking of one endangered species and one threatened species. Under the proposed permits, approximately 18,579 acres of private land in Lincoln County would be open to development within the restrictions described within the SLCHCP. The permits which are requested would allow no more than 20,000 acres of private land and rights-of-way within the Covered Area to be disturbed during the 30-year permit period.

Issuance of the permits by the USFWS would cause adverse and irreversible environmental changes to the habitat of the species for which the incidental take permit is issued. However, because the SLCHCP provides overall mitigation by funding existing and future conservation measures and provides for the coordination of a multi-agency conservation effort program, the habitat losses on private lands would not be further mitigated on a project-by-project basis. Once converted to urban use, existing habitat would no longer function as natural habitat for these species. In rare cases, direct loss of listed species may occur as a result of individuals or eggs missed during pre-construction surveys. Under the proposed permit, land development during the 30-year term of the permit may irrevocably convert to urban use up to 22 acres of suitable southwestern willow flycatcher habitat within the Covered Area and up to 19,840 acres of desert tortoise habitat in the Covered Area.

The amount of taking and habitat loss due to the Preferred Alternative would be largely irreversible. However, the 19,840 acres of desert tortoise habitat potentially disturbed as a result of the Covered Activities under SLCHCP constitutes 2.6 percent of the total amount of habitat available (769,428 acres, refer to Section 3.2.8.2.1 in the SLCHCP) for the species in the Covered Area. Similarly, the 84.3 acres of suitable southwestern willow flycatcher habitat potentially disturbed as a result of the Covered Activities constitutes 9.4 percent of the total amount of habitat available (899 acres, refer to Section 3.3.7.2 in the SLCHCP) for the species in the Covered Area.

Other irreversible commitments under the Preferred Alternative would include soil and vegetation loss from development activities and road and railway construction or maintenance, and changes in minor ephemeral washes during development activities. These activities would occur on considerably less than 2 percent of lands within Lincoln County. However, none of these irreversible commitments are likely to threaten overall levels of soils, vegetation, or ephemeral wash habitat within Lincoln County.

Irretrievable commitments under the Preferred Alternative would include vegetation loss along road and railway rights-of-way, loss of groundwater from the carbonate aquifer for use as drinking water and for industrial activities, and low noise levels in the LCLA lands area. Again, these activities would occur on a small acreage of the total lands within Lincoln County.

5.23 CUMULATIVE EFFECTS

The CEQ Regulations for Implementing the Procedural Provisions of the NEPA defines cumulative impacts as:

> *"...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7). Past, present, and reasonable foreseeable actions are analyzed to the extent that "they are relevant and useful in analyzing whether the reasonably foreseeable effects of the agency proposal for action and its alternatives may have an additive and significant relationship to those effects" (CEQ 2005).*
>
> *CEQ regulations for implementing NEPA require discussing cumulative, connected, and similar actions within the environmental review document. Cumulative actions are actions*

> *"which when viewed with other proposed actions have cumulatively significant impacts and would therefore be discussed in the same [environmental review]" [40 CFR 1508.25(a) (2)].*
>
> *Connected actions are actions closely related to the proposed action. "Actions are connected if they: (i) automatically trigger other actions which may require environmental review; (ii) cannot or would not proceed unless other actions are taken previously or simultaneously; or (iii) are interdependent parts of a larger action and depend on that larger action for their justification" [40 CFR 1508.25(a) (1)].*
>
> *Similar actions are actions that occur within a similar time frame or geography. These actions "which when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography" [40 CFR 1508.25(a)(1)].*

Effects of these three types of actions are analyzed within this cumulative effects section to determine an overall level of cumulative effect on each resource.

5.23.1 Cumulative Effects Methodology

Cumulative effects were analyzed by aggregating effects of a given alternative (No Action Alternative, Preferred Alternative, or Alternative A) with effects of past, present, and reasonably foreseeable future actions on a particular resource. Such actions can be specific, such as construction of a road, or more generalized, such as population growth trends in Lincoln County. Cumulative analysis is not necessarily an additive process, depending upon the resource topic and types of actions; therefore, these aggregate analyses are qualitative in nature.

For the purposes of this analysis, cumulative effects are bounded by time and geography. Because expected effects are likely different for different resource topics, the geographic scope of the cumulative analysis varies for each resource topic. The timeframe for all cumulative analyses is past, present, and the foreseeable future. If a future project or action is highly unlikely to occur, it has not been considered in these analyses.

Other projects and actions considered for this cumulative analysis include the following:

- CSI Multi-species Habitat Conservation Plan (MSHCP) in Lincoln County
- CSI Development in Clark County
- LS Power Electrical Transmission Project
- Coyote Springs 138-kV Transmission Line Project
- Ely Energy Center
- Coyote Spring Well and Moapa Transmission System Project
- Muddy River Memorandum of Agreement
- Additional Moapa Valley Water District Groundwater Pumping in Upper Moapa Valley
- Clark, Lincoln, and White Pine Counties Groundwater Development Project
- Caliente Management Framework Plan Amendment and Final EIS for the Management of Desert Tortoise Habitat
- BLM Ely District Resource Management Plan
- Kane Springs Groundwater Development Project
- Lincoln County Land Act Groundwater Development Project
- Clark County Multiple Species Habitat Conservation Plan
- Virgin River Habitat Conservation and Recovery Program
- Toquop Energy Project

5.23.1.1 CSI MSHCP in Lincoln County

CSI proposes to develop a master planned community encompassing approximately 21,454 acres of developable private land, 720 acres of protected private land now owned by The Conservation Fund, and approximately 7,548 acres of leased land within Lincoln County, Nevada. The Lincoln County community is entitled for approximately 111,000 residential units and 4,500 acres of commercial development. Initial development plans identify a variety of housing options, golf courses, commercial centers, heliport(s), industrial sites, schools, open space, and governmental and public facilities. Pardee Homes of Nevada will be the master residential developer for the Lincoln County community. CSI is seeking a Section 404 permit from the USACE together with an approved Multi-Species Habitat Conservation Plan from USFWS. Development of the Lincoln County community would not occur until some time after these authorizations are obtained.

Conservation measures are being incorporated into the proposed development, including perpetual conservation easements, open space, preservation and restoration of WOUS, dedication of water rights to the survival and recovery of the Moapa dace, desert tortoise conservation measures, and natural wash buffer zones (ENTRIX et al. 2005). Reclaimed wastewater would be utilized for golf course, park, and common area landscape irrigation to the maximum reasonable extent.

CSI anticipates 75,000 acre feet per annum (afa) would be needed to serve the developments water needs at build-out. CSI anticipates the Preferred Alternative would allow delivery of the initial water supply appropriated by LCWD within the Kane Spring Valley to the community. CSI anticipates that additional water rights would be obtained from existing certificated rights owned by an affiliate of CSI further to the north in Lincoln County or new appropriations of groundwater in Lincoln County. CSI anticipates that this need being met in multiple phases by groundwater produced from various basins within Lincoln County rather than being identified at one time or produced from one location. The utilization of all such water rights within the community is and would be subject to the jurisdiction of an authorization by the Nevada State Engineer.

5.23.1.2 CSI Development in Clark County

CSI is currently constructing a master planned community encompassing approximately 6,881 acres of private land and approximately 6,219 acres of leased land within Clark County, Nevada. The Clark County community is currently being planned and developed for 29,000 residential units, 710 acres of mixed use, 270 acres of commercial development and 1,210 acres of golf, parks, open space, public facilities, and preserve areas. The leased land has been designated as the Coyote Springs Resource Management Area and will not be developed. Initial development plans identify a variety of housing options, golf courses, commercial centers, heliport(s), industrial sites, schools, and governmental facilities. CSI selected Pardee Homes of Nevada as the master residential developer for the Clark County community. The ground breaking for the Clark County community occurred in late 2005. Golf course, road, and utility improvements are under construction. The first phase is anticipated to be completed within 2 to 7 years (ENTRIX et al. 2005).

Conservation measures have been incorporated into the proposed development, including perpetual conservation easements, preservation and restoration of WOUS, dedication of water rights to the survival and recovery of the Moapa dace, desert tortoise conservation measures, and natural wash buffer zones (ENTRIX et al. 2005). Reclaimed wastewater would be utilized for golf course, park, and common area landscape irrigation to the maximum reasonable extent. CSI intends to pump its permitted groundwater rights in the Coyote Spring Valley to serve the initial demand of the Clark County community. It is anticipated that an additional 15,000 afa would be needed to serve the community at build-out. CSI anticipates the additional water rights would be obtained from existing certificated rights owned by an affiliate of CSI further to the north in Lincoln County or new appropriations of groundwater in Lincoln County.

5.23.1.3 LS Power Electrical Transmission Project

The LS Power Electrical Transmission (LS Power) Project involves the proposed construction, operation, and maintenance of a 540-mile-long 500 kV transmission line between Midpoint Substation near Twin Falls, Idaho to the Dry Lake area northeast of Las Vegas. Approximately 383 miles of this project would be located in the BLM Ely District within the approved Southwestern Intertie Project (SWIP) corridor, located on the west side

of U.S. Highway 93. The right-of-way for the SWIP corridor was granted by the BLM in the 1990s (BLM 2007b).

5.23.1.4 Coyote Springs 138-kV Transmission Line Project

LCPD is proposing to upgrade a portion of its existing transmission system from 69-kV to 138-kV and construct up to 5 new substations to provide power to the CSI project. Up to 11.2 miles of transmission line would be upgraded between the proposed Scott Substation to the proposed Sheep Mountain Substation.

The proposed Scott Substation would be located on CSI private property east of U.S. Highway 93 (within Lincoln County), approximately 5 miles south of the intersection of Kane Springs Road and U.S. Highway 93. The proposed Sheep Mountain Substation would be located on BLM managed land west of U.S. Highway 93 within a right-of-way. Ancillary facilities would include three additional substations, stepdown transformers for fiber optic and cellular tower facilities, and related electrical components. These facilities would be primarily located along State Route 168 (BLM 2007b).

5.23.1.5 Ely Energy Center

Nevada Power Company, in conjunction with Sierra Pacific Power Company have applied to the Public Utility Commission of Nevada to construct and operate a new coal-fired electrical generation facility and associated transmission, switching station, and communication facilities. These facilities would primarily be located on Federal land administered by the BLM, Ely, Elko, and Las Vegas offices. A portion of the 500-kV transmission line between the Robinson Summit Switching Station near Ely, and the Harry Allen Switching Station northeast of the intersection of U.S. Highway 93 and Interstate 15, is proposed to be constructed through the Delamar Valley to Kane Springs Valley, and west along the Kane Springs Road, within the 2,640-foot-wide LCCRDA corridor, to U.S. Highway 93 (BLM 2007b).

5.23.1.6 Coyote Spring Well and Moapa Transmission System Project

SNWA is proposing to develop its existing groundwater rights in Coyote Spring Valley Hydrographic Basin. The Nevada State Engineer has permitted 16,300 afy of groundwater in Coyote Spring Valley, of which 9,000 acre-feet are owned by SNWA. The Coyote Spring Well and Moapa Transmission System Project (Coyote Spring Project) would develop and convey 9,000 afy of groundwater from Coyote Spring Valley in northeastern Clark County using new and existing facilities (BLM 2007b).

Development of groundwater resources for this project is subject to Nevada State Engineer Order 1169, which relates to groundwater applications in several adjacent groundwater basins, including Coyote Spring Valley, and holds various permits in abeyance pending the completion of a study of the regional carbonate aquifer system.

5.23.1.7 Muddy River Memorandum of Agreement

SNWA in addition to CSI, USFWS, Moapa Band of Paiute Indians, and the Moapa Valley Water District, have entered into a Memorandum of Agreement (MOA) for the protection and recovery of the Moapa dace and its habitat. The MOA outlines the following conservation measures:

- Establishment by all parties of a Recovery Implementation Program for the protection and recovery of Moapa dace;
- Dedication by the Moapa Valley Water District of its entire 1.0 cfs Jones Spring water right to provide in-stream flows beneficial to Moapa dace;
- Funding provided by the USFWS ($125,000) to develop an ecological model for the Moapa dace;
- Construction of a set of fish barriers on the Muddy River by BLM and USFWS to prevent further migration of non-native fishes;
- Establishment of a Hydrologic Review Team by all parties;
- Operational coordination among USFWS, SWNA, CSI, and MVWD;

- Carrying out adaptive management measures by the parties, including funding preparation, and implementation of biological and hydrological studies and activities supporting recovery of Moapa dace, establishing a regional monitoring and management plan, assessing the feasibility of augmenting and/or restoring in-stream flows, and continuing to reevaluate necessary measures to protect and recover Moapa dace; and
- If flow levels, as measured at the Warm Springs West flume reach 3.0 cfs during the Order 1169 pumping study, the Moapa Valley Water District would shut down the Arrow Canyon well.

5.23.1.8 Additional Moapa Valley Water District Groundwater Pumping in Upper Moapa Valley

The Moapa Valley Water District's existing water right permit allows for phased increases in groundwater pumping from wells in the Upper Moapa Valley. Current pumping by MVWD is approximately 2,400 afy (up to 7,200 afy are allowed). Similar to the stipulated agreement between USFWS and LCWD, MVWD has agreed to restrict groundwater pumping if the 2.7 cfs "trigger level" at the Warm Springs West flume is reached (BLM 2007b).

5.23.1.9 Clark, Lincoln, and White Pine Counties Groundwater Development Project

In August 2004, SNWA filed an application with the BLM Ely Field Office for rights-of-way for a proposed system of regional groundwater production, conveyance, and treatment facilities, and power conveyance facilities in Clark, Lincoln, and White Pine counties. As part of this project, SNWA plans to convey approximately 170,000 afy of groundwater from five hydrographic basins in eastern Nevada. The water conveyed by this project will be used to serve SNWA purveyor members in the Las Vegas Valley and customers of the Lincoln County Water District in Coyote Spring Valley. SNWA has submitted a draft Conceptual Plan of Development for the Clark, Lincoln and White Pine Counties Groundwater Development Project to the BLM in December 2008. This plan describes the water rights that will be developed for the project, along with the proposed facilities, construction methods, and environmental protection measures and the recent decisions made by the Nevada State Engineer. It is currently anticipated that the project would not begin construction before 2010, and would not be completed until approximately 2019.

In July 2008, the Nevada State Engineer released a ruling granting SNWA 18,755 acre-feet of groundwater annually from Delmar, Dry Lake and Cave valleys (refer to Table 4-2 herein).

5.23.1.10 Caliente Management Framework Plan Amendment and Final EIS for the Management of Desert Tortoise Habitat (BLM 2000)

The Plan Amendment and Final EIS for the Caliente Management Framework Plan implemented management goals and actions for BLM-administered desert tortoise habitat in Lincoln County, Nevada. The Caliente Management Framework Plan outlines how 754,600 acres of public lands administered by the BLM Ely Field Office will be managed to aid in the recovery of the desert tortoise, in compliance with the USFWS Desert Tortoise Recovery Plan (USFWS 1994). These goals and actions, some of which are recommended in the Desert Tortoise (Mojave Population) Recovery Plan, will assist the recovery and delisting of the desert tortoise in the Northeastern Mojave Recovery Unit. This amendment was required to comply with the ESA of 1973, which mandates that all Federal agencies conserve and recover listed species within their administrative units.

5.23.1.11 BLM Ely District Resource Management Plan

The ROD to approve the Ely District Approved RMP was signed on August 20, 2008. The Ely District Approved RMP is based on that described as the Proposed RMP in the November 2007 Ely Proposed RMP/EIS with exceptions as noted in the ROD. The Final RMP/EIS for the Ely District provides direction and guidance for the management of approximately 11 million acres of BLM administered land in Lincoln, Nye, and White Pine counties (BLM 2008).

5.23.1.12 Kane Springs Valley Groundwater Development Project

BLM issued a ROD for the Kane Springs Valley Groundwater Development Project in November 2008, which allows BLM to grant a right-of-way to the LCWD for construction, operation and maintenance of a pipeline to deliver water to Coyote Springs Valley. The project would assist in meeting a portion of the water demands of Lincoln County and is a component of Lincoln County's Water Plan.

5.23.1.13 Lincoln County Land Act Groundwater Development Project

LCWD has submitted right-of-way applications for development of up to 15 production water wells to be located in the previously permitted Toquop Energy Project proposed well field area located in the Tule Desert Hydrographic Basin and up to 15 production water wells to be located in the Clover Valley Hydrographic Basin of southeastern Lincoln County. Collectively, wells in the Tule Desert basin would pump up to 9,340 acre-feet of groundwater per year. Wells in the Clover Valley would pump up to 14,480 acre-feet of groundwater per year. A system of pipelines would collect pumped water for conveyance through a main transmission pipeline southeast to the Lincoln County Land Act development area following, in part, the 2,640-foot-wide LCCRDA corridor. Other utilities, including natural gas, telecommunications, and electrical power, would be brought into the LCLA area along portions of the water pipeline alignment (BLM 2007).

The existing Tule Desert well field is currently permitted to produce and export 2,100 afy of groundwater. The LCWD has applications pending before the Nevada State Engineer for an additional 7,240 afy in the Tule Desert Basin. The decision about how much additional water would be permitted, if any, rests with the Nevada State Engineer.

5.23.1.14 Clark County Multiple Species Habitat Conservation Plan and EIS

In 2000, Clark County, Nevada and other applicants and participants completed a multi-species habitat conservation plan for a series of Covered Activities that would occur on all non-Federal (private, municipal, State) lands within Clark County and NDOT activities in areas within Clark, Nye, Lincoln and Esmeralda counties south of the 38th parallel and below 5,000 feet in elevation over the next 30 years. Activities include development, recreation, agriculture, flood control, mineral activities, off-highway vehicle use, solid waste, transportation, utilities, and sewer and water. Seventy-eight species are covered under the Clark County MSHCP, of which two are listed under the Federal ESA (desert tortoise and southwestern willow flycatcher) and an additional 103 species as evaluation or watchlist species. This plan area is adjacent to the SLCHCP Covered Area.

5.23.1.15 Virgin River Habitat Conservation and Recovery Program

The City of Mesquite (City) initiated development of the Virgin River Habitat Conservation Plan (VRHCP), with the intent of obtaining an incidental take permit, in June 2004. In April 2005, an agreement was reached between the City, USFWS, and Clark County to expand the scope of the VRHCP to activities beyond the discretion of the City as well as implementing recovery actions. This resulted in the proposal to develop the Virgin River Habitat Conservation and Recovery Program (VRHCRP). Guidance and direction for development of the VRHCRP was sought from cooperating agencies and entities including the Southern Nevada Water Authority (SNWA), Virgin Valley Water District, BLM, National Park Service (NPS), and Nevada Division of Wildlife (NDOW). The VRHCRP will serve as the primary mechanism for implementing conservation measures associated with aquatic and riparian species in the Virgin River Basin. Additionally, the framework for administration of the VRHCRP, as well as the technical, stakeholder and public involvement processes would be adapted and modified to include the Virgin River Basin Resource Conservation Assessment (VRBRCA) process. The VRBRCA is broader in scope than the VRHCRP. It includes: 1) assessing the status, including potentially conducting presence/absence surveys and developing objectives and a monitoring program for approximately 55 additional species; 2) involvement by more entities in plan development decision making processes; 3) coordination with the Clark County MSHCP process; 4) integration of potential recreational and cultural resource issues, and 5) the production of a document structured for a resource conservation assessment based on the Clark County format.

5.23.1.16 Toquop Energy Project

Toquop Energy, LLC (a subsidiary of Sithe Global Power, LLC) is proposing to construct a 750 megawatt, coal-fired power plant in southeastern Lincoln County. In April 2003, the BLM Ely Field Office issued an EIS for the Toquop Energy Power Project, proposed by Toquop Energy, Inc. (Proposed Toquop Land Disposal Amendment to the Caliente Management Framework Plan and EIS for the Toquop Energy Power Project, March 2003). The project analyzed in the 2003 EIS was a 1,100-megawatt (MW) natural gas-fired electric power generation plant and associated facilities in Lincoln County in southern Nevada. Toquop Energy, Inc., proposed the project in order to generate electrical power at competitive costs for use by consumers and to meet the needs of forecasted electric load growth.

The BLM has determined that, although an EIS for the original gas-fired power plant has been completed, the currently proposed coal-fired power plant has a number of components that are different from the previously proposed gas-fired technology. The footprint of the proposed coal-fired plant is larger than what was analyzed in the 2003 EIS; the power plant, ash disposal, and topsoil storage areas would occupy a total of 475 acres. Additional acreage of desert tortoise habitat would also be disturbed due to construction of the rail spur. Fencing off the entire 640-acre area would make it all unavailable to desert tortoises.

Public scoping meetings were held in March of 2006, and an EIS has been completed. The BLM recently released an updated Draft EIS for this project on October 12, 2007. Public meetings were held in November 2007, and the comment period closed on December 11, 2007. A Final EIS is forthcoming.

5.23.2 Cumulative Effects by Resource Topic

Cumulative effects are present by resource topic below, in the same order as they are presented in the environmental consequences analysis of the effects of each of the alternatives. A geographic boundary is described for each resource topic, and cumulative effects for each alternative are considered.

5.23.2.1 Threatened and Endangered Species

The geographic extent of the cumulative impacts analysis for threatened and endangered species is the Covered Area and surrounding federal lands.

5.23.2.1.1 No Action Alternative

The No Action Alternative would contribute no additional effects to the threatened and endangered species, such as the desert tortoise and southwestern willow flycatcher, and their habitat if Section 10 permits were not issued.

Under the No Action Alternative, the USFWS would not issue incidental take permits under Section 10(a)(1)(B) of the ESA, "take" of the Covered Species would not be authorized, and the SLCHCP would not be implemented. ESA consultation would still be required for ongoing road maintenance and railway activities and land development activities on all non-Federal land within the Covered Area. These activities would require individual Section 10(a)(1)(B) permits which would result in the development of conservation measures to avoid, minimize, and mitigate for any adverse effects to any threatened and endangered species.

The closest development to other private lands in Lincoln County is the development of CSI private lands in Clark and Lincoln Counties. As part of the development of CSI private lands in Clark County, detention basins are being constructed in the BLM utility corridor west of U.S. Highway 93 in Clark County. Development of CSI lands in Clark County and construction within the BLM utility corridor would disturb and fragment habitat for sensitive wildlife species including critical habitat for desert tortoise. However, the setting aside of 6,881 acres of land to be protected and reconfigurating of CSI private and lease land (reserve land) within Clark County would minimize habitat fragmentation and provide protection for the special status species. Adverse effects to desert tortoise from development of the CSI lands would be offset by the permanent protection and management of 13,767 acres of the CSICL for desert tortoise. In addition, the results of research efforts funded by the CSI MSHCP are expected to have beneficial effects to desert tortoise and their habitat that could extend beyond the project area. In addition, the reconfiguration of CSI private and lease land (reserve land) within Lincoln County would minimize habitat fragmentation as the lease lands would be

consolidated west of the CSI private land in Clark County and be contiguous with the protected CSI lease lands in Clark County and the adjacent undisturbed lands that are part of the Mormon Mesa CHU and are managed as BLM ACECs. The currently proposed coal-fired power plant for the Toquop Energy Project would require ESA consultation, which would result in the implementation of conservation measures to offset adverse effects.

In 2005, approximately 403,000 acres of desert tortoise habitat burned in southern Nevada, including 15,559 acres (4 percent) of the Mormon Mesa CHU. Activities on BLM lands in both the Ely and Las Vegas field offices would have adverse effects on desert tortoise, although minimization and mitigation measures have been proposed and large acreages of BLM lands have been protected for desert tortoise as ACECs.

Drought and other climatic variations due to climatic change could also adversely affect desert tortoise and the viability of its habitat. Even a relatively short-term drought combined with little or no vegetation biomass can result in a severe reduction in adult tortoise survival (Longshore et al. 2003) and affects clutch size and reproduction (Turner et al. 1986, 1987; Avery et al. 2002). The Intergovernmental Panel on Climate Change (IPCC) has suggested that increasingly reliable regional climate change projections are now available as the result of improved modeling capabilities and advanced understanding of climate systems (Christensen et al. 2007). Twenty-one Atmosphere-Ocean General Circulation Models were run to predict regional temperature and precipitation in 2080 through 2099 as changed from conditions that occurred between 1980 and 1999. General predictions for the geographic range of the desert tortoise's listed population suggest a 3.5 to 4.0°C (6.3 to 7.2°F) increase in annual mean temperature, with the greatest increases occurring in summer (June-July-August mean up to 5°C (9°F) increase) (Christensen et al. 2007). Precipitation will likely decrease by 5 to 15 percent annually in the region, with winter precipitation decreasing in the range of 5 to 20 percent (Christensen et al. 2007). Because germination of the tortoise's food plants is highly dependent on cool season rains, the forage base could be reduced due to increasing temperatures and decreasing precipitation in winter. Currently, little is known about specific direct effects of climate change on the desert tortoise or its habitat.

OHV use on public lands in Lincoln County could also increase as a result of development activities bringing more residents into the county. With measures in place to address the management of OHV trails for a larger number of people, additional adverse effects to threatened and endangered species would be unlikely.

With over 98 percent of Lincoln County under federal administration, the majority of the County's lands would continue to provide quality habitat for threatened and endangered species. Recovery plans would continue to improve and protect habitat conditions for threatened and endangered species. Protected lands within the Coyote Springs Resource Management Area in Lincoln County would also provide protection and unfragmented habitat for desert tortoise. Additionally, the current incidental take permit issued to Clark County for their MSHCP covers the loss of 145,000 acres of habitat for 78 species in Clark County. The conservation actions for the MSHCP focus on conservation of the habitat of the Covered Species for this plan. The conservation and recovery of the Covered Species is being accomplished through a suite of 604 potential conservation actions that minimize, mitigate or monitor the impacts of take. The disturbance fees ($550 per acre) are collected by the permittees (Clark County, NDOT, Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas) and collectively administered by the County in an endowment fund (approximately $4 million every two years).

5.23.2.1.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Overall, cumulative effects for threatened and endangered species would be greater for the Preferred Alternative than those described for the No Action Alternative, because the amount of lands disturbed in Lincoln County would be greater. Up to an additional 19,840 acres of desert tortoise habitat and 84.3 acres of suitable southwestern willow flycatcher habitat would be disturbed under this alternative; however, no critical habitat would be altered. Development of the SLCHCP for other private lands in Lincoln County would provide a mechanism to protect terrestrial threatened and endangered species such as the desert tortoise and southwestern willow flycatcher, respectively. To offset the loss of 19,840 acres of potential desert tortoise habitat, a one-time per-acre mitigation fee would be paid by those permittees disturbing suitable habitat. The funds generated from the mitigation fees collected will then be used to implement the conservation measures described in Section 3.2.2.3 herein to offset the effects to desert tortoise. Under the SLCHCP, the modification or reduction of

riparian habitat could adversely affect up to 84.3 acres of suitable flycatcher habitat. The permittees have agreed to contribute $12,000 per acre to offset potential effects to southwestern willow flycatcher habitat from their activities to replace the loss of up to 84.3 acres of suitable habitat with native habitat at a 2:1 ratio and the loss of non-native suitable flycatcher habitat with native habitat at a 1:1 ratio. These measures would enhance recovery actions for both the desert tortoise and southwestern willow flycatcher.

5.23.2.1.3 Alternative A

Effects of other plans and projects would be the same as described for the No Action Alternative. Overall cumulative effects would be greater for Alternative A than those described for the Preferred Alternative. An additional 13,461 acres of land between Alamo and Hiko and around Elgin and Carp would be available for development or other authorized uses under this alternative. Similar mitigation and conservation measures as those described for the Preferred Alternative would be developed and implemented for Alternative A.

5.23.2.2 Other Listed and Candidate Species and Species of Concern

5.23.2.2.1 No Action Alternative

The No Action Alternative would contribute no additional effects to the other listed and sensitive species identified herein if Section 10 permits were not issued. Under the No Action Alternative, the USFWS would not issue incidental take permits under Section 10(a)(1)(B) of the ESA, "take" of the special status species would not be authorized, and the SLCHCP would not be implemented. ESA consultation would still be required for ongoing road maintenance and railway activities and land development activities on all non-federal land within the Covered Area. These activities would require individual Section 10(a)(1)(B) permits which would result in the development of conservation measures to avoid, minimize, and mitigate for any adverse effects to any other listed and sensitive species.

The closest development to other private lands in Lincoln County is the development of CSI private lands in Clark and Lincoln Counties. As part of the development of CSI private lands in Clark County, detention basins are being constructed in the BLM utility corridor west of U. Highway 93 in Clark County. Development of CSI lands in Clark County and construction within the BLM utility corridor would disturb and fragment habitat for other special status species. However, the setting aside of 6,881 acres of land to be protected and reconfigurating of CSI private and lease land (reserve land) within Clark County would minimize habitat fragmentation and provide protection for the special status species. Adverse effects to other special status species habitat from development of the CSI lands would be offset by the permanent protection and management of 13,767 acres of the CSICL for desert tortoise. In addition, the results of research efforts funded by the CSI MSHCP are expected to have beneficial effects to desert tortoise and their habitat that could extend beyond the project area. In addition, the reconfiguration of CSI private and lease land (reserve land) within Lincoln County would minimize habitat fragmentation as the lease lands would be consolidated west of the CSI private land in Clark County and be contiguous with the protected CSI lease lands in Clark County and the adjacent undisturbed lands that are part of the Mormon Mesa CHU and are managed as BLM ACECs. The currently proposed coal-fired power plant for the Toquop Energy Project would require ESA consultation, which would result in the implementation of conservation measures to offset adverse effects.

OHV use on public lands in Lincoln County could also increase as a result of development activities bringing more residents into the county. With measures in place to address the management of OHV trails for a larger number of people, additional adverse effects to other listed and sensitive species would be unlikely.

Overall, Federal actions with the potential to affect other federally-listed species would require consultation with the USFWS under the ESA. Conservation measures identified for the CSI MSHCP and Section 7 consultations would prevent significant adverse effects occurring to other listed and sensitive species, although disturbance and loss of habitat and/or incidental take would occur. Additionally, the current incidental take permit issued to Clark County for their MSHCP covers the loss of 145,000 acres of habitat for 78 species in Clark County. The conservation actions for the MSHCP focus on conservation of the habitat of the Covered Species for this plan. The conservation and recovery of the Covered Species is being accomplished through a suite of 604 potential conservation actions that minimize, mitigate or monitor the impacts of take. The

disturbance fees ($550 per acre) are collected by the permittees (Clark County, NDOT, Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas) and collectively administered by the County in an endowment fund (approximately $4 million every two years).

5.23.2.2.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Overall, cumulative effects for other listed and sensitive species would be greater for the Preferred Alternative than those described for the No Action Alternative, because the amount of lands disturbed in Lincoln County would be greater. Up to an additional 30,673.5 acres of land and or potential habitat for other sensitive species could potentially be disturbed under this alternative.

Development of the SLCHCP for other private lands in Lincoln County would provide a mechanism to protect other listed and sensitive species habitat within the Covered Area and those lands that fall outside of the SLCHCP Covered Area. Under the SLCHCP, a one-time per-acre mitigation fee would be paid by those permittees disturbing suitable desert tortoise habitat. The funds generated from the mitigation fees collected will then be used to implement the conservation measures described in Section 3.2.2.3 herein to offset the effects to desert tortoise as well as potential habitat of other listed and sensitive species adjacent to the Covered Area. To offset the potential loss of up to 84.3 acres of suitable flycatcher habitat, the permittees have agreed to contribute $12,000 per acre to replace the loss of up to 84.3 acres of suitable habitat with native habitat at a 2:1 ratio and the loss of non-native suitable flycatcher habitat with native habitat at a 1:1 ratio. These measures would enhance recovery actions for other listed and sensitive species within the Covered Area.

Development of the LCLA lands will require construction of flood control structures in the drainages that flow throughout the LCLA area. These drainages flow south and terminate in the Virgin River, where woundfin, Virgin River chub, southwestern willow flycatcher, Yuma clapper rail, and yellow-billed cuckoo are known to occur. Manipulation of natural drainages may result in reducing the amount of allochthonous material transported to the river, which is needed for nutrient input into a system naturally low in nutrients. Re-engineering of drainages may also cause water to flow faster than normal, resulting in erosion of streambanks. Non-point source pollution from urban runoff may also enter drainages and flow down to the river.

As described in Section 3.3 herein, best management practices would be implemented to ensure effects to listed species in downstream habitats are insignificant or discountable. Furthermore, alteration of some of the drainages on the LCLA lands or other non-federal lands within the Covered Area of the SLCHCP may entail obtaining permits under Section 404 of the CWA, which will require that the project proponent modify drainages designated as WOUS in a manner that preserves the function and value of the drainage system. If the ACOE determines that modifications may affect a federally-listed species, they will be required to consult with the USFWS under Section 7 of the ESA to minimize potential effects to those listed species.

Railroad construction, maintenance, and urgent response activities, as well as flood control activities to protect the railroad and City of Caliente, may affect the Meadow Valley Wash desert sucker, Meadow Valley Wash speckled dace, and Arizona toad. Construction, maintenance, and flood control activities requiring the movement of sediment, realignment of the channel, or diversion of water may all lead to mortality of fish and toads. The avoidance, minimization and mitigation measures to be implemented under the SLCHCP (described in Section 3.2.2.3 in this FEIS) to offset all of the potential impacts to the Covered Species from the Covered Activities will also benefit the Meadow Valley Wash species (i.e., dace, sucker, Arizona toad).

Threecorner milkvetch, sticky wild buckwheat, and Las Vegas buckwheat occur within the southeastern corner of Lincoln County, in proximity to the LCLA lands. Plants within the LCLA lands would be replaced by development, and plants occurring on lands adjacent to the LCLA lands may be subject to disturbance and competition from invasive species from increased recreational and other human uses. Threecorner milkvetch and sticky wild buckwheat are protected by the State of Nevada, and developers would be required to obtain a permit from the Nevada Division of Forestry prior to removal of either of these species. Also, these plants are considered species of concern by the BLM, and plants occurring on BLM-administered land would be managed in accordance with BLM's policies for protection of species of concern. The status of these two species within the LCLA lands is unknown, although surveys for these species have been conducted for other projects near or adjacent to the LCLA lands (e.g. 640-acre Section 36 disposal parcel) and have not found

them. These species have been found in the Beaver Dam Slope area close to the extreme northeastern corner of the LCLA boundary. The location of these two species in Lincoln County represents the extreme northern extent of their distribution. Most of the known populations of these two species occur in Clark County. All known occurrences of these species occur outside the boundary of the LCLA lands. Therefore, effects to these two species from the Preferred Alternative are expected to be insignificant or negligible.

The Las Vegas buckwheat also occurs in Lincoln County, but within the Covered Area is known to occur only on mining claims in the vicinity of the proposed Toquop Energy Project. It is not known to occur on any non-federal lands covered under the SLCHCP. Recent surveys conducted in Lincoln County by the BLM in October 2007 found no evidence of this species other than the mining claim population. Mining is not a Covered Activity in the SLCHCP; therefore, effects to this species resulting from the Preferred Alternative are expected to be insignificant or negligible.

5.23.2.2.3 Alternative A

Effects of other plans and projects would be the same as described for the No Action Alternative. Overall, cumulative effects to other listed and sensitive species would be greater for Alternative A than those described for the Preferred Alternative. An additional 13,461 acres of land between Alamo and Hiko and around Elgin and Carp would be available for development or other authorized uses. Similar mitigation and conservation measures as those described for the Preferred Alternative would be developed and implemented for Alternative A.

5.23.2.3 Wildlife

The geographic extent for the cumulative analysis is the Covered Area and surrounding federal lands.

5.23.2.3.1 No Action Alternative

The No Action Alternative would contribute no additional effects to wildlife and their habitat if Section 10 permits were not issued. Under the No Action Alternative, the USFWS would not issue incidental take permits under Section 10(a)(1)(B) of the ESA, "take" of the Covered Species would not be authorized, and the SLCHCP would not be implemented. Separate ESA consultation would still be required for ongoing road maintenance and railway activities and land development activities on all non-Federal land within the Covered Area. As such, these activities would result in small temporary and permanent disturbances of upland and riparian habitats within the Covered Area. Any new road development in the Covered Area would also result in localized losses of habitat and increases in habitat fragmentation.

The closest development to other private lands in Lincoln County is the development of CSI private lands in Clark and Lincoln Counties. As part of the development of CSI private lands in Clark County, detention basins are being constructed in the BLM utility corridor west of U.S. Highway 93 in Clark County. Up to an additional 20,960 acres (20,716 acres from the CSI development and up to 244 acres from the construction of detention basins) of wildlife habitat would be disturbed. Permanent protection and management of 13,767 acres of the CSICL would help offset impacts to habitat. In addition, the results of research efforts funded by the CSI MSHCP are expected to have beneficial effects to other wildlife and their habitat that would likely extend beyond the project area.

Development of CSI lands in Lincoln County, Nevada, would result in habitat loss and habitat fragmentation. Habitat loss would be small in proportion to the size of Lincoln County, and effects to fish habitat would be limited because of mitigation measures associated with the various projects. The development of CSI lands could also adversely affect migration routes for desert bighorn sheep. Given that lands in Lincoln County are relatively unfragmented, aside from infrequent roads and railroad tracks, these additional sources of fragmentation would not result in cumulatively significant effects. These activities would not in and of themselves have an effect large enough to affect dispersal and effects related to habitat fragmentation such as increased predation, competition, and etc. at the population level for any given wildlife species. The currently proposed coal-fired power plant for the Toquop Energy Project would result in the implementation of

conservation measures, including avoidance and minimization measures, to offset adverse effects to wildlife and their habitat.

OHV use on public lands in Lincoln County could increase as a result of CSI development activities bringing more residents into the area. A number of conservation measures would be implemented in conjunction with the Coyote Springs Investment Planned Development Project MSHCP to minimize effects to Covered Species in Lincoln County. Conservation and mitigation measures would ensure that adequate education be implemented to address potential problems associated with increased OHV use, such as creation of social trails, illegal dumping, and vandalism to address the management of OHV trails for a larger number of people.

In addition to the loss of habitat and displacement, drought and other climatic changes could contribute adverse effects to demographics and habitat for terrestrial and aquatic species. The IPCC predicts that there is a 90 percent probability that extreme weather events, warmer temperatures, and regional drought will increase in the northern hemisphere as a result of climate change (IPCC 2007). In the past 60 years, the frequency of storms with extreme precipitation has increased in Nevada by 29 percent (Madsen and Figdor 2007). Climate models show the southwestern U.S. has entered a period of drought that will continue into the next century (Seager et al. 2007). Changes in local southern Nevada climatic patterns cannot be definitively tied to global climate change; however, they are consistent with IPCC predicted patterns of extreme precipitation, warmer than average temperatures and drought (Redmond 2007). Therefore, climate change is likely to impact wildlife and its habitat through predicted increases in extreme precipitation and drought which may affect distribution and abundance of wildlife. It is anticipated that there would be movement of species to cooler areas, and increases in the survival of heat tolerant species and in abundance of habitat generalists (e.g. insects and invasive species) (Hoshovsky 2007). In addition, an increase in extreme events would most likely affect populations living at the edge of their physiological tolerances (Parmesan and Matthews 2006) and exacerbate threats to sensitive species.

Climate change also has the potential to affect wildlife that have a strong linkage to seasonal change. One of the clearest signals of biological response to rising temperatures has been shifts in species phenology (Forchhammer et al. 1998, Walther et al 2002, Parmesan 2006). Root et. al (2005) examined large scale trends across the Northern Hemisphere on 130 birds, insect, and plant species that showed significant phenological shifts. Based on their research, it is estimated that spring events such as blooming, insect emergence, and migratory bird arrival dates are occurring 3.2 days earlier per decade. These authors found that higher latitude species are showing stronger responses than those in lower latitude areas. The change in timing of emergence dates for insects, clutch initiation dates for birds, and flowering could disturb local food webs with some animals appearing ahead or behind of others on which they rely for food. The extent to which climate change would affect the phenology of wildlife in the southwestern U.S. in not known with certainty at this time.

With over 98 percent of Lincoln County under Federal administration, the majority of Lincoln County's lands would continue to provide quality habitat for fish and wildlife species. Recovery plans intended to protect threatened and endangered species and their habitats would continue to improve and protect habitat conditions for fish and wildlife species that use the same habitats. Continued management of BLM's Areas of Critical Environmental Concern and wilderness areas and Desert National Wildlife Refuge in Lincoln County would continue to protect all wildlife species in these areas and maintain large tracks of unfragmented land for wildlife migration and dispersal. CSI lands would also provide over 8,200 additional acres of wildlife habitat in a permanent conservation easement if the incidental take permit is issued and the HCP is implemented.

5.23.2.3.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Overall, cumulative effects to wildlife and their habitat would be greater for the Preferred Alternative than those described for the No Action Alternative, because the amount of lands disturbed in Lincoln County would be greater. Up to an additional 30,673.5 acres of land could potentially be disturbed. However, the implementation of the general mitigation measures described in Section 3.3 herein combined with the specific avoidance and minimization measures for all the Covered Activities described in Section 3.2.2.3 of this FEIS would minimize and mitigate effects to wildlife and their habitat. However, the majority of the lands in the Covered Area would continue to provide quality habitat for fish and wildlife species. Therefore, no significant adverse effects would result.

5.23.2.3.3 Alternative A

Effects of other plans and projects would be the same as described for the No Action Alternative. Overall cumulative effects to wildlife and their habitat would be greater for Alternative A than those described for the Preferred Alternative. An additional 13,461 acres of private land between Alamo and Hiko and around Elgin and Carp would be available for development or other authorized uses. Similar mitigation and conservation measures as those described for the Preferred Alternative would be developed and implemented for Alternative A.

5.23.2.4 Vegetation

The analysis area with respect to potential cumulative effects of the alternatives on vegetation resources is all lands within the Covered Area.

5.23.2.4.1 No Action Alternative

Cumulative impacts on vegetation resources are generally additive and proportional to the amount of ground disturbance within specific habitat areas. Within southeastern Lincoln County, the vegetation composition includes mainly mixed salt desert scrub, creosote white-bursage scrub, and Mojave mixed scrub. These vegetation types are characteristic of the Mojave Desert Scrub Ecosystem (Clark County Department of Comprehensive Planning 2000).

Under the No Action Alternative, the USFWS would not issue incidental take permits under Section 10(a)(1)(B) of the ESA, "take" of the Covered Species would not be authorized, and the SLCHCP would not be implemented. ESA consultation would still be required for ongoing road maintenance and railway activities and land development activities on all non-federal land within the Covered Area. As such, these activities would result in small temporary and permanent disturbances of upland and riparian habitats within the Covered Area. Any new road development in Lincoln County would also result in vegetation disturbance.

Aside from lands identified for disposal related to the LCLA and LCDDRA, BLM lands would remain in BLM ownership and be managed for healthy ecosystems and eradication of non-native plants, which would maintain vegetation diversity. Other federal lands would continue to provide protection for vegetation from disturbances. Grazing on public and private lands would continue to alter vegetation community composition somewhat. Non-native plants would continue to occur within the area, although weed management plans of various agencies and groups would prevent increases in non-natives and work to reduce existing occurrences. Over 8,200 acres of land leased or owned by CSI would be protected in a perpetual conservation easement, which would protect native vegetation communities.

The closest development to other private lands in Lincoln County is the development of CSI private lands in Lincoln County (up to 20,960 acres, see Figure 1-1). Up to an additional 20,960 acres (20,716 acres from the CSI development and up to 244 acres from the construction of detention basins) of Mojave desert scrub vegetation would be disturbed. However, 7,548 acres of Mojave desert scrub vegetation in Lincoln County would be Permanently protected and managed as the CSICL, which would help to offset impacts to vegetation. In addition, CSI would develop and implement a Weed Management Plan and mitigation fees collected through the CSI MSHCP would be used to fund research on fire and habitat restoration in the Mojave Desert. Information gained from this research would be expected to benefit fire restoration efforts within the Mojave Desert.

Construction of a new town on CSI lands in Clark County would result in loss and alteration of vegetation and a potential increase in non-native, invasive plants, although a native plant nursery, protection of vegetation within the CSICL, and other mitigation measures would restore disturbed areas with native plants, provide a seed source for restoration elsewhere, and manage for non-native plants. These measures will minimize the effects of the No Action Alternative; however, the vegetation on disturbed areas will require many years to return to the predisturbance condition.

Drought and other climatic variations due to climate change could result in short-term and long-term adverse effects to vegetation biomass and composition. The IPCC predicts that there is a 90 percent probability that extreme weather events, warmer temperatures, and regional drought will increase in the northern hemisphere

as a result of climate change (IPCC 2007). Recent global-circulation models are projecting intensified xerification and northward extension of North American deserts along with rising temperatures (Wagner 2008). Such changes could affect plants that are dependent on cool seasonal rains in the desert. Plant generalists, such as invasive species, and plants adapted to extreme temperatures, such as non-native grasses, would be expected to increase in distribution and abundance. Rising temperatures could result in phenological shifts in plant species (see wildlife, cumulative effects for further discussion).

Rising temperatures as a result of climate change could also result in prolonged summer droughts, and increase the likelihood and intensity of fire events in the Mojave desert. Historically, fire in the Mojave has been infrequent and a rare event. Woody shrubs and cacti would be most susceptible as these vegetation types are most often killed by fire and those that survive are vulnerable to recurrent fire (Brooks and Pike 2001). An increase in fire frequency would also negatively impact many perennial desert plant species since these species are extremely slow growing, long lived and not specifically adapted to fire. Therefore, post-fire recovery would take decades.

From development of land and utility corridor projects, vegetation disturbance and/or loss would occur on a small portion of the 6.8 million acres of land within Lincoln County. The loss and disturbances would not affect rare vegetation communities, but rather the dominant creosote scrub community located at lower elevations in the County. Overall, the vast majority of vegetation acreages and the diversity of vegetation types in Lincoln County would continue to be protected and managed by the BLM, USFWS, and DOD.

5.23.2.4.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Overall, cumulative effects to vegetation would be greater for the Preferred Alternative than those described for the No Action Alternative, because the amount of lands disturbed in Lincoln County under this alternative would be greater. Up to an additional 30,673.5 acres of Mojave desert scrub vegetation could potentially be disturbed. However, the implementation of the general mitigation measures described in Section 3.3 herein combined with the specific avoidance and minimization measures for all the Covered Activities described in Section 3.2.2.3 of this FEIS would minimize and mitigate effects on vegetation resources. In addition, the mitigation fees collected through the SLCHCP would be used to fund research on fire and habitat restoration in the Mojave desert. Information gained from this research would be expected to benefit fire restoration efforts within the Mojave desert.

Overall, the vast majority of vegetation acreages and diversity of vegetation types in Lincoln County would continue to be protected and managed by the BLM, USFWS, and DOD. Therefore, no significant cumulative effects would occur to vegetation resources if the Preferred Alternative were to be implemented.

5.23.2.4.3 Alternative A

Effects of other plans and projects would be the same as described for the No Action Alternative. Overall, cumulative effects would be greater for Alternative A than those described for the Preferred Alternative. Mojave desert scrub vegetation could be disturbed on up to an additional 13,461 acres of private land between Alamo and Hiko and around Elgin and Carp which would be available for development or other authorized uses. Similar mitigation and conservation measures as those described for the Preferred Alternative would be developed and implemented for Alternative A.

5.23.2.5 Hydrology and Water Quality

For groundwater hydrology, the extent of the cumulative analysis is alluvial and carbonate-rock aquifers within hydrographic basins that intersect with the Covered Area: Coyote Spring Valley (210), Muddy River Springs Area (219), Lower Meadow Valley Wash (205), Dry Lake Valley (181), Delamar Valley (182), Kane Springs Valley (206), Virgin River Valley (222), Tule Desert (221), and Clover Valley (204).

The extent of the cumulative impacts analysis for surface water hydrology and water quality is all surface waters within the Covered Area, along with Pahranagat Creek and the Virgin River outside the Covered Area.

Table 5-2 shows permitted groundwater rights and pending applications within the hydrographic basins considered in this cumulative analysis. Table 5-3 shows the predicted groundwater usage for various projects that could occur within the basins described in Table 5-2.

Table 5-2 Existing Water Rights and Applications within the Cumulative Effects Area of Analysis

Hydrographic Basin	Perennial Yield (afa)	Permitted Water Rights (afy)	Water Rights Applications (afy)	Designated Groundwater Basin
Pahranagat Valley (209)	25,000	9,123.67	20,428.15	No
Lower Meadow Valley Wash (205)	5,000	23,714.17	2,874.81	Yes
Lower Moapa Valley (220)	16,500	5,713.25	0	Yes
Kane Springs Valley (206)	Up to 500	1,000	17,000	No
Dry Lake Valley (181)	2,500	11,584	21,823.75	No
Delamar Valley (182)	3,000	2,493	21,823.52	No
Coyote Spring Valley (210)	18,000	16,304.00	28,511.71	Yes
Virgin River Valley (222)	3,600	12,343.56	185,339.95	Yes
Tule Desert (221)	1,000	2,103.62	0	No
Clover Valley (204)	1,000	3,787.0	0	No

Source: NDWR 2007

[a] Permitted groundwater rights approach or exceed the estimated average annual recharge and water resources are being depleted. These basins require additional administration by the State of Nevada Division of Water Resources. (NDWR 2007)

Table 5-3 Past, Present, and Foreseeable Future Groundwater Basin Projects

Project	Amount of Groundwater (afa)	Hydrographic Basins
CSI Lincoln County Development	Up to 75,000	A combination of all basins included in cumulative analysis, via third-party and/or separate NEPA and ESA consultation, includes the Clark, Lincoln, and White Pine Counties Groundwater Development Project and Kane Springs Valley Groundwater Development Project, alluvial and carbonate aquifers
CSI Clark County Development	16,100	Coyote Spring Valley (210) and California Wash (outside of cumulative analysis area), alluvial and carbonate aquifers
LS Power Electric Transmission Project	Minimal	Unknown
Coyote Spring 138-kV Transmission Line Project	Minimal	Unknown
Ely Energy Center Project 500-kV transmission line within LCCDRA corridor	Minimal	Unknown
Coyote Spring Well and Moapa Transmission System Project	9,000	Coyote Spring Valley (210), carbonate aquifer
LCLA Groundwater Development Project	23,820	Tule Desert and Clover Valley, carbonate aquifer
Additional Moapa Valley Water District Groundwater Pumping in Upper Moapa Valley	Up to 7,200	Muddy River Springs Area (219), carbonate aquifer
Clark, Lincoln, and White Pine Counties Groundwater Development Project	Up to 170,000	Spring Valley (201, outside of cumulative analysis area), Cave Valley (180, outside of cumulative analysis area), Dry Lake (181), Delamar (182), and Snake Valley (outside of cumulative analysis area), carbonate aquifer
Kane Springs Valley Groundwater Development Project	Up to 5,000	Pahranagat Valley (209), Delamar Valley (182), Kane Springs Valley (206), Lower Meadow Valley Wash (205), Muddy River Springs Area (219), Lower Moapa Valley (220), Coyote Spring Valley (210), carbonate aquifer

5.23.2.5.1 No Action Alternative

GROUNDWATER

The No Action Alternative would contribute no additional effects to groundwater if Section 10 permits were not issued. However, depending upon the specifics of future projects in terms of total water removed and pumping levels if permitted, the carbonate and alluvial aquifers present under private lands in southeastern Lincoln County could be affected.

Currently, under Order Number 1169, the Nevada State Engineer has held in abeyance carbonate-rock aquifer system groundwater applications pending or to be filed in specified hydrogeographic basins, including some basins in this cumulative analysis: Coyote Spring Valley (210), Black Muddy River Springs (219), and Lower Moapa Valley (220). This is for further study of the appropriation of water from the carbonate-rock aquifer system, in Lincoln and Clark Counties, Nevada, "… until further information is obtained by stressing the aquifer by those water rights already permitted for the appropriation of water from the carbonate-rock aquifer system." The Order specifies that a study must be conducted to provide information on the effect of pumping permitted rights that are not yet in production on prior existing rights and the environment. The results of this study will be used to assess long-term impacts to the aquifer and down-gradient flows. No additional water rights to appropriate waters will be issued until after the required pump test and report are completed and the State Engineer has determined that there is sufficient data to support the granting of additional permits.

The participants in the study must, at a minimum, include LVVWD, SNWA, CSI, Nevada Power Company, and MVWD. Under direction of the State Engineer, these entities are conducting pump tests and monitoring activities within the basins in accordance with Nevada State Engineer Order Number 1169. A regional Water Monitoring Plan was approved by the State Engineer on March 14, 2005, and is being implemented by several parties under the State Engineer's direction. It is anticipated that the Water Monitoring Plan will be modified as data is collected or changed circumstances warrant.

Groundwater development of the carbonate aquifer in the Muddy River Springs Area, California Wash, and Coyote Spring Valley, and the Kane Springs Valley (by stipulation) groundwater basins by SNWA, CSI, MVWD, and the Tribe would occur in compliance with the Muddy River MOA, signed by the parties in April 2006. This MOA implemented triggers for protecting the Moapa dace in relation to their groundwater development actions in these basins. These actions would ensure that groundwater pumping would not result in significant adverse effects to surface waters in the Muddy River system, through monitoring and required reductions and/or cessations in pumping to protect surface flows. By stipulation among LCWD/Vidler and USFWS, groundwater development of the carbonate aquifer in the Kane Springs Basin by LCWD/Vidler was made subject to the Trigger Levels set out in the Muddy River MOA. The parties requested that a Monitoring, Management, and Mitigation Plan to the Stipulation be included as part of the terms and conditions of any application that are granted. The goal of the plan is to collectively manage the development of LCWD water rights in the Kane Springs Valley Hydrographic Basin, to avoid losses to senior water rights held by the USFWS in the Moapa Valley National Wildlife Refuge (NWR). This would thereby protect surface waters within the refuge. Measures included in Nevada State Engineer Order Number 1169, the MOA, and the Stipulation would alleviate potential cumulative impacts to carbonate aquifer depletion from many of the directly associated projects, as well as those of more distant projects.

Development of the CSI lands in Lincoln County would require up to 70,000 afa of water, which would likely be supplied from groundwater water rights. Many of these water rights would result from other groundwater development projects. The extent of CSI Development in Lincoln County would be dependent upon the availability of water, which would be acquired from separate groundwater development projects in southern Nevada (e.g. Kane Springs Groundwater Project and Clark, Lincoln and White Pine County Groundwater Project). Were these projects unable to provide CSI with water as part of the CSI Lincoln County MSHCP, other projects that would require separate NEPA analysis would provide water (as BLM rights-of-way would be used to bring water to the CSI lands in Lincoln County). As such, future cumulative effects analyses would address these unforeseen potential future effects to groundwater resources from implementation of this project.

Climate change is expected to significantly affect water resources in the western United States by the mid-21st century (Leung et al. 2004, Barnett et al. 2008). Climate change is generally predicted to result in increased air and water temperatures, decreased water quality, increased evaporation rates, increased proportion of precipitation as rain instead of snow, earlier and shorter runoff seasons, and increased variability in precipitation patterns (Adams and Peck 2006). Several studies have shown declining snowpack, earlier spring snowmelt, and earlier stream runoff in the western United States over the past few decades (Hamlet et al. 2005, Stewart et al. 2005, Knowles et al. 2006). However, few studies have examined the sensitivity of groundwater systems to a changing climate. The U.S. Climate Change Science Program (CCSP) stated that the ability to predict the effects of climate and climate change on groundwater systems is nowhere near advanced as for surface water systems, and the existing studies have shown both increases and decreases to recharge as a result of climate change (CCSP 2008).

Overall, significant cumulative impacts could potentially occur to groundwater as a result of groundwater development projects in the cumulative analysis area. Many of the hydrographic basins in the analysis area are over-allocated or have the potential to become over-allocated (Table 5-3). Conservation measures for some pumping in the Kane Springs Valley, Coyote Spring Valley, California Wash, and Lower Meadow Valley Wash basins would reduce some of these impacts.

Potential effects to the alluvial aquifer in the hydrographic basins of the cumulative analysis area could also occur. At present, it is not understood whether water rights for the alluvial aquifer would result in adverse effects to groundwater, but it is expected that this would be more likely in those basins identified as "Designated Groundwater Basins" by NDWR (Table 5-2).

SURFACE WATER HYDROLOGY AND WATER QUALITY

The potential effects to surface water flows of the Virgin River, Clover Creek, and Meadow Valley Wash from implementation of groundwater projects, such as the LCLA Groundwater Development Project also exist. As part of the LCLA Groundwater Development Project, LCWD proposes to construct up to 15 production wells located in the Tule Desert HA, up to 15 production wells in the Clover Valley HA, and associated facilities to convey water pumped under these rights and applications for the operation of the Toquop Energy coal-fired power plant and urban development of the LCLA lands north of Mesquite, Nevada. However, based on the results of recent hydrological studies, it is unlikely that LCWD's proposed pumping from the Tule Desert HA would result in measurable declines of surface water flows in the Virgin River. A water budget analysis prepared by DeMeo et al. (2008), as part of an evapotranspiration study conducted by the USGS, indicated that groundwater discharge to the Virgin River and its riparian zone is approximately 1,000 afy (or less) between the USGS stream gage at Littlefield and the downstream USGS gage at Overton, Nevada. According to this analysis, even if all groundwater currently being discharged to the river and its riparian corridor originates in Tule Desert and is captured by the proponent's pumping, the change in the overall water budget of the river (1,000 afy compared to 102,000 afy of streamflow at the Littlefield gage and 72,000 afy of streamflow at the Overton gage in 2003 and 2004) would be small. Currently, the water budget prepared by DeMeo et al. (2008) represents the best basis for evaluating the potential effects of the proposed groundwater pumping from the Tule Desert HA on Virgin River flows, water levels in adjacent wetlands, and shallow groundwater levels in zones of phreatophytic vegetation along the river at this time.

The perennial yield of the Meadow Valley Groundwater Flow System is estimated to be approximately 25,000 afy (Rush, 1964). Thus, the 14,480 afy groundwater withdrawal proposed in Clover Valley by LCWD/Vidler would represent a significant portion of the overall perennial yield of the flow system (comprised of 10 basins). Currently, no wells have been drilled by LCWD/Vidler in Clover Valley to date and existing wells in the basin (domestic and stockwater wells) are relatively limited in depth. However, drawdown of groundwater levels due to pumping in Tertiary volcanic rocks, or rock underlying the Tertiary volcanic rocks, in the Clover Valley HA may decrease spring discharges by lowering surficial groundwater levels in the vicinity of the springs, whether or not the majority of recharge to the springs is derived from precipitation. To date, no studies have been conducted to estimate sources of recharge or discharge for Clover Valley. As part of the LCLA Groundwater Development Project, a hydrologic monitoring, management, and mitigation plan will be developed cooperatively by LCWD/Vidler, BLM, and USFWS, and implemented by the LCWD/Vidler, which will provide early warning of any such effects to groundwater levels and establish measures which will be implemented to mitigate adverse effects before they occur. In the event that monitoring does detect effects to surface flows of Clover Creek resulting from LCWD/Vidler's groundwater development activities, the USFWS will conduct Section 7 consultation under the ESA for the groundwater project, and if necessary, LCWD/Vidler will apply for an incidental take permit under Section 10(a)(1)(B) of the ESA to cover any take that may occur due to groundwater pumped and transferred as part of the proposed project.

Stormwater hydrology would be altered in southeastern Lincoln County from the development of projects in the BLM Utility Corridors along U.S. Highway 93 and Kane Springs Road and from construction on CSI lands, but all of these activities would be mitigated through restoration and creation of WOUS to maintain flood capacity. The potential for groundwater development projects to result in effects to surface waters such as the Muddy River also exists. This could include effects to water quality through a reduction in water levels. While localized impacts to desert dry wash habitat may occur, cumulative impacts to the Muddy River are unlikely, due to a MOA and stipulation that triggers limits on the amount of pumping that can occur relative to

surface water levels. The No Action Alternative would make minimal contributions to cumulative effects, through the potential effects of sedimentation and other contamination from road maintenance and railway activities. Thus, cumulative effects to surface water flows in the Covered Area would not be anticipated.

5.23.2.5.2 Preferred Alternative

GROUNDWATER

Effects of other plans and projects would be the same as described for the No Action Alternative. In addition, under the Preferred Alternative, development of the LCLA lands would require up to 23,820 afa of water at buildout, which would be obtained from the Tule Desert and Clover Valley hydrographic basins. These basins are not currently considered designated basins, but the increased demand for groundwater from the LCLA project could potentially result in removing groundwater at a greater rate than it can be recharged (Table 5-3). Development of the Alamo Industrial Park and Community Expansion Area would not exceed the established water rights for the City of Alamo.

Many of these water rights would result from other groundwater development projects discussed in Table 5-3. The extent of private lands in southeastern Lincoln County would be dependent upon the availability of water, which would be acquired from separate groundwater development projects in southern Nevada. No additional cumulative effects would be likely to occur from the Preferred Alternative, as for the foreseeable future, plans are to provide water to the LCLA lands in Lincoln County from these separate groundwater development projects (refer to Table 5-3), which have mitigation and monitoring plans associated with them. Thus, significant cumulative impacts would be unlikely to occur to the carbonate aquifer groundwater. Conservation measures for some pumping in the Kane Springs Valley, Coyote Spring Valley, California Wash, and Muddy River Springs basins would reduce potential impacts.

SURFACE WATER HYDROLOGY AND WATER QUALITY

In addition to those effects of other projects described under the No Action Alternative, surface water hydrology would be modified in separate, localized areas from flood control activities in the City of Caliente, from development of the 13,500-acre LCLA lands, Alamo Industrial Park, future BLM lands identified for disposal, and other identified private lands proposed for development in the Covered Area. None of these activities would result in increased peak flows; rather, flood protection measures associated with each activity would ensure that flood levels would not increase. Only the flood control activities in the City of Caliente could directly affect perennial surface waters, although the implementation of best management practices described in Section 3.3 herein would minimize any potential increases in sedimentation or contaminants. Conversion of existing, previously undisturbed agricultural or grazing land to urban use or from grazing land to irrigated and/or cultivated agricultural fields could also have a potential adverse effect on localized hydrology and water quality through changes in sediment delivery. Avoidance and minimization measures, particularly BMPs, used for road maintenance and railway activities would limit the potential for sediment and other contaminants to enter desert dry washes or the Lower Meadow Valley Wash.

Stormwater hydrology would be altered in Lincoln County primarily from construction on the LCLA lands. However, these actions are not expected to result in significant cumulative adverse impacts to the hydrology of the WOUS within the areas proposed for development within the Covered Area under the SLCHCP, and adverse effects to habitat for species in downstream areas are not likely to occur.

5.23.2.5.3 Alternative A

GROUNDWATER

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects to groundwater under Alternative A would be greater than those described under the Preferred Alternative, as an additional amount of groundwater (unknown at this time) would be needed for the increased amount of private land (an additional 13,461 acres) between Alamo and Hiko and around Elgin and Carp which would be available for development or other authorized uses. Similar mitigation and conservation

measures as those described for the Preferred Alternative would be developed and implemented for Alternative A.

SURFACE WATER HYDROLOGY AND WATER QUALITY

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects to surface water hydrology and water quality would be similar to those described for the Preferred Alternative, although an increased level of development of additional private lands would result in the potential for increased adverse effects to hydrology. The implementation of avoidance, minimization, and mitigation measures would reduce the potential adverse effects to hydrology and water quality under this alternative.

5.23.2.6 Floodplains, Wetlands, and Waters of the United States

For cumulative analysis of WOUS, the extent considered for analysis is the Meadow Valley Wash within the Covered Area and the Pahranagat Creek and Virgin River outside the Covered Area.

5.23.2.6.1 No Action Alternative

The No Action Alternative would contribute no effects to WOUS. Effects of other plans and projects would include the potential for effects to WOUS from construction in the BLM utility corridor west of U.S. Highway 93, the Kane Springs BLM utility corridor, and the development on CSI lands in both Clark and Lincoln Counties. For any activity affecting a WOUS, a Section 404 permit would be required, which would require mitigation measures to offset such effects.

Additionally, if development projects and road maintenance and railway activities were to result in effects to WOUS, alteration of WOUS would require a Section 404 and subsequent mitigation and separate ESA consultation.

5.23.2.6.2 Preferred Alternative

Effects of other plans and projects would be less than those described for the cumulative effects for the No Action Alternative because of the programmatic nature of the permitting activity that would be implemented under such plans (i.e., CSI Lincoln County Development Project; LCLA Groundwater Development Project; SNWA, Clark, Lincoln, White Pine Counties Groundwater Development Project, etc.). However, the extent of effects from these projects are not yet known but will be analyzed under separate NEPA consultation.

According to a reconnaissance survey conducted in 2001 (BLM 2001), no FEMA-designated floodplains and wetlands occupy the LCLA lands. The drainages that cross this area from east to west (i.e., Town Wash, Abbott Wash, and Pulsipher Wash) do not support riparian vegetation. Also, no surface waters occur on the LCLA lands.

However, unnamed and named ephemeral washes could be adversely affected by development activities. Upon further evaluation, should the ephemeral washes on LCLA lands be classified as jurisdictional WOUS, a separate Section 404 permit and accompanying NEPA compliance document with USACE would address potential effects to these ephemeral washes from development of these lands or other private lands proposed for development within the Covered Area of the SLCHCP.

No part of the Meadow Valley Industrial Park's footprint occurs within the floodplain of the Meadow Valley Wash, and no wetlands or WOUS are associated with the area. Thus, no effects to floodplains, wetlands, or WOUS would occur under the Preferred Alternative. There are no perennial drainages, streams, or creeks within the Alamo Industrial Park site and no known wetland/riparian areas exist within the site; therefore, no effects to floodplains and wetlands or WOUS would occur as a result of activities conducted within or adjacent to this area under the Preferred Alternative.

Maintenance of roads and railway activities would occur within the floodplains of Meadow Valley Wash. A description of the routine maintenance activities conducted by the Lincoln County Road Department within their rights-of-way are discussed in Section 3.2.2.3 herein. Further, the activities routinely conducted by UPRR

within the Meadow Valley Wash area involve maintaining drainages and other water carrying facilities as discussed in Section 3.2.2.2.4 herein. These types of activities could result in adverse effects to floodplains, wetlands, or WOUS. However, the implementation of the general mitigation measures described in Section 3.3 herein would reduce the potential effects to WOUS from roadway improvements and maintenance activities and UPRR activities.

It is not the intent of the SLCHCP to provide a mechanism to cover actions by the applicants that may result in potentially significant effects to wetlands and WOUS. These actions would need to be covered under an individual project 404 permit application process. As such, a separate ESA compliance (Section 7 consultation) and NEPA compliance would be required in addition to the USACE permitting process. However, as discussed in Section 2.2 herein, it is the intent of the SLCHCP to streamline Section 7 consultations associated with such permits where the activities and the impacts to endangered species are within the scope of the SLCHCP.

5.23.2.6.3 Alternative A

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects would be greater than those described for the Preferred Alternative, as a greater extent of WOUS could potentially be affected by the development of an additional 13,461 acres of land between Alamo and Hiko and around Elgin and Carp. Any significant effects to wetland or WOUS by future development projects under this alternative would have to be addressed through a separate Section 404 permit with USACE.

5.23.2.7 Cultural and Paleontological Resources

For the cumulative analysis of cultural and paleontological resources, the extent of analysis is all lands that fall within the Covered Area.

5.23.2.7.1 No Action Alternative

The No Action Alternative would contribute no effects to cultural resources. Cumulative effects under the No Action Alternative could occur to cultural resources from activities on BLM lands and CSI lands within southeastern Lincoln County. Development of the CSI lands in Lincoln County, disturbance of 20,716 acres of private land and up to 244 acres within the BLM utility corridor, could occur and has the potential to result in adverse effects to cultural resources. However, a mitigation plan is currently planned to address impacts to cultural resources for lands in Lincoln County under this project, which shall include additional surveys and evaluation of cultural resources as well as data collection shall be completed on CIS lands.

Existing road maintenance and railway activities would not be likely to disturb any cultural resources, as they would occur in previously disturbed areas. Activities on BLM disposal lands could affect cultural resources. All activities with the potential for effects to cultural resources would be subject to Section 106, requiring consultation with the Nevada SHPO. If the potential for adverse effects were to occur from these activities, then an agreement with the Nevada SHPO would be enacted so as to avoid adverse effects to cultural and paleontological resources. As a result, no adverse effects would be expected to occur under the No Action Alternative.

5.23.2.7.2 Preferred Alternative

Effects from other projects and plans would be the same as described for the No Action Alternative. If the potential for adverse effects to cultural resources were to occur from development of the LCLA lands, Alamo Industrial Park and Community Expansion Area, or future BLM lands identified for disposal within the Covered Area of the SLCHCP, then an agreement with the Nevada SHPO would be enacted so as to avoid adverse effects. As a result, no adverse effects would be expected to occur under the Preferred Alternative.

5.23.2.7.3 Alternative A

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects to cultural resources could be greater for Alternative A than those described for the Preferred Alternative, as an additional 13,461 acres of private land between Alamo and Hiko and around Elgin and Carp would be available for development or other authorized uses. Development of additional federal lands would require separate Section 106 consultations.

5.23.2.8 Soils and Geological Resources

For the cumulative analysis of soils and geologic resources, the extent of analysis is all lands within the Covered Area.

5.23.2.8.1 No Action Alternative

Cumulative impacts on soil resources are generally additive and proportional to the amount of ground disturbance within specific habitat areas. Within Lincoln County, the main soil types include carbonate rocks, non-carbonate rocks, and alluvial fill.

Under the No Action Alternative, the USFWS would not issue incidental take permits under Section 10(a)(1)(B) of the ESA, "take" of the Covered Species would not be authorized, and the SLCHCP would not be implemented. ESA consultation would still be required for ongoing road maintenance and railway activities and land development activities on all non-Federal land within the Covered Area. As such, these activities would result in small temporary and permanent disturbances to soils and potentially the addition of fill along existing roads and railways.

Development of a BLM utility corridor along U.S. Highway 93 for a groundwater pipeline, power lines, and detention basins and development of another BLM utility corridor along Kane Springs Road for telecommunications, power lines, and a groundwater pipeline would result in ground disturbance. Construction of a new town on CSI lands in southeastern Lincoln County would also result in the loss and alteration of soils on up to 29,002 acres.

Management of adjacent lands under BLM's Ely District Resource Management Plan would be likely to emphasize prevention of soil erosion, conservation of soil resources, and maintaining long-term soil quality, although effects from grazing and other activities could still occur. Because of this, on the whole, soils within southeastern Lincoln County would not be adversely affected by the cumulative effect of these projects, although a portion of soils would be permanently altered.

Geological resources in Lincoln County would be affected by wells being drilled for groundwater development. The drilled holes would be very small in scale, and while noticeable, would be essentially negligible. Thus, the integrity of geologic rocks would remain unchanged.

5.23.2.8.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects on soils would be greater than described under the No Action Alternative, as a greater level of development in Lincoln County (i.e., LCLA lands, Alamo area, future BLM lands identified for disposal, and other private lands) would be expected from implementation of the SLCHCP. Overall, effects would not be significantly cumulative, as the vast majority of the County's 6.8 million acres of soils would remain undisturbed.

Cumulative effects to minerals and geological resources would be less than those described for the No Action Alternative, as no mineral development would occur on private or future BLM lands identified for disposal in Lincoln County.

5.23.2.8.3 Alternative A

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects on soils would be similar to those described for the No Action Alternative, although an additional 13,461 acres of private land between Alamo and Hiko and around Elgin and Carp would be available for development or other authorized uses under this alternative when compared to the Preferred Alternative.

Cumulative effects to minerals and geological resources would be the same as those described for the Preferred Alternative.

5.23.2.9 Ecologically Critical Areas

For cumulative analysis of ecologically critical areas, the extent of analysis is the Mormom Mesa, Beaver Dam Slope and Kane Springs ACECs and adjacent lands.

5.23.2.9.1 No Action Alternative

The No Action Alternative would contribute no effects to ecologically critical areas. Under the No Action Alternative, the USFWS would not issue incidental take permits under Section 10(a)(1)(B) of the ESA, "take" of the Covered Species would not be authorized, and the SLCHCP would not be implemented. ESA consultation would still be required for ongoing road maintenance and railway activities and land development activities on all non-federal land within the Covered Area. These activities would require individual Section 10(a)(1)(B) permits which would result in the development of conservation measures to avoid, minimize, and mitigate for any adverse effects to ecologically critical areas within Clark and Lincoln Counties.

Other plans and projects could have indirect effects to ecologically critical areas. These include projects where rights-of-way are sought across BLM lands, which would result in increased fragmentation of desert tortoise habitat, the purpose of these designated ecologically critical areas. The development of the Toquop Energy Project site and the development of CSI property in Clark County would also increase fragmentation of desert tortoise habitat within ACECs, as these developments are located adjacent to ACECs established for desert tortoise. If groundwater development from various groundwater development projects in the region were to affect the Lower Meadow Valley Wash, then this development could potentially adversely affect the riparian ACEC established along this waterway under the BLM Ely District's Resource Management Plan and its protection of the area.

Development of CSI lands in Lincoln County would disturb 20,716 acres of land in the project area and up to 244 acres in the BLM utility corridor; however, 13,767 acres of land adjacent to two ACECs would be protected, resulting in low indirect effects from fragmentation and potentially increased visitor use and the increased potential for vandalism and illegal OHV use. Because of the continuing relative isolation of the Kane Springs, Coyote Spring, Beaver Dam Slope, and Mormon Mesa ACECs, as well as the likely addition of 18 more ACECs in the BLM Ely District, overall cumulative effects would be relatively small in magnitude.

5.23.2.9.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Under the Preferred Alternative, cumulative effects on Ecologically Critical Areas would be potentially greater than those described for the No Action Alternative. Under this alternative, up to 19,840 acres of desert tortoise suitable habitat have the potential to be affected by the Covered Activities within the Covered Area of the SLCHCP. There are 246 acres of private lands within the Mormon Mesa Critical Habitat Unit for desert tortoise in the Covered Area; however, there are no known plans for changing the current land use within these parcels except for up to 60 acres, which could potentially be disturbed by UPPR activities. Within the 60 acres or approximately 2 miles of UPRR's right-of-way that traverses designated desert tortoise critical habitat within the Mormon Mesa Critical Habitat Unit, 36 acres are previously disturbed, leaving only 24 acres that are relatively undisturbed. No critical habitat for the southwestern willow flycatcher occurs within the Covered Area.

The Conservation Measures required under the SLCHCP to be implemented by the developers to avoid and minimize impacts of proposed development and maintenance activities on these lands to desert tortoise and/or their habitat are discussed in Section 3.2.2.3.1 of this FEIS. Additionally, to offset the loss of 19,840 acres of potential desert tortoise habitat from land development activities on non-federal property within the Covered Area, the developers will pay one-time per-acre mitigation fee to implement the SLCHCP and fund such conservation efforts as the head start and translocation programs for the desert tortoise, fund research of the ecological implications of fire, and restoration of desert tortoise habitat which will have beneficial effects on the biological resources and desert tortoise ACECs. Cumulatively, these conservation efforts will improve the environmental baseline of these ACECs.

If groundwater development from various groundwater development projects in the region were to affect the Lower Meadow Valley Wash, then this development could potentially adversely affect the riparian ACEC established along this waterway under the BLM Ely District's Resource Management Plan and its protection of the area. Because of the continuing relative isolation of the Kane Springs, Coyote Spring, Beaver Dam Slope, and Mormon Mesa ACECs, as well as the likely addition of 18 more ACECs in the BLM Ely District, overall cumulative effects would be relatively small in magnitude. Overall, large tracks of contiguous land surrounding the ACECs would remain, which would serve as a buffer around these ecologically critical areas.

5.23.2.9.3 Alternative A

Effects of other plans and projects would be the same as described for the No Action Alternative. Under Alternative A, cumulative effects on Ecologically Critical Areas would be greater than those described for the Preferred Alternative, as development of up to 44,135 acres of private land (increased human population) within the Covered Area under this alternative could include increased recreational use, dumping, collection of tortoises, introduction of non-native species, and increased fire risk on the adjacent ACECs. All of these effects could occur in desert tortoise habitat both in and out of the ACECs and critical habitat areas in Nevada, Utah and Arizona surrounding these lands. In order to protect neighboring ACECs from potential adverse indirect effects, the following mitigation measures would be employed to reduce the magnitude of effects: 1) access control with the development of the road/fence/trail system to limit the kind of uses within the ACECs; 2) public education such as the posting of signs and educational materials at entry points to the ACECs; and 3) law enforcement.

5.23.2.10 Visual Resources

For the cumulative analysis of visual resources, the extent considered is the southeastern portion of Lincoln County, Nevada, typical of Basin and Range topography.

5.23.2.10.1 No Action Alternative

The No Action Alternative would contribute no effects to visual resources. Under the No Action Alternative, the USFWS would not issue incidental take permits under Section 10(a)(1)(B) of the ESA, "take" of the Covered Species would not be authorized, and the SLCHCP would not be implemented. ESA consultation would still be required for ongoing road maintenance and railway activities and land development activities on all non-Federal land within the Covered Area. As such, these activities would result in small temporary and permanent disturbances to visual resources within the Covered Area. However, these activities would not result in long-term changes to visual resources, as these areas have already been disturbed.

Approximately 20,716 acres of CSI land in southeastern Lincoln County are proposed for residential and commercial purposes. Development of detention basins and utility infrastructure in the BLM utility corridor west of U.S. Highway 93 and development of utility infrastructure in the BLM utility corridor along Kane Springs Road would result in low levels of adverse effects to visual resources in the Coyote Spring Valley. Also, all construction of the CSI planned development in Lincoln County would be required to meet aesthetic requirements stated in Title 15 of the Lincoln County Code. Changes in the viewshed would be expected, but because requirements would be met, adverse effects to visual resources would not be expected.

BLM lands within southeastern Lincoln County are managed, in part, according to allowable effects to visual resources. Because the Resource Management Plan would continue to follow this type of management for visual resources within the Covered Area, no adverse effects to visual resources would be expected. Depending upon the class assigned to a given area, a different level of alteration to visual resources is permissible. For example, those areas that are on BLM lands but designated as rights-of-way can be greatly altered, while areas designated as wilderness or wilderness study areas have limited allowable alterations of visual resources. Overall, the visual resources in southeastern Lincoln County would be very similar to existing conditions, mostly undeveloped federal land.

5.23.2.10.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects on visual resources in the southeastern portion of Lincoln County would be greater under the Preferred Alternative with the development of the LCLA lands, Alamo area, future BLM lands identified for disposal, and other private lands when compared to the No Action Alternative. However, the rural character of the surrounding area would remain, as this land would continue to be managed by the BLM for the foreseeable future.

5.23.2.10.3 Alternative A

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects on visual resources in the southeastern portion of Lincoln County would be similar to those described for the Preferred Alternative, although alteration of the viewshed would be greater due to construction at higher elevations under Alternative A, especially between Alamo and Hiko and around Elgin and Carp.

5.23.2.11 Air Quality

The geographic extent considered for the cumulative analysis of air quality is the Virgin River Valley, Tule Desert, Clover Valley, Lower Meadow Valley Wash, Kane Springs Valley, Coyote Spring Valley, Delamar Valley, and Pahranagat Valley airsheds within the Covered Area.

5.23.2.11.1 No Action Alternative

The No Action Alternative would contribute no effects to air quality. Under the No Action Alternative, the USFWS would not issue incidental take permits under Section 10(a)(1)(B) of the ESA, "take" of the Covered Species would not be authorized, and the SLCHCP would not be implemented. ESA consultation would still be required for ongoing road maintenance and railway activities and land development activities on all non-Federal land within the Covered Area. As such, these activities would result in temporary effects to air quality during construction and/or maintenance activities.

Past, present, and foreseeable future actions that could affect air quality in Lincoln County include potential construction activities on CSI lands in Lincoln County (up to 21,454 acres fully developed), well construction on CSI lands in Clark and Lincoln Counties, ongoing road maintenance and railway activities, and construction of pipelines and other utilities within the U.S. Highway 93 right-of-way corridor to the west of CSI lands and the Kane Springs right-of-way just to the north of CSI lands heading northeast.

A temporary increase in emissions of $PM_{10}/PM_{2.5}$ would be expected to occur from initial land surface disturbance activities for these projects. Incremental increases in emissions of NOx, SO_2, CO, and VOCs would be expected to occur in the short term from mobile combustion sources associated with construction equipment, and the temporary increase in vehicle traffic for construction of the CSI developments in Lincoln and Clark Counties. However, these near-ground releases would be expected to stay in the vicinity of the developments.

If blasting is used for pipeline construction of the Kane Springs pipeline, ammonium nitrate and fuel oil (ANFO) would be a source of gaseous pollutants. ANFO blasting can also cause fugitive emissions of NOx,

CO, and SO_2. Emissions from blasting agents would be limited by restricting its use to the smallest area possible.

Depending upon air movements and the amount emitted from the proposed Toquop Energy Power Project, these activities could result in temporary and potentially long-term effects to air quality within the southeastern portion of Lincoln County.

All construction and operational activities within the region are required to comply with local, state or federal policies, including the implementation of a Fugitive Dust Control Plan. As such, cumulative air quality impacts would not be anticipated to exceed state or Federal ambient air quality standards.

The addition of residents on CSI lands in Lincoln County would result in increased emissions from vehicles and potential emissions from other sources over the long term. Increased OHV use in the area as a result of an increased population base would be possible, which in turn could result in localized, infrequent emissions and increases in fugitive dust. It is unlikely that these sources would be sufficient to exceed state or federal ambient air standards, as the condition of air quality in southeastern Lincoln County is currently high. Therefore, long-term cumulative effects would not be anticipated. However, it should be noted that combustion of fossil fuels from the equipment used for construction activities associated with various projects and the proposed coal-based Toquop Energy Power project would contribute to an increase in greenhouse gases, such as carbon dioxide (CO_2).

5.23.2.11.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects to air quality from implementation of the Preferred Alternative would be greater than those described for the No Action Alternative, as up to 30,673.5 acres of private, state, and local government-held property in Lincoln County could potentially be disturbed over the 30-year permit term. An increased population base would result in higher levels of vehicle emissions than under the No Action Alternative. However, because all construction and operation activities would comply with local, state, and federal policies and current air quality is high, cumulative effects to air quality would not be anticipated to exceed state or federal ambient air quality standards.

5.23.2.11.3 Alternative A

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects to air quality from implementation of Alternative A would be similar to those described for the No Action Alternative, although an additional 13,461 acres of private land between Alamo and Hiko and around Elgin and Carp would be available for development or other authorized uses under this alternative when compared to the Preferred Alternative. Because all construction and operation activities would comply with local, state, and federal policies, cumulative effects to air quality would not be anticipated to exceed state or federal ambient air quality standards.

5.23.2.12 Transportation and Circulation

The geographic extent considered for the cumulative analysis is the roads within the Covered Area, as well the City of Mesquite area to the south of the Covered Area.

5.23.2.12.1 No Action Alternative

The No Action Alternative would contribute no effects to transportation and circulation. Under the No Action Alternative, the USFWS would not issue incidental take permits under Section 10(a)(1)(B) of the ESA, "take" of the Covered Species would not be authorized, and the SLCHCP would not be implemented. ESA consultation would still be required for ongoing road maintenance and railway activities and land development activities on all non-federal land within the Covered Area. As such, these activities would result in small temporary and permanent disturbances to transportation and circulation patterns along the existing roadways within the southeastern portion of Lincoln County.

Temporary effects to traffic would occur from development projects on CSI lands in both Clark and Lincoln Counties; construction of power lines, telecommunication lines, and pipelines along the BLM utility corridor west of U.S. Highway 93; construction of detention basins west of U.S. Highway 93 in Clark County; installation of wells on CSI lands in Clark County; and development of a Kane Springs pipeline and associated utilities. Traffic could be slowed or rerouted during periods of construction.

The traffic plan for the CSI development in Clark County would result in many road and traffic improvements, which would reduce the adverse impacts of a no traffic plan for any development that could occur in Lincoln County. Traffic and circulation on CSI lands in Lincoln County would be coordinated with other projects in the area and existing Levels of Service on U.S. Highway 93 would be maintained as stated in a development agreement between Lincoln County and CSI. Therefore, road improvements would be made that would address any long-term effects to traffic and circulation for all CSI lands in Lincoln and Clark Counties.

Construction of the Toquop Energy Project site would result in a temporary increase in average daily traffic near Exit 109 of Interstate 15. Mitigation measures would be implemented under this project to reduce the magnitude of possible effects.

5.23.2.12.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Overall, cumulative effects to transportation and circulation would not be adversely affected under the Preferred Alternative. The development of LCLA lands would affect transportation patterns around the City of Mesquite, in Clark County, Nevada. Up to 44,550 housing units would be developed over the course of the 30-year permit, creating the need for access to and from this area. Essentially, this area would become part of the greater growth area of the City of Mesquite. Zoning ordinances and development codes created by Lincoln County would work in concert with the City of Mesquite to create an effective road network for the expected numbers of people who would move to this area. No conflicts would arise with the rest of Lincoln County's transportation systems, as there would be no direct link to the rest of Lincoln County. Rapid development of the Mesquite area could result in increased traffic problems, but the Transportation Element of the updated City of Mesquite Master Plan outlines a comprehensive plan for addressing transportation and circulation issues, which would minimize adverse effects from increased development. Any of the other large areas proposed for development under the SLCHCP would require development agreements with Lincoln County, which would address long term traffic management.

5.23.2.12.3 Alternative A

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects to transportation and circulation under Alternative A would be similar to those described for the Preferred Alternative, although an additional 13,461 acres of private land between Alamo and Hiko and around Elgin and Carp would be available for development or other authorized uses under this alternative when compared to the Preferred Alternative which could result in a greater need for road improvements. Long-term traffic management for these sites would be addressed through development agreements with Lincoln County to maintain acceptable levels of service on main roads.

5.23.2.13 Noise

The geographic extent considered for the cumulative analysis of noise is all lands that fall within the Covered Area.

5.23.2.13.1 No Action Alternative

The No Action Alternative would contribute no effects to noise levels. Under the No Action Alternative, the USFWS would not issue incidental take permits under Section 10(a)(1)(B) of the ESA, "take" of the Covered Species would not be authorized, and the SLCHCP would not be implemented. ESA consultation would still be required for ongoing road maintenance and railway activities and land development activities on all non-

Federal land within the Covered Area. As such, these activities would result in temporary, localized increases in noise from heavy equipment and vehicles.

Short-term construction noise (e.g. heavy equipment) would increase noise levels within the southeastern portion of Lincoln County during the development of CSI lands and installation of utility lines in the Kane Springs right-of-way and the utility corridor along U.S. Highway 93. Lincoln County currently has no noise regulations, and there are no sensitive receptors in the area; therefore, significant effects would not be expected. Noise levels in this area of Lincoln County would also increase from adjacent development of CSI lands in Clark County.

Long-term noise levels would increase as a result of residents and workers inhabiting the CSI lands in Lincoln County. These noise levels would be expected to be low, resulting from human voices and vehicle use. Overall, adverse cumulative effects from increases in short- and long-term levels would not be anticipated under the No Action Alternative, given the low levels of noise generated in the long term.

5.23.2.13.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects of the Preferred Alternative would be slightly greater than those described for the No Action Alternative, as the extent of short-term and long-term noise sources would increase with the development of the LCLA lands, area around Alamo, future BLM lands identified for disposal, and other private lands within the southeastern portion of Lincoln County. Temporary noise levels would increase from all of these additional activities. However, adverse cumulative effects from increases in short- and long-term levels would not be anticipated under this alternative, given the low levels of noise generated in the long term.

5.23.2.13.3 Alternative A

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects of Alternative A would be similar to those described for the Preferred Alternative, although the extent of temporary noise levels would increase slightly, due to increased development of additional lands.

5.23.2.14 Agricultural Resources

For the cumulative analysis of agricultural resources, the extent of analysis is all lands within the Covered Area.

5.23.2.14.1 No Action Alternative

The No Action Alternative would contribute no effects to agricultural resources. Under the No Action Alternative, the USFWS would not issue incidental take permits under Section 10(a)(1)(B) of the ESA, "take" of the Covered Species would not be authorized, and the SLCHCP would not be implemented. ESA consultation would still be required for ongoing road maintenance and railway activities and land development activities on all non-Federal land within the Covered Area. Development of CSI lands in Clark and Lincoln Counties, development of detention basins in the BLM utility corridor west of U.S. Highway 93 in Clark County, and development of utility corridors along U.S. Highway 93 and Kane Springs rights-of-way would be unlikely to affect agricultural resources, as these activities would not occur on agricultural lands, nor would they compete economically with agriculture.

5.23.2.14.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects of the Preferred Alternative would be slightly greater than those described for the No Action Alternative, as existing private lands along the Meadow Valley Wash may be converted from agricultural or grazing land to urban use or from grazing land to irrigated and/or cultivated agricultural fields. Mitigation measures for flycatcher habitat loss and/or desert tortoise habitat loss would include the collection of funds from the landowners or mitigation fees, respectively, as part of their obligations when signing the participation

agreement with Lincoln County to participate in the SLCHCP process , to cover costs of flycatcher and desert tortoise habitat restoration (refer to Section 3.2.2.3.6 herein). However, this activity would not substantially reduce farm acreage in Lincoln County, nor interfere with the viability of farm and ranchlands in Lincoln County.

On the whole, development projects in Lincoln County could have the potential to somewhat indirectly affect agricultural resources, through potentially increasing development pressures on other nearby private lands and for purchasing water rights from farmers and ranchers. This effect is likely to be centered on areas that are relatively near to Las Vegas or other areas that would receive economic benefits from these projects in Lincoln County, such as Alamo, where the industrial park would be constructed. However, agriculture as a source of income for Lincoln County residents has been in decline. Currently, only 7 percent of employment and 3 percent of income in Lincoln County is derived from agriculture (Rask 2005). Given the limited economic opportunities currently present in Lincoln County, it is unlikely that demand for residential and commercial development beyond the proposed projects would noticeably exist. Therefore, adverse effects to agricultural resources would not be expected.

5.23.2.14.3 Alternative A

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects of Alternative A would be similar to those described for the Preferred Alternative, although the additional development of up to 13,461 acres under this Alternative could occur on existing farm and ranchlands. As described for the Preferred Alternative, the potential exists for increased development in Lincoln County to adversely affect agricultural resources through increasing economic incentives to develop land and sell water rights. However, because economic opportunities are limited in Lincoln County (Section 4.2.18: Socioeconomics herein), it is unlikely that large-scale development would occur on private lands where farms and ranches occur. Therefore, it is unlikely that farm acreage and/or size would be affected as a result.

5.23.2.15 Recreational Resources

For the cumulative analysis, the extent of analysis for recreational resources is all lands that fall within the Covered Area.

5.23.2.15.1 No Action Alternative

The No Action Alternative would contribute no effects to recreational resources. Increased demand for use of recreational resources would occur from the CSI development in Lincoln and Clark Counties. Land disposals by BLM have reduced the total recreation by a small amount in areas near the CSI lands, but these land sales have also provided funding for improvements to recreation management by the agency. Recreational demand would increase in areas near the CSI lands. Increased recreational demand from these increases in population in this area could potentially result in overuse of areas by OHV users and other recreationists. The Preferred Alternative of the BLM Final RMP/EIS for the Ely District (BLM 2008) calls for restricting OHV use to designated trails and roads. Overall, recreational resources could potentially be impacted from overuse from an increased population. However, adverse effects to recreational resources within this area are unlikely, as the total acreage available for recreation and the number of trails would be sizeable within the southeastern portion of Lincoln County.

5.23.2.15.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Under the Preferred Alternative, cumulative effects would be greater than those described for the No Action Alternative. With the construction of residential dwellings on LCLA lands, in addition to other expected population increases in the Mesquite area, recreational resources could potentially be impacted from overuse from an increased population. However, adverse effects to recreational resources in this area are unlikely, as the total acreage available for recreation and the number of trails within Lincoln County would still be sizeable

(i.e., Silver State trail accessed from U.S. Highway 93 near Caliente, other trails on BLM and USFS lands, and private OHV parks in Alamo and North Las Vegas).

Also, conservation and mitigation measures associated with the Preferred Alternative (refer to Section 3.2.2.3 herein) would ensure that adequate education would be implemented to address potential problems associated with increased use of public lands, such as creation of social trails, illegal dumping, and vandalism from increased recreational use.

5.23.2.15.3 Alternative A

Effects of other plans and projects would be the same as described for the No Action Alternative. Under Alternative A, cumulative effects would be similar to those described for the No Action Alternative. With the additional development of up to 13,461 acres of private land between Alamo and Hiko and around Elgin and Carp, in addition to other expected population increases in the Mesquite area, recreational resources could potentially be impacted from overuse from an increased population. However, adverse effects to recreational resources in this area are unlikely, as the total acreage available for recreation and the number of trails would still be sizeable within this portion of Lincoln County. Also, ff recreational areas were to be created on these additional federal lands for disposition, benefits to recreational resources would increase on a cumulative level.

5.23.2.16 Socioeconomics and Environmental Justice

The area of cumulative analysis for socioeconomics and environmental justice is Lincoln and northeastern Clark Counties.

5.23.2.16.1 No Action Alternative

The No Action Alternative would contribute no effects to socioeconomics and environmental justice.

Build out of the CSI lands in Clark County is expected to provide up to 29,000 residential units by completion. Up to 111,000 residential units would be constructed on CSI lands in Lincoln County, which could result in an added population of over 250,000 in the next 30 to 40 years. Given that the 2000 Census population of Lincoln County was 4,165, this increase in population would be substantial. Effects of adding up to 29,000 residential units to Clark County would not be substantial to Clark County, which had a population of 1,375,765 at the time of the 2000 Census, but it would occur in a remote corner of Clark County, which would have localized socioeconomic effects.

Increased development in Lincoln County would generate employment, income, and increases in the Lincoln County and Clark County tax base. The cumulative effect of the No Action Alternative and other plans and projects would increase the population size of Lincoln and Clark Counties which would result in additional demand on police protection, fire protection, emergency medical services, and housing. Thus, cumulative effects to the social and economic structure of Lincoln County could be substantial.

Projects likely to occur on federal lands according to the Ely District Resource Management Plan would be unlikely to provide measurable socioeconomic effects to Lincoln or Clark Counties. However, increased recreational demand, water development projects, road improvements, and projects adjacent to or within the BLM utility corridors would likely be associated with the increased population and would occur on federal lands, given that Lincoln County has a limited amount of private lands.

Other planned and foreseeable projects with a potential to affect the social and economic structure of Lincoln and Clark Counties are being developed in response to the rapidly growing population and economy of the Las Vegas and surrounding metropolitan areas. Community services and infrastructure would likely need to be increased as a result of ongoing residential and commercial development in the region.

No adverse cumulative effects to environmental justice would occur, as all residential development activities and federal land activities with the potential for socioeconomic effects would occur in remote areas away from existing population centers. Beneficial effects to low-income communities could occur, as the local government's ability to supply services would increase with an increased tax base.

5.23.2.16.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects would be similar to those described for the No Action Alternative, although a build-out population growth of as many as 111,375 additional residents is expected with the proposed development of the LCLA lands. Around the Alamo area, based on the allowable density of residential development, the Preferred Alternative would indirectly facilitate a build-out population growth of as many as 30,743 additional residents to Lincoln County, assuming a 3 unit per acre development rate and a household of 2.5 people for the Alamo Community Expansion Area.

Proposed development activities on other private lands and potentially the BLM disposal lands may result in a change of demographics, as new housing could occur if the existing land use (i.e., agricultural/grazing lands or undisturbed land) is converted to urban use.

As described for the No Action Alternative, no adverse cumulative effect would occur to environmental justice, as all residential development activities and federal land activities with the potential for socioeconomic effects would occur in undeveloped, rural areas. Beneficial effects to low income communities could occur, as local government's ability to supply services would increase with an increased tax base.

5.23.2.16.3 Alternative A

Effects of other plans and projects would be the same as described for the No Action Alternative. Overall, cumulative effects would be very similar to the Preferred Alternative, although a slight increase in the number of residential units under Alternative A would also result in increased employment, government revenues, and housing.

As described for the No Action Alternative, no adverse cumulative effect would occur to environmental justice, as all residential development activities and Federal land activities with the potential for socioeconomic effects would occur in undeveloped, rural areas. Beneficial effects to low income communities could occur, as local government's ability to supply services would increase with an increased tax base.

5.23.2.17 Land Use, Planning, and Zoning

The geographic extent considered for the cumulative analysis of land use planning and zoning is Lincoln County, Nevada.

5.23.2.17.1 No Action Alternative

The No Action Alternative would contribute no effects to land use, planning, and zoning. No changes to land use, planning, or zoning or actions contradictory to existing land uses, planning, or zoning would occur from County road maintenance and UPRR activities. Development could occur on LCLA land and other non-federal land within the Covered Area, as described under the Preferred Alternative, only after issuance of individual Section 10(a)(1)(B) permits by the USFWS for incidental take.

Development of CSI lands in Lincoln County would occur in accordance with Title 14: Toquop Township PUD Code. CSI development in Clark County would be developed in accordance with appropriate zoning regulations of Lincoln County.

Because the land adjacent to the Toquop Energy Project parcel is primarily undeveloped, with some power production facilities located nearby, development of this area would not be incompatible with existing adjacent land uses. This area is not considered prime or unique farmland, thus no impacts on those land types would occur. Furthermore, since this parcel is currently owned by the BLM, any actions that would occur on these lands would occur with the permission of the BLM. Therefore, no significant effects to land use, planning, and zoning from future development of these parcels are expected.

5.23.2.17.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. As described for the No Action Alternative, no adverse effects to land use, planning, and zoning would occur under the Preferred Alternative.

The City of Mesquite and Lincoln County have been planning cooperatively for the development of the LCLA lands. Lincoln County has adopted a development code for the area that is generally consistent with the City of Mesquite Unified Development Code. Therefore, development of the LCLA lands would not be in conflict with land use plans or zoning of either Lincoln County or the City of Mesquite.

Development of the Alamo Industrial Park and Community Expansion Area and surrounding BLM disposal lands would alter the existing land use within these areas. Land use changes in these areas would be notable as the rural, vacant lands would be modified to developed parcels characterized by industrial, commercial, residential, or urban uses. However, these proposed land uses are keeping within local and county plans and are consistent with development of land parcels with highway frontage and ready access to public services and amenities provided in the town of Alamo. Therefore, no significant effects to land use, planning, and zoning are expected.

5.23.2.17.3 Alternative A

Effects of other plans and projects would be the same as described for the No Action Alternative. As described for the Preferred Alternative, no adverse effects to land use, planning, and zoning would occur under Alternative A. Development of the additional lands identified under this alternative would be developed in accordance with appropriate zoning regulations of Lincoln County.

5.23.2.18 Public Services and Utilities

For public services, the extent of the cumulative analysis is Lincoln County.

5.23.2.18.1 No Action Alternative

The No Action Alternative would contribute no effects to public services and utilities. No changes to public services and utilities would occur from County road maintenance and UPRR activities. Development could occur on LCLA land and other non-Federal land within the Covered Area, as described under the Preferred Alternative, only after issuance of individual Section 10(a)(1)(B) permits by the USFWS for incidental take.

As part of the proposed development of CSI lands in Lincoln County, associated public services would be created, as there are currently no public services in this area. Groundwater development and powerline projects would provide additional public services to the greater Las Vegas area. Because of the isolation from the rest of Lincoln County, these services would be created as part of developing that area to ensure all needs would be met at full build-out of the area. The Toquop Energy Power Project would also create new public sources of power.

5.23.2.18.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Under the Preferred Alternative, the LCLA lands, comprising 13,500 acres, would be developed in an area without current public services. Because of the isolation from the rest of Lincoln County, these services would be created as part of developing that area; therefore, no adverse cumulative effects to existing public services and utilities would be expected from this alternative. Expansion of Alamo and the addition of industrial parks in Alamo and Caliente could create an additional burden on power, water, and sewer needs in these two areas.

Overall, the cumulative effects on public services and utilities would be small in scale under the Preferred Alternative as additional public services and utilities would be created with development of the proposed non-federal lands under the SLCHCP.

5.23.2.18.3 Alternative A

Effects of other plans and projects would be the same as described for the No Action Alternative. Overall, cumulative effects on public services and utilities would be similar to those expected for the Preferred Alternative, except under Alternative A, adequate public services would need to be planned and constructed to ensure all public service needs for the additional development of up to 13,461 acres of private land between Alamo and Hiko and around Elgin and Carp would be met at potential build out of these areas.

5.23.2.19 Hazardous Materials

For hazardous materials, the extent of the cumulative analysis is Lincoln County.

5.23.2.19.1 No Action Alternative

The No Action Alternative would contribute no effects to hazardous materials. Cumulative effects to human health and safety could occur from various maintenance and construction activities within the area of analysis. These activities have the potential to result in oil or gas spills, injuries to humans, or other accidents. Safety guidelines for Lincoln County road activities, UPRR maintenance activities, and federally-enforced regulations by OSHA would limit the potential for adverse effects to human health and safety to the lowest level practicable through prevention of spills, other accidents, and injuries. Compliance with state and federal regulations would control the release of hazardous materials, hazardous waste, and regulated substances and would reduce the potential for impacts from these hazardous materials to low levels.

5.23.2.19.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects would be the same as described for the No Action Alternative, although construction associated with land development would raise the potential for injury and accidents to occur. Compliance with state and federal regulations would control the release of hazardous materials, hazardous waste, and regulated substances and would reduce the potential for impacts from these hazardous materials to low levels.

5.23.2.19.3 Alternative A

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects would be the same as described for the No Action Alternative, although construction associated with the additional lands proposed for development under this alternative would raise the potential for accidents to occur. Compliance with state and federal regulations would control the release of hazardous materials, hazardous waste, and regulated substances and would reduce the potential for impacts from these hazardous materials to low levels.

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SECTION 6

Compliance, Consultation, and Coordination

Section 6: Compliance, Consultation, and Coordination

6.1 PUBLIC AND AGENCY INVOLVEMENT

Public involvement related to the development of the SLCHCP began in October 2000, when a Technical Steering Committee (TSC) was convened to obtain input from stakeholders. Since the first meeting, over a dozen TSC meetings were held to define the framework of the SLCHCP. These meetings have been open to the public and conducted pursuant to the Nevada Open Meeting Law. The Draft HCP was prepared in consultation with the USFWS, NDOW, the BLM, the Lincoln County Farm Bureau, the Lincoln County Public Land Commission, The Nature Conservancy, the Toiyabe Chapter of the Sierra Club, the Red Rock Chapter of the Audubon Society, and the non-Federal land owners.

A Notice of Intent to prepare an EIS was published in the Federal Register on July 5, 2001, and public workshops were held in late June at the Alamo Annex and at the Caliente City Hall. Notices for the workshops and the TSC meetings were posted at public locations pursuant to the Nevada Open Meeting Law. The public workshops were advertised in the Lincoln County Record, the Desert Valley Times, and the Valley Times. Additional meetings were held on July 5, 2006 in Caliente and Alamo and on July 6, 2006 in Mesquite to provide an update to the public about the planning process and to receive additional comments. All meetings were open to the public and their input from the workshops and the TSC meetings was integral to the planning process. Throughout the development of this FEIS, written and oral public comments were received and addressed in the draft as appropriate.

Substantive comments from the internal and public workshops and written comments prior to the publication of the Draft EIS for the SLCHCP included concerns regarding the following:

- Type of growth (i.e., focus on planned growth, in fill),
- Energy requirements and conservation potential (as required by 43 FR 55994 section 1502.16),
- Ability of proposed conservation measures to ensure the preservation and enhancement of these ecosystems,
- Feasibility of proposed mitigation measures,
- Long-term implications of mitigating impacts of take through increased funding and coordination for conservation measures primarily on existing lands, and
- Cumulative impacts of Covered Activities on Covered Species.

6.2 TRIBAL CONSULTATION

Federal legislation and executive orders dictate that Federal agencies must consider the repercussion of their actions when Native American traditions and religious practices are involved. Therefore, USFWS must make efforts to consult with the Tribes on the Federal action to insure that issuance of incidental take permit(s) and approving habitat plan(s) do not unduly or unnecessarily burden the pursuit of traditional religion or life ways by inadvertently damaging important locations or hinder access to them. The USFWS does this by inviting the Tribes to comment on drafts of the EIS for HCPs.

BLM is responsible for conducting tribal consultations before the disposal of lands. The consultations conducted to date on the LCLA Lands, Meadow Valley Industrial Park, and the Alamo Land Sale are summarized below.

6.2.1 LCLA Lands

The National Historic Preservation Act of 1966, as amended, Native American Grave Protection and Repatriation Act (NAGPRA), as amended, American Indian Religious Freedom Act of 1978, Executive Order 13007 – Indian Sacred Sites, and the government-to-government relationships direct Federal agencies to consult with Native American tribe s concerning the identification of cultural values, religious beliefs, and traditional practices of native American people that may be affected by actions on Federal lands. Native American consultation includes consideration of Tribal Government view and the identification of places (i.e., physical locations) of traditional cultural importance to Native American tribes. Places that may be of traditional cultural importance to Native American people include, but are not limited to, locations associated with the continuous ongoing traditional beliefs concerning tribal origins, cultural history, or the nature of the world; locations where religious practitioners go to perform ceremonial activities based on tradition cultural rules or practice; ancestral habitation sites; trails; burial sites; and places from which plants, animals, minerals, and waters possessing healing powers or used for other subsistence purposes, may be taken.

In accordance with the policy and regulations mentioned above, the BLM contacted the following American Indian tribes with cultural ties to the lands proposed for sale under the LCLA 2000: Moapa Band of Paiutes (Nevada), Paiute Tribe of Utah, Kaibab Paiute Tribe (Arizona), Las Vegas Paiute Tribe, and Shivwits Band of Paiutes (Utah). In March 2001, the BLM attended the Tribal Council Meeting of the Shivwits Band in Santa Clara, Utah. At the meeting, the BLM explained the LCLA of 2000, the process for selling the land, showed maps of the lands to be sold, and discussed the cultural resources survey and possible treatment of any identified significant sites. The Shivwits are interested in the findings of the cultural resources survey; the BLM agreed to keep them informed. On May 30, 2001, the BLM continued consultation with the remaining four tribes by calling the representatives of each tribe. None of the representatives were available at the time, so the BLM left their contact information and requested a response. At this time, only the Las Vegas Paiute Tribe responded. The Las Vegas Paiute Tribe informed the BLM that they are not interested in meeting with them to discuss the sale of LCLA lands; therefore, consultation with this tribe is complete. None of the tribes participating in the Native American consultation have identified any traditional cultural properties within the LCLA lands, nor is there any documentary evidence to indicate ongoing traditional practices or specific geographic reference to the LCLA lands. BLM also provide a preliminary report of the archaeological survey findings to the Native American tribes on August 6, 2001.

As part of the DA, if any traditional cultural properties are subsequently identified within the LCLA lands, they will receive consideration for treatment in accordance with cultural resources protection plans to be prepared by the developer(s).

6.2.2 Meadow Valley Industrial Park

No record of tribal consultation.

6.2.3 Alamo Land Sale

For the Alamo Land Sale, a Native American Coordination Meeting was held in the BLM Ely Field Office on July 20, 2006. The Ely Shoshone Tribe and the Duckwater Shoshone Tribe were represented at this meeting. The tribal representatives were informed of the request made by Lincoln County for the disposal of lands near the town of Alamo. The tribal representatives asked about why the tribes were not asked if they wanted to expand and why they were not given first access [for lands under disposal] and they were informed that the Proposed Action was done under LCCRDA. Prior to Congress passing the LCCRDA, there were hearings in Caliente, Reno, and Las Vegas and there was no rebuttal of the bill by any tribes. No other comments were noted in the minutes from the meeting (BLM July 20, 2006).

6.3 PREPARERS AND CONTRIBUTORS

The U.S. Fish and Wildlife Service, Bureau of Land Management, Lincoln County, UPRR, and the City of Caliente consulted the following individuals, Federal, State, and local agencies, tribes and individuals during the development of this FEIS:

6.3.1 Federal Agencies

U.S. FISH AND WILDLIFE SERVICE

Jeri Krueger, Habitat Conservation Planning Coordinator ..... Nevada Fish and Wildlife Office, Las Vegas, NV

Jody Brown, Deputy Field Supervisor.....Nevada Fish and Wildlife Office, Reno, NV

Bob Williams, Field Supervisor .....Nevada Fish and Wildlife Office, Reno, NV

U.S. BUREAU OF LAND MANAGEMENT

John Ruhs, District Manager .....Ely District Bureau of Land Management, Ely, NV

Alicia Styles, Wildlife Biologist.....BLM Caliente, Caliente, NV

6.3.2 Applicants

LINCOLN COUNTY

Ronda Hornbeck, Chairperson.....Board of Lincoln County Commissioners, Pioche, NV

Ken Dixon .....Lincoln County Building and Safety, Pioche, NV

UPRR

Debra L. Schafer, General Director
Maintenance of Way Environmental..... Union Pacific Railroad Company, Omaha, NE

Wayne M. Whitlock, Partner..... Pillsbury Winthrop Shaw Pittman LLP, Palo Alto, CA

CITY OF CALIENTE

Keith Larson, Mayor.....City of Caliente, Caliente, NV

6.3.3 Participants

- Nevada Department of Wildlife (NDOW)
- Lincoln County Farm Bureau
- Lincoln County Public Land Commission
- The Nature Conservancy
- Toiyabe Chapter of the Sierra Club
- Red Rock Chapter of the Audubon Society
- Non-Federal landowners

6.3.4 Consultants

- ENTRIX, Inc. (Lisa Mash and Leo Lentsch)
- Intertech Services Corporation (Mike Baughman)

6.4 DISTRIBUTION OF THE ENVIRONMENTAL IMPACT STATEMENT

The FEIS has been distributed to individuals who specifically requested a copy of the document and those who submitted substantive comments during public workshops and on the DEIS. In addition, copies have been sent to the following Federal agencies, federally-recognized tribes, State and local governments, and organizations representing a wide range of views regarding the Southeastern Lincoln County Habitat Conservation Plan.

- BLM Ely District, Las Vegas Field Office, Caliente Field Office, and Nevada State Office

- Congressman Dean Heller
- Congresswomen Shelley Berkley and Dina Titus
- DOI Natural Resources Library and Office of Environmental Policy and Compliance
- EPA
- Fort Mojave Indian Tribe
- Kaibab Paiute Tribal Council
- Las Vegas Paiute Tribe
- Lincoln County, Clark County and Washoe County libraries
- Moapa Paiute Band of the Moapa Indian Reservation
- NDOW
- Paiute Indian Tribe of Utah
- Senators Harry Reid and John Ensign
- USFWS Southern Nevada Field Office and WO NEPA Coordinator

EXHIBIT H

2023 Environmental Statement

HOLLAND & HART LLP
5441 KIETZKE LANE, SECOND FLOOR
RENO, NV 89511

bec environmental, inc.
Environmental Services

August 3, 2023

Madeleine Lehner
Estuary Development Partners LLC
50 West Liberty Street, Suite 430
Reno, NV 89501

Dear Ms. Lehner:

SUBJECT: Estuary – Lincoln County Solar Environmental Statement

Estuary Development Partners LLC (Estuary) has proposed developing a solar facility utilizing approximately 2,900 acres of undeveloped private land in southeastern Lincoln County, Nevada. The land is a part of the Lincoln County Land Act of 2000 (LCLA), public land auctioned to provide for economic development in Lincoln County. Estuary retained BEC Environmental, Inc. (BEC) to develop an Environmental Statement evaluating the applicability of potential impacts evaluated and mitigation measures developed in an Environmental Impact Statement (EIS) completed in 2010. The EIS was developed by the U.S. Fish and Wildlife Service (USFWS) to assess the impacts of issuing Incidental Take Permits (ITPs) and implementing the Southeastern Lincoln County Habitat Conservation Plan (SLCHCP). SLCHCP covers 1,780,140 acres (Covered Area) within the southeastern portion of Lincoln County, Nevada, and includes the LCLA lands. "The SLCHCP's goal is to achieve a balance between 1) long-term conservation and recovery of native species of plants and animals present on southeastern Lincoln County lands and 2) the orderly and beneficial use of private land to promote the economy, health, and well-being of the future population within Lincoln County" (EIS 2010).

The 2010 EIS served as the National Environmental Policy Act (NEPA) compliance document for the USFWS in the analysis of the effects of implementing the Proposed Action (Preferred Alternative) and the anticipated development which included the transfer of lands from BLM to non-Federal owners. The 2010 EIS stated, "Lincoln County anticipates that development of the LCLA land will occur over a 30-year period" (2010 EIS). The 2010 EIS was created in part for residential, commercial, and public facilities development. Development of the lands disposed of under the LCLA will be conducted in accordance with a development agreement (DA) between the developer(s) and Lincoln County.

Proposed Project

The subject site is located north of US Interstate 15 (I-15) in unincorporated Lincoln County, Nevada. The subject site includes Lincoln County Assessor's Parcel Numbers (APNs) 008-261-09 (666.27 acres) and the northern half of 008-261-20 (2,233.73) acres (Project Area). Only 1,600 acres of the Project Area will be disturbed. A site visit was conducted by BEC scientists on July 14, 2023, to compare, investigate, and observe any environmental changes having occurred at the subject site since the January 2010 EIS was finalized. The 2010 EIS, SLCHCP, and ITPs established the goals, actions, and mitigation measures which will apply to the current proposed project plan of action.

Purpose of Environmental Statement

The 2010 EIS evaluated the impacts of implementing the SLCHCP and issuance of three incidental take permits (ITPs) under Section 10(a)(1)(B) of the Endangered Species Act (ESA). Approximately 13,500 acres of LCLA lands have been transferred to non-Federal ownership, including to Lincoln County as part

of the enacted public law. The universal goals of the SLCHCP are to protect and conserve the ESA Covered Species ((desert tortoise (*Gopherus agassizii*) and southwestern willow flycatcher ((*Empidonax traillii extimus*)) and their habitats and to ensure compliance with the ESA, NEPA, and other applicable federal laws and regulations while allowing for orderly growth and development to proceed in Lincoln County.

This Environmental Statement summarizes the potential environmental impacts, alternatives, and mitigation measures addressed in the 2010 EIS and any new findings that may have occurred over the last decade within the LCLA lands. A summary of potential environmental impacts from the construction and operations of the proposed solar facility within southeastern Lincoln County is also included in this Environmental Statement.

Site Information

The Project Area is located within the southeastern portion of unincorporated Lincoln County, Nevada, five miles north of I-15 and Mesquite, Nevada. Lincoln County is the third largest county in Nevada with a land area of 6,816,000 acres (Lincoln County Master Plan, 2006).

The vegetation in the area is typical Mojave Desert Scrub dominated by white bursage (*Ambrosia dumosa*) and creosote (*Larrea tridentata*) with other shrub and herbaceous species present. The climate of the area is dry throughout the year, with long, hot summers and short, mild winters. Lincoln County is one of the most arid regions of the United States and receives little precipitation. Maximum daily temperatures in the summer typically exceed 100 degrees Fahrenheit (°F).

The project area is part of the covered (evaluated) lands in the 2010 EIS and is within the LCLA lands. Development of the LCLA area would occur in accordance with Title 14: Toquop Township Planned Unit Development. The project area encompasses both the Toquop Water Tank Road and Mesquite Heights Road which lead north to the Mesquite landfill and a water facility, respectively.

Previous Environmental Findings

Several elements of the human environment were not evaluated in the 2010 EIS because the elements did not occur in the LCLA or did not have the potential to be affected by the proposed development of the LCLA lands. These non-evaluated elements received no further action or discussion in the 2010 EIS: Environmental Justice, Indian Trust Resources, Wild and Scenic Rivers and other Unique Natural Resources, and Prime and Unique Farmland. A description of why these issues were dismissed from further analysis and not addressed in the 2010 EIS can be found in Section 1.2.2: Issues Dismissed from Further Analysis. According to the 2010 EIS, no Indian trust resources or wild and scenic rivers were found to occur within the Covered Area. No prime and unique farmland was found to occur on the lands proposed for development. No Environmental Justice impacts relative to the EPA's Environmental Justice Guidelines from the 2010 EIS had occurred during the time of population assessment. The visual conditions of the project area observed as of July 14, 2023, were consistent with the conditions evaluated in the 2010 EIS.

The 2010 EIS evaluated three alternatives: No Action Alternative, Preferred Alternative, and Alternative A: Additional Federal Lands. The following summaries reflect information analyzed and presented in the 2010 EIS. The resources or concerns addressed in the EIS and summarized below include the following: Biological Resources, Hydrology and Water Quality, Floodplains, Wetlands, Waters of the United States, Cultural and Paleontological Resources, Soils and Geological Resources, Ecologically Critical Areas,

Visual Resources, Air Quality, Transportation and Circulation, Noise, Agricultural Resources, Recreational Resources, Socioeconomics, and Hazardous Materials.

Biological Resources

The 2010 EIS evaluated the potential impacts of the proposed project development on the following species listed as threatened or endangered under the ESA at the time: the desert tortoise and the southwestern willow flycatcher. The 2010 EIS addresses habitat conservation plans, goals, and ITPs for Lincoln County (permittee) for the two species designated as "Covered Species". The USFWS issued its Biological Opinion (BO) regarding the disposal of the LCLA lands on September 7, 2001. The BO addressed the "transfer of LCLA lands to non-Federal ownership, and the effects the proposed transfer may have on the Covered Species" as well as the anticipated development (2010 EIS).

The desert tortoise is present within the Project Area and is listed as threatened under the ESA and protected by the State of Nevada. Land development activities, including the development of the LCLA lands, could result in a substantial impact on the species because of the loss of potential desert tortoise habitat and the removal of tortoises potentially present in the Project Area prior to construction. However, the USFWS determined these impacts would not jeopardize the continued existence of the species and issued permits for the development. The status of the Mojave Desert tortoise has not changed substantively since the 2010 EIS.

The 2010 EIS reported no direct effects on the southwestern willow flycatcher, or their habitat would result from development activities associated with the LCLA lands; no southwestern willow flycatcher habitat was identified within the LCLA.

BEC generated a U.S. Fish and Wildlife Information for Planning and Consultation (IPaC) resource list on July 19, 2023, to identify additional species considered to be potentially impacted by the proposed project. These species include the yellow-billed cuckoo (*Coccyzus americanus*), a state and federally threatened bird species, and the monarch butterfly (*Danaus plexippus*), designated as a candidate insect species in 2023. The yellow-billed cuckoo was listed as a threatened species in 2014. The 2010 EIS determined habitat for the yellow-billed cuckoo was not within the project area. BEC confirmed habitat is not present in the project area.

The 2010 EIS also evaluated the potential for the presence of plant species identified as BLM sensitive or Critically Endangered by the State of Nevada in the project area, such as sticky buckwheat (*Eriogonum viscidulum*), threecorner milkvetch (*Astragalus geyeri* var. *triquetrus*), and Las Vegas buckwheat (*Eriogonum corymbosum*). All known occurrences of these species were reported to occur outside the boundary of LCLA lands and the project area. Mitigation measures and BMPs for weed management adopted from the SLCHCP will be implemented during any ground disturbance of the LCLA lands to minimize the potential to introduce or spread non-native or invasive weeds.

Hydrology and Water Quality

No perennial surface waters occur in the LCLA lands. Construction activities could increase the potential for erosion from precipitation affecting water quality. However, Best Management Practices (BMPs) described in a required Stormwater Pollution Prevention Plan (SWPPP) would be used to minimize the amount of erosion and possible sedimentation. No long-term effects on water quality would occur due to the development of the LCLA lands based on the lack of water resources in the area and project design measures to avoid the ephemeral washes in the area.

Floodplains, Wetlands, and Waters of The United States

The Project Area was not within a mapped FEMA floodplain as of 2001 (EIS 2010, citing a BLM 2001 document). Based on a brief review of available FEMA floodplain maps by BEC, the area remains unmapped.

The 2010 EIS determined the area contained no areas with the potential to be considered wetlands. Reviews by BEC of available remote imagery and the USFWS National Wetland Inventory maps do not show the presence of wetlands in the Project Area.

The Project Area is bisected by numerous ephemeral dry washes which flow only in response to local rain events. The 2010 EIS summarized the regulations and guidelines applicable at that time which indicate these aquatic features would fall within the definition of jurisdictional waters of the United States (WOUS) under the Clean Water Act. However, the definition of jurisdictional WOUS has changed multiple times through revised guidelines, establishment and recension of regulations, and U.S. Supreme Court rulings. The most recent change came in May 2023 with a Supreme Court ruling which indicated ephemeral dry washes should not fall within the CWA jurisdiction. Under the current WOUS ruling and Army Corps of Engineers and EPA guidelines, no impacts would occur to jurisdiction waters within the Project Area; only ephemeral washes exist in the Project Area.

Cultural and Paleontological

Cultural resource surveys were conducted as a part of the 2001 Environmental Assessment (EA) developed by the Bureau of Land Management (BLM) to evaluate the sale of the LCLA lands. Prior to the sale of these lands, the BLM was required to comply with the National Historic Preservation Act (NHPA). For private lands, if surveys are needed to satisfy NHPA requirements, then the monies for these surveys would come from the mitigation fees paid by the applicants pursuant to the terms and conditions of the SLCHCP (2010 EIS).

According to the SLCHCP, the results of the cultural resources inventory and collection that was completed at the site negate any effects of the build-out of the LCLA lands on historic properties.

Paleontological field reconnaissance of the LCLA lands was conducted in April 2001 and found no paleontological resources. Although fossil-bearing rocks were found to be abundant in the LCLA Project Area, no fossils were found during the 2001 survey. In the event paleontological or cultural resources are discovered during project construction, mitigation measures would require workers to stop work and ensure the resources are appropriately protected until they are properly evaluated (EIS 2010). No changes in the paleontological resources in the area nor potential impacts to them are likely to have changed since the 2010 evaluation.

Soils and Geological Resources

Impacts on soil and geotechnical resources could occur from the construction of land development and operations within the proposed project area. Implementing general mitigation measures described in section 3.3 of the 2010 EIS, construction and operations of the proposed solar facility would minimize potential impacts to soils from water and wind erosion. The 2010 EIS stated, "the overall future development of the LCLA lands would disturb very little of the approximately 6.8 million acres of land". Any resulting adverse effects would not be extensive or sizeable (EIS 2010).

Ecologically Critical Areas

No ecologically critical areas are present within the Project Area.

Visual Resources

Visual resources could be impacted by the development of the LCLA lands. The BLM identified the project area as Visual Resource Management Class IV, an area expected to experience major modifications of the existing characterization of the landscape and include development that may dominate the view and be the major focus of a viewer's attention. As such, the proposed project would be consistent with the analysis of impacts completed in 2010.

Air Quality

Dust from construction would be controlled by the Nevada Bureau of Air Pollution Control's (BAPC) Surface Area Disturbance Permitting Program. Permits with Dust Control Plans are required for all projects disturbing more than 20 acres (2010 EIS). Mitigation measures to minimize impacts from construction emissions would be implemented by properly maintaining and shutting down equipment when not in use. Equipment would be located as far as possible from sensitive receptors if identified in the project area.

Transportation and Circulation

The 2010 EIS identified transportation and circulation patterns in the region, which would change significantly with the development of the entire LCLA as a residential area, and substantial transportation planning would be required. However, with the development of a small part of this area for solar, the extent and duration of the disturbance to transportation would be less and shorter as it would be constrained to the construction phase.

Noise

Changes in noise levels could occur under the alternatives analyzed in the 2010 EIS due to the initial construction. Long-term operations of the proposed solar development would produce minimal noise.

Agricultural Resources

No agricultural resources are present within the Project Area.

Recreational Uses

Rapid urban expansion of Las Vegas and Clark County has resulted in a loss of traditional off-highway vehicle (OHV) recreational areas, resulting in the use of OHVs outside of traditional use areas including the LCLA lands now in private ownership. The 2010 EIS assessed the development of these lands for residential uses. OHV, bicycle paths, and walking trails for recreational use could be impacted by development activities. On-site construction and operations activities could impact recreational activities; however, this property is private land and is not intended for public use. However, the project will set aside land for a road to bypass the project boundary which will allow access to the public lands north of the project site.

Socioeconomics

Existing socioeconomic conditions in Lincoln County, Nevada were considered and included the following: 1) demographic characteristics of the region, including population, race/ethnicity, and potentially affected social groups; 2) housing; 3) economic base of the region based on measures of employment and income; and 4) fiscal resources of local government (EIS 2010).

The 2010 EIS determined Lincoln County socioeconomics, including housing and population, could be impacted by residential, commercial, industrial, and public facilities development of the LCLA lands within the project area and would require the design of the built environment to be included in the analysis of the socioeconomics, including population and housing during master planning. The development of a portion of LCLA lands for solar energy could have an impact on socioeconomics including additional job growth and tax revenue increases (socioeconomics). Solar energy would reduce the stress on the power grids by adding an additional source of electricity. Solar development would not impact government services and would increase water conservation by utilizing limited consumption of water relative to residential development of the LCLA.

Hazardous Waste

Any fluids leaks or hazardous waste spills or releases would be stopped, cleaned, and repaired immediately at the time of occurrence. The direct effects of the potential to create hazardous waste are associated with operations of industrial or manufacturing facilities on the LCLA Lands addressed in the 2010 EIS. The proposed development of a solar facility within the project area would manage and dispose of any waste in compliance with Nevada Revised Statute (NRS) 444 and NRS 459, minimizing the potential for any spills or contamination of hazardous materials.

Field Reconnaissance

Field reconnaissance was originally conducted in 2001 as reported in the 2010 EIS. A follow-up site visit was conducted by BEC scientists on July 14, 2023, to identify any changes that may have occurred in the last two decades within the LCLA lands. The Photo Log (attached) includes photos of the Project Area (see attached project area map) and the nearby Mesquite landfill and water facilities enclosed within the proposed project boundary. The Mesquite landfill, water facility, and police shooting range are not included as part of the Project Area. The observations made by BEC scientists on July 14, 2023, during the site visit, confirmed only minor environmental changes have occurred since the 2010 EIS was developed.

The environmental changes observed during the field reconnaissance on July 14, 2023, included evidence of new OHV trails, bicycle trails, and walking pathways near the accessible paved roadways within the project area (see attached Photo Log, Photos 1 through 14). BEC scientists observed wind-blown debris on the Mesquite Heights Road leading north to the Mesquite landfill (Photo Log, Photo 2). Soil erosion was observed in the soft sandy areas parallel to the paved roadside. The presence of deep rills and gullies were observed alongside the Toquop Water Tank Road at a downgradient, trending from north to south (Photo Log, Photos 5 through 7). During this site visit, the subject site was observed to generally match the 2010 EIS descriptions of the LCLA disposal lands.

Statement and Conclusion

The analysis of the direct, indirect, and cumulative effects within the LCLA lands completed in the 2010 EIS and SLCHCP resulted in the development of mitigation measures to reduce impacts due to development within LCLA lands. Construction and operation activities must adhere to the mitigation

measures outlined in the SLCHCP to ensure sensitive areas and species are protected. These mitigation measures would include Lincoln County mitigation fees, minimization of construction emissions, protection of air quality, and reduced impacts on soil through operations. The proposed development of the project area must also adhere to applicable local, state, Federal, and non-federal regulations to reduce impacts on resources.

BEC has completed this Environmental Statement to evaluate the applicability of the previously issued 2010 EIS to the current proposed project and any current findings or modifications to the area, up to the date of July 19, 2023. Therefore, the 2010 EIS mitigations recommended would be applicable to the proposed project development.

The proposed solar development project within the LCLA lands would be less impactful than residential development. Solar energy implements water efficiency, overall job growth, tax revenue increases and reduced stress on power consumption. Mitigation measures and BMPs included in the 2010 EIS, SLCHCP, and associated with the LCLA lands will be outlined in the Development Agreement with Lincoln County and implemented during the development of the Estuary Solar Project.

Sincerely,

BEC Environmental, Inc.

Prepared by:

Mariah Jackson
Environmental Scientist

Reviewed by:

Erika Balderson
Senior Environmental Scientist

Attached: Photo Log
Attached: Project Area Map

bec environmental, inc.
Environmental Services

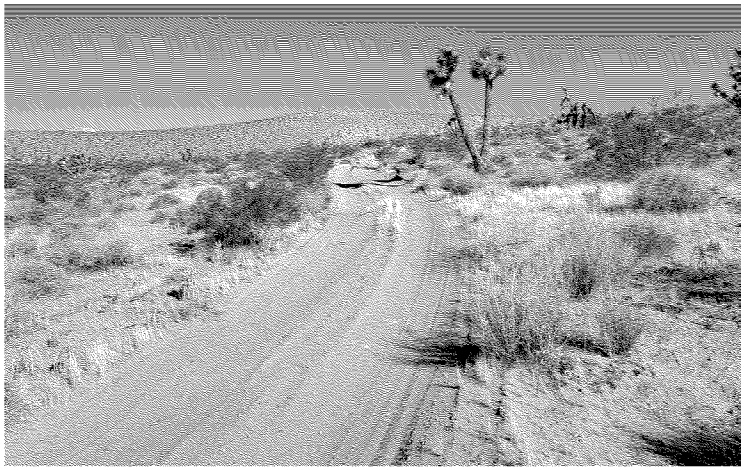
Photo 1

View facing northwest. Photographer is located southwest of the Mesquite landfill between Toquop Water Tank Road and Mesquite Heights Road.

Photo 2

View facing east from Mesquite Heights Road. Photographer is located southeast of the Mesquite landfill.

Photo 3



View facing northwest. Photographer is located southwest of the Mesquite landfill off Mesquite Heights Road.

Photo 4

View facing north. Photographer is located southwest of the Mesquite landfill off Mesquite Heights Road.

Photo 5

View facing south. Photographer is located southwest of the Mesquite landfill off Toquop Water Tank Road.

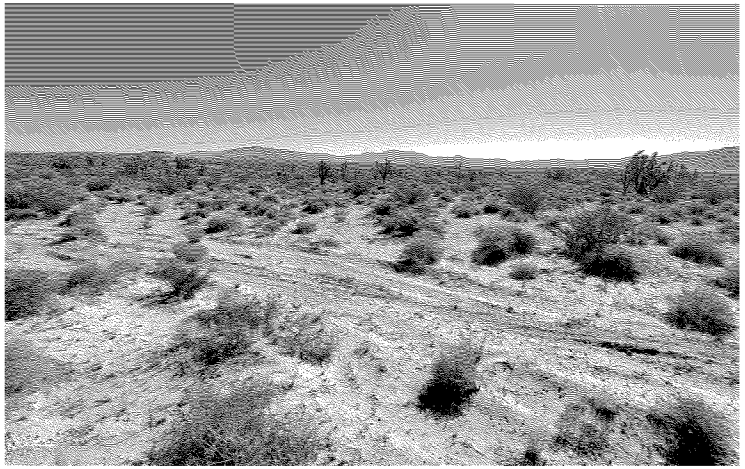
Photo 6

View facing south. Photographer is located southwest of the Mesquite landfill off Toquop Water Tank Road.

Photo 7

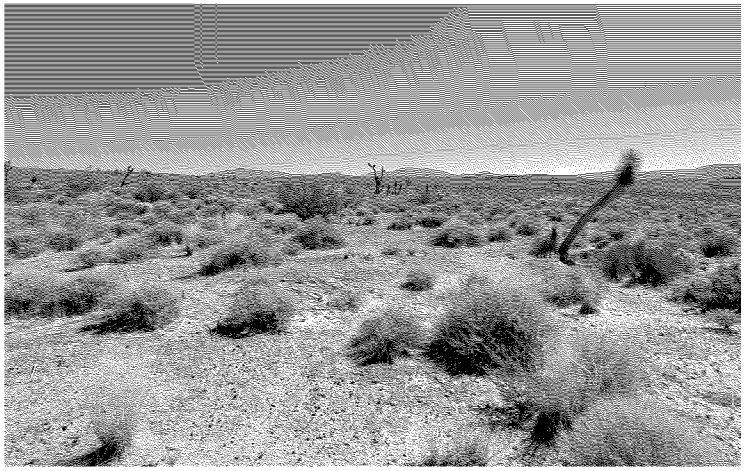
View facing west. Photographer is located southwest of the Mesquite landfill off Toquop Water Tank Road. The observed erosion was trending from north downgradient to the south.

Photo 8



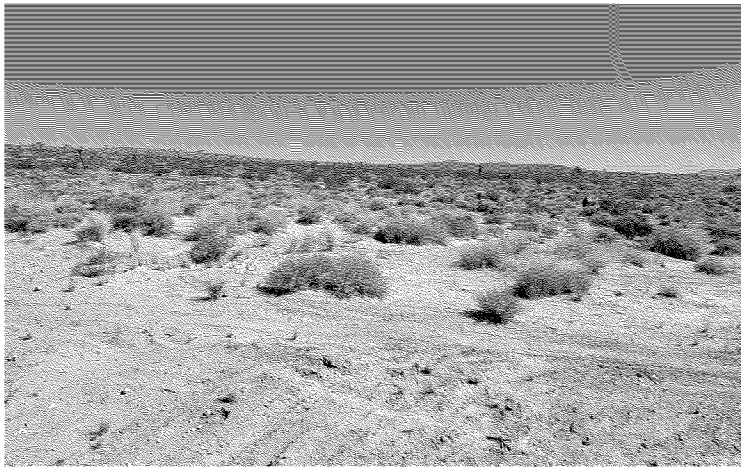
View facing southeast. Photographer is located north of the Lincoln County water facility.

Photo 9



View facing southeast. Photographer is located northwest of the Mesquite landfill.

Photo 10

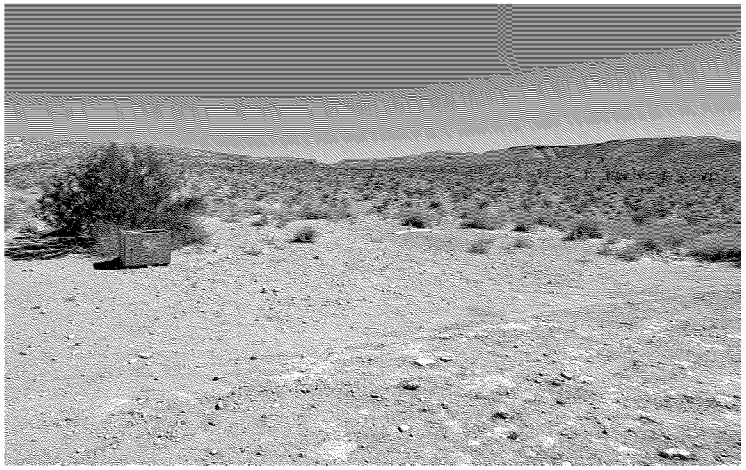


View facing north. Photographer is located north of the Mesquite landfill.

Photo 11

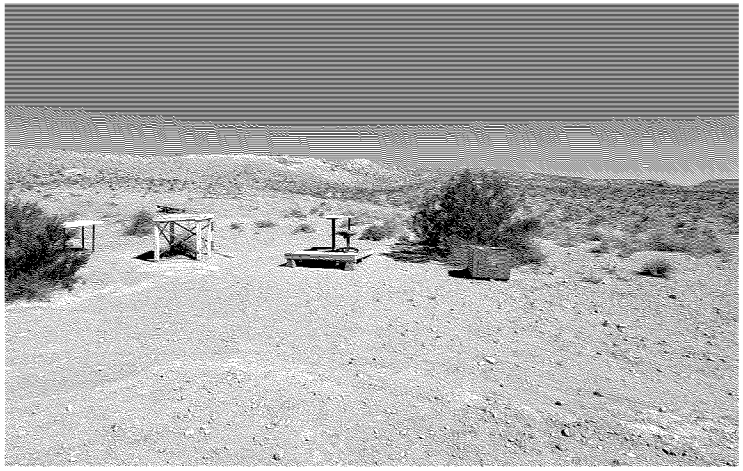
View facing southwest. Photographer is located north of the Mesquite landfill.

Photo 12



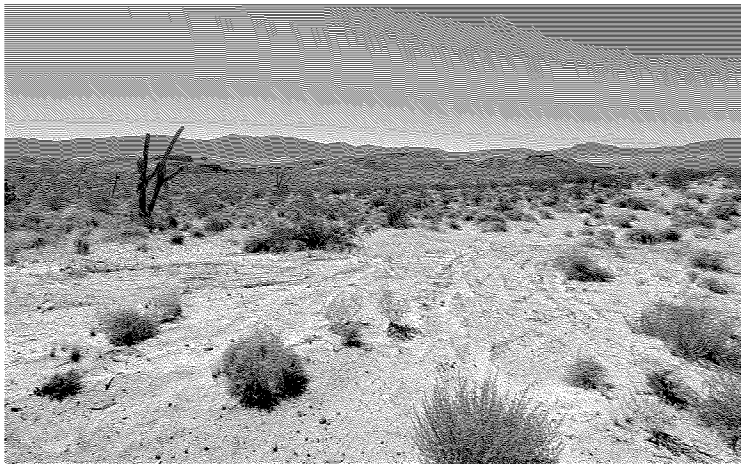
View facing northwest. Photographer is located north of the Police shooting range.

Photo 13



View facing north. Photographer is located north of the Police shooting range.

Photo 14



View facing northeast. Photographer is located east of the Mesquite landfill and west of the Police shooting range.

Estuary - Lincoln County Proposed Solar Project Area

Observations made by BEC scientists from site visit on July 14, 2023

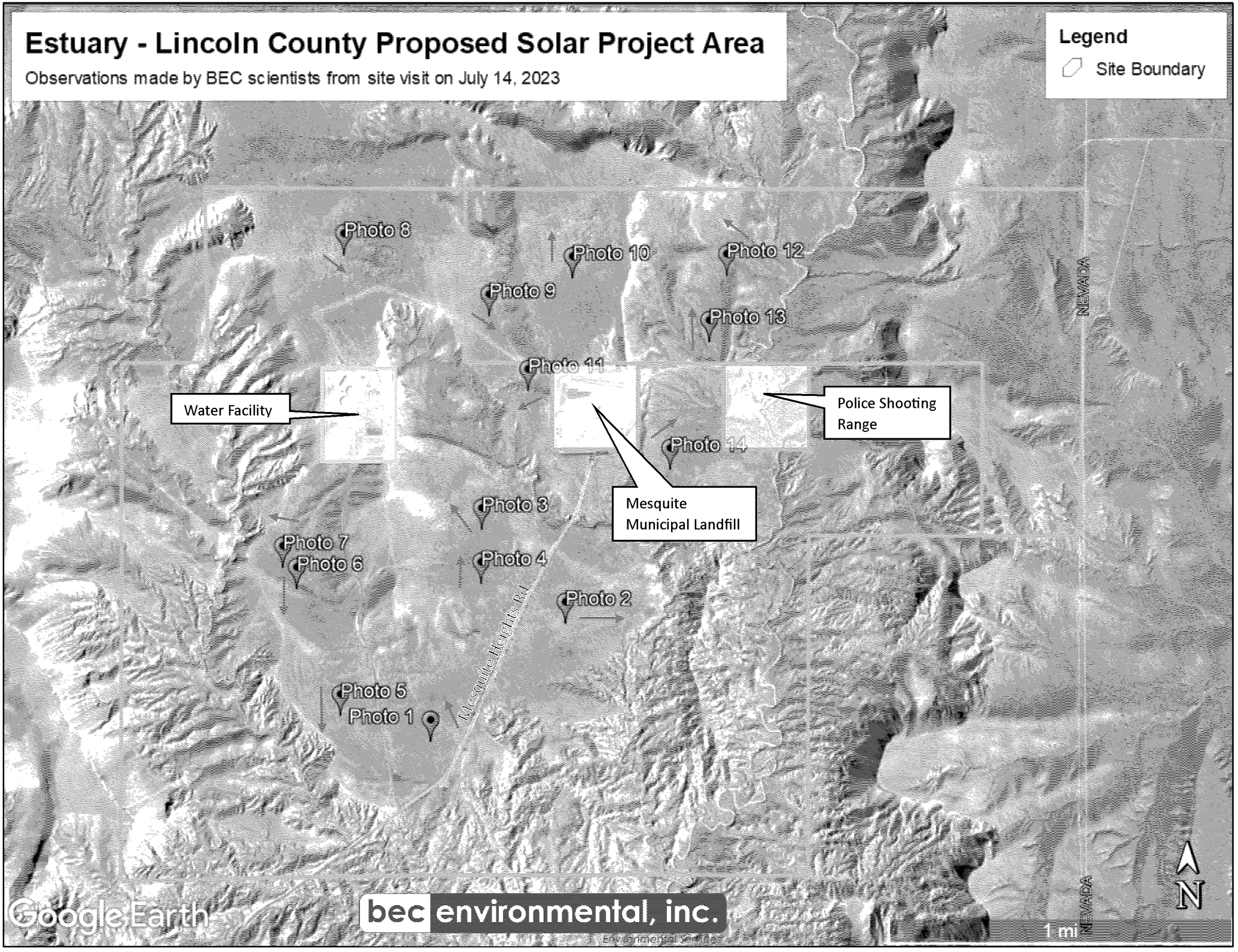


EXHIBIT I

Public Notice

HOLLAND & HART LLP
5441 KIETZKE LANE, SECOND FLOOR
RENO, NV 89511

BEFORE THE PUBLIC UTILITIES COMMISSION OF NEVADA
NOTICE OF APPLICATION FOR A PERMIT TO CONSTRUCT A UTILITY FACILITY UNDER THE UTILITY ENVIRONMENTAL PROTECTION ACT

Escape Solar LLC (the "Applicant"), is submitting, pursuant to the Nevada Utility Environmental Protection Act ("UEPA"), an application to the Public Utilities Commission of Nevada ("PUCN") for a permit to construct an up to 185 MW solar energy generating facility, a 138 kV generation-tie line, and associated facilities, including an optional energy storage system, to be located in Lincoln County, Nevada (the "Project") pursuant to Nevada Revised Statutes Sections 704.820 through .900, inclusive, and Nevada Administrative Code Sections 703.415 through .427, inclusive (the "Application"). The Project will provide renewable energy to Nevada's electrical transmission grid via the existing Mesa Substation, which is owned and operated by Lincoln County Power District No. 1. The Project will consist of three basic components: (1) an up to 185 MW solar energy generating facility; (2) a 138 kV generation-tie line; and (3) associated facilities and components, including an optional energy storage system.

The Project will be located on approximately 2,900 acres of private land in Lincoln County, Nevada, approximately five miles north of Mesquite. The Project will result in the disturbance of approximately 1,600 acres of land in total. Construction is expected to occur over two phases, one of approximately 10 months and one of approximately 16 months, some of which may occur concurrently. The U.S. Fish and Wildlife Service conducted an environmental review of 1,780,140 acres within the southeastern portion of Lincoln County, Nevada, including the Project area, culminating in an Environmental Impact Statement ("EIS") in January 2010. An Environmental Statement ("ES") specific to the Project area was conducted in July of 2023. Both the EIS and ES will be included with the Application.

NOTICE OF THE APPLICATION FOR A PERMIT TO CONSTRUCT UNDER UEPA FOR AN UP TO 185 MW SOLAR ENERGY GENERATING FACILITY, A 138 KV GENERATION-TIE LINE, AND ASSOCIATED FACILITIES, INCLUDING AN ENERGY STORAGE SYSTEM.

Notice is hereby given to persons residing in the county in which any portion of the Project will be located and constructed: Applicant will request a permit to construct the Project, which will consist of an up to 185 MW solar energy generating facility, a 138 kV generation-tie line, and associated facilities, including an optional energy storage system to be located in Lincoln County, Nevada.

The contents of the Application to be submitted to the PUCN for the Project will include but are not limited to:

1. A description of the Project, including general and detailed descriptions of the location of the Project, appropriately scaled site plan and layout drawings, vicinity maps, and routing maps; a description of the size and nature of the Project; and a description of the natural resources that will be used during the construction and operation of the Project;

2. A copy and summary of the EIS and ES with respect to the environmental impact of the Project; an explanation of the nature of the probable effect of the Project on the environment; and a description of the current environmental characteristics of the Project

area, the environmental impacts that the construction and operation of the Project would have on the Project area before mitigation, and the environmental impacts that the construction and operation of the Project will have on the Project area after mitigation;

3. A description of any reasonable alternate locations for the Project, a description of the comparative merits or detriments of each location submitted, and a statement of the reasons why the location is best suited for the Project;

4. An explanation of the extent to which the Project is needed to ensure reliable utility service to customers in this State of Nevada, including a description of the extent to which the Project will provide and enhance utility service to customers in Nevada;

5. An explanation of how the need for the Project balances any adverse effects on the environment, and how the Project represents the minimum adverse effect on the environment;

6. An explanation of how the location of the Project conforms to applicable federal, state, and local laws and regulations; and

7. An explanation of how the Project will serve the public interest, including the economic benefits that the Project will bring to the state, and the nature of the probable effect on the public health, safety, and welfare of the residents of the state if the Project is constructed.

A copy of the Application will be available on the PUCN's website following Applicant's filing of the Application. Additional information about the UEPA process and a person's right to participate in that process can be found in Nevada Revised Statutes Chapter 704 and Nevada Administrative Code Chapter 703. Protests and written comments about the Application and the Project must be filed with the PUCN as provided by law. DATED this 31st day of July, 2023 by Escape Solar LLC.

EXHIBIT J

Affidavit of Publication

HOLLAND & HART LLP
5441 KIETZKE LANE, SECOND FLOOR
RENO, NV 89511

LINCOLN COUNTY
SINCE 1870
RECORD

P.O. Box 485, Pioche, NV 89043
Phone: (775) 725-3232
Email: contact.lcrecord@gmail.com

AFFIDAVIT OF PUBLICATION

I, Robin Rowley, of the Lincoln County Record, published weekly each Friday, at Pioche, Lincoln County, Nevada, do solemnly swear that a copy of the below notice as per clipping attached was published each week in the regular and entire issue of the said newspaper in 1 consecutive issue(s) commencing with the issue dated August 4, 2023 and ending in the issue dated August 4, 2023.

Holland and Hart——— 1x27.4, Estuary Lincoln Public Notice

Robin Rowley
State of Nevada
County of Lincoln

Subscribed and sworn to before me on August 9, 2023 by Robin Rowley

Notary Public

ROBIN E SIMMERS
Notary Public, State of Nevada
No. 02-78907-11
My Appt. Exp. Nov. 6, 2026

Scanned with CamScanner

EXHIBIT K

Proof of Submission

HOLLAND & HART LLP
5441 KIETZKE LANE, SECOND FLOOR
RENO, NV 89511

CERTIFICATE OF SERVICE

I hereby certify that I am an employee of Holland & Hart LLP and on August 22, 2023, I caused to be served a true and correct copy of the foregoing document to the following:

ELECTRONIC MAIL

Nevada State Clearinghouse
Department of Conservation & Natural Resources,
Division of State Lands
901 S. Stewart Street, Ste. 5003
Carson City, NV 89701
nevadaclearinghouse@lands.nv.gov

ELECTRONIC MAIL

Jennifer Carr
Nevada Division of Environmental Protection
901 S. Stewart Street, Suite 4001
Carson City, NV 89701
Jcarr@ndep.nv.gov

ELECTRONIC MAIL

Staff Counsel Support
Public Utilities Commission of Nevada
1150 E. William Street
Carson City, NV 89701-3109
Pucn.sc@puc.nv.gov

ELECTRONIC MAIL

Ernest Figueroa, Esq.
Nevada State Consumer Advocate
Bureau of Consumer Protection
100 N. Carson Street
Carson City, NV 89701
bcpserv@ag.nv.gov

U.S. MAIL TRANSMITTAL:

Lincoln County Clerk
181 North Main Street, Suite 201
Pioche, NV 89043

/s/Cecilia Martin
Cecilia Martin, Legal Secretary
an employee of Holland & Hart LLP

HOLLAND & HART LLP
5441 KIETZKE LANE, SECOND FLOOR
RENO, NV 89511

EXHIBIT L

List of Permits and Approvals

HOLLAND & HART LLP
5441 KIETZKE LANE, SECOND FLOOR
RENO, NV 89511

Required Permit	Issuing Agency	Expected Approval Date	Project Phase
Stormwater General Permit	Nevada Division of Environmental Protection	12/1/2023	1-3
Surface Area Disturbance Permit	Nevada Division of Environmental Protection	12/1/2023	1-3
Building Permit	Lincoln County	12/1/2023	1-3
Determination of No Hazard to Air Navigation	Federal Aviation Administration	3/1/2024	2

HOLLAND & HART LLP
5441 KIETZKE LANE, SECOND FLOOR
RENO, NV 89511

EXHIBIT M

Draft Notice

HOLLAND & HART LLP
5441 KIETZKE LANE, SECOND FLOOR
RENO, NV 89511

PUBLIC UTILITIES COMMISSION OF NEVADA
DRAFT NOTICE

(Applications, Tariff Filings, Complaints, and Petitions)

Pursuant to Nevada Administrative Code ("NAC") 703.162, the Commission requires that a draft notice be included with all applications, tariff filings, complaints and petitions. Please complete and include **ONE COPY** of this form with your filing. (Completion of this form may require the use of more than one page.)

A title that generally describes the relief requested (see NAC 703.1605(4)(a)):

Application for a Permit to Construct a 185 megawatt ("MW") photovoltaic ("PV") solar generation facility, a 138 kilovolt ("kV") generation-tie power line ("Gen-tie"), and associated facilities, including an up to 400-MWh energy storage system, located in Lincoln County, Nevada, under the Utility Environmental Protection Act ("UEPA").

The name of the applicant, complainant, petitioner or the name of the agent of the applicant, complainant or petitioner (see NAC 703.160(4)(b)):

Escape Solar LLC ("Applicant").

A brief description of the purpose of the filing or proceeding, including, without limitation, a clear and concise introductory statement that summarizes the relief requested or the type of proceeding scheduled **AND** the effect of the proceeding upon customers (see NAC 703.160(4)(c)).

Applicant files this Application pursuant to UEPA for a permit to construct facilities to be known as the Escape Solar Project (the "Project"). The Project includes development of approximately 2,900 acres of private land in Lincoln County, Nevada. The Project will consist of a 185 MW alternating current ("AC") solar PV energy generating facility, a battery energy storage facility with a capacity of up to 400 MWh, an on-site substation, inverters, fencing, roads, operations and maintenance facility, and a supervisory control and data acquisition ("SCADA") system. The Project will also include a roughly one-fifth of a mile long, 138 kV Gen-tie, which will connect the on-site substation to the existing Mesa Substation, which is owned and operated by Lincoln County Power District 1. The Application is not anticipated to have any effect upon customers.

The Application will be filed pursuant to the requirements of NRS 704.820 to 704.900 and NAC 703.415 to 703.427.

A statement indicating whether a consumer session is required to be held pursuant to Nevada Revised Statute ("NRS" 704.069(1)).

A consumer session is not required by NRS 704.069.

If the draft notice pertains to a tariff filing, please include the tariff number **AND** the section number(s) of the schedule number(s) being revised.

This Application does not pertain to a tariff filing.

HOLLAND & HART LLP
5441 KIETZKE LANE, SECOND FLOOR
RENO, NV 89511